ACADEMIC REGULATIONS
COURSE STRUCTURE
AND SYLLABI
OF
MASTER OF COMPUTER APPLICATIONS

EFFECTIVE FROM THE ACADEMIC YEAR 2012-13.

GAYATRI VIDYA PARISHAD
COLLEGE OF ENGINEERING

(AUTONOMOUS)

ACCREDITED BY **NAAC** WITH **A** GRADE WITH A **CGPA** OF **3.47/4.00**

AFFILIATED TO JNTU KAKINADA

MADHURAWADA, VISAKHAPATNAM 530048

Vision

To evolve into and sustain as a Centre of Excellence in Technological Education and Research with a holistic approach.

Mission

To produce high quality engineering graduates with the requisite theoretical and practical knowledge and social awareness to be able to contribute effectively to the progress of the society through their chosen field of endeavor.

To undertake Research & Development, and extension activities in the fields of Science and Engineering in areas of relevance for immediate application as well as for strengthening or establishing fundamental knowledge.

FOREWORD

This academic year 2012-13 is starting on a happy note of this college being able to send its 2nd batch of M.C.A Students under autonomous status out by April, 2013. When it is contemplated to apply for autonomous status to GVP college of Engineering, there was a word of caution by some outsiders about its successful implementation. But for the determination of the management, excellent guidance from experts on the Academic Council and Boards of Studies, support from faculty and staff as well as acceptance from students and parents, this college would not have reaped the fruits of success so far and has been what it is to-day in the world of higher technical education in the state. In the past three years of experience, this college gained confidence and has become more and more self reliance in upholding the quality of technical education while presenting employable graduates to the industry without squandering the freedom given and confidence bestowed on it by authorities responsible for.

The system has stabilized and functioning to the satisfaction of industry and academics alike. Thanks to the help extended by the members of the new boards of studies and the efforts of the faculty in designing the syllabi.

Principal

ACADEMIC REGULATIONS

ACADEMIC REGULATIONS

(Effective for the students admitted into first year from the academic year 2012-2013 onwards)

The MCA Degree of the Jawaharlal Nehru Technological University, Kakinada shall be recommended to be conferred on students who are admitted to the program and fulfill all the requirements for the award of the Degree.

1.0 ELIGIBILITY FOR ADMISSIONS :

Admission to the above program shall be made subject to the eligibility, qualifications and specialization prescribed by the AICTE from time to time.

Admissions shall be made on the basis of merit rank obtained by the qualifying candidate at ICET examination or an Entrance Test conducted by the University subject to reservations prescribed by the university from time to time.

2.0 AWARD OF M.C.A. DEGREE:

2.1 A student shall be declared eligible for the award of the MCA degree, if he pursues a course of study and completes it successfully for not less than three academic years and not more then six academic years.

2.2 A student, who fails to fulfill all the academic requirements for the award of the degree within six academic years from the year of his admission, shall forfeit his seat.

2.3 The minimum instruction for each semester shall be 20 weeks with 5 days a week. A working day shall have 7 periods each of 50 minutes.

3.0 CREDIT STRUCTURE:

Course work (I-V semesters):	(5T+2P)/sem.	
	20+4 =	24 credits/sem
Seminar(VI semester)		2 credits.
Project work(VI semester)		28 credits.
Total		150 credits.

4.0 ATTENDANCE:

4.1 The attendance shall be considered subject wise.

4.2 A candidate shall be deemed to have eligibility to write end semester examinations in a subject if he has put in at least 75% of attendance in that subject.

4.3 Shortage of attendance up to 10% in any subject (i.e. 65% and above and below 75%) may be condoned by a Committee on genuine and valid reasons on representation by the candidate with supporting evidence.

4.4 A student who gets less than 65% attendance in a maximum of two courses in any semester shall not be permitted to take the end semester examination in which he/she falls short. His/her registration for those courses will be treated as cancelled. The student should re-register and repeat those courses as and when offered next.

4.5 If a student gets less than 65% attendance in more than two courses in any semester he/she shall be detained and has to repeat the entire semester.

4.6 Shortage of attendance below 65% shall in no case be condoned.

4.7 A stipulated fee shall be payable towards condonation of shortage of attendance.

4.8 Attendance will be indicated in the marks memo by a letter code as follows:

Grading of Attendance:

90% and above	A (Very Good)
75% to 89%	B (Good)
65% to 74%	C (Condoned)
Below 65%	D (Detained)

5.0 EVALUATION AND ACADEMIC REQUIREMENTS:

The performance of the student in each semester shall be evaluated subject-wise, with a maximum of 100 marks for each theory and 100 marks for each practical, on the basis of Internal Evaluation and End Semester Examination.

5.1 For the theory subjects 60 marks shall be awarded based on the performance in the External Examination, 40 marks shall be awarded based on the Internal Evaluation.

One part of the internal evaluation shall be made based on the average of the marks secured in the two Mid Term-Examinations of 30 each conducted one in the middle of the Semester and the other immediately after the completion of instruction. Each mid term examination shall be conducted for duration of 90 minutes with 3 questions to be answered out of 5 questions. The remaining 10 marks are awarded through an average of continuous evaluation of assignments/seminars/any other method, as notified by the teacher at the beginning of the semester.

5.2 For Practical subjects, 50 marks shall be awarded based on the performance in the End Semester Examinations, 50 marks shall be awarded based on the day-to-day performance as

Internal marks**.** A candidate has to secure a minimum of 50% in the external examination and has to secure a minimum of 50% on the aggregate to be declared successful.

5.3 Laboratory examination for MCA course must be conducted with two Examiners, one of them being Laboratory Class Teacher and second examiner shall be other than Class Teacher.

5.4 A student shall be promoted from II to III year only if he aquires 68 out of 96 credits at the end of II year. (from I, II, III semesters regular and supplementary examinations and IV semester regular examinations).

5.5 There shall be a seminar presentation in VI Semester. For Seminar there will be only internal evaluation of 50 marks. A student has to secure a minimum of 50% to be declared successful. The assessment will be made by a Board consisting of Head of the Department and two other internal staff members of the department

5.6 A student shall be allowed to submit the project report only after fulfilling the attendance requirements of all the semesters. The viva-voce examination shall be conducted at the end of the course work and after the completion of the End Semester examination of the final semester.

5.7 A candidate shall be given one chance to re-register for each subject provided the internal marks secured by a candidate are less than 50% and he has failed in the end examination. The re-registration is permitted only after completion of his regular course and before submitting his final project report and as and when the subjects (or any other equivalent subjects as decided by the College) are offered. In the event of re-registering, the

internal marks and end examination marks obtained in the previous attempt are nullified. At a given time a candidate is permitted to re-register for a maximum of three subjects.

6.0 EVALUATION OF PROJECT WORK:

6.1 A Departmental Project Review Committee (DPRC) shall be constituted with the Head of the Department as the chairman and two senior faculty as members to oversee the proceedings of the project work from allotment to submission.

6.2 A Project Review Committee (PRC) of the college is to be constituted with a Senior Professor not below the rank of a HOD as chairperson, Heads of the Departments, which are offering PG courses and two other senior faculty members of the department offering MCA.

6.3 Registration of Project work: A student is permitted to register for the project work after satisfying the attendance requirement of all the courses (theory and practical courses) up to V Semester. A candidate has to submit, in consultation with his project supervisor, the title, objective and plan of action of his project work to the DPRC for its approval. Only after obtaining the approval of DPRC the student can initiate the Project work.

6.4 Duration of the project is for one semester.

6.5 If a candidate wishes to change mid course his supervisor or topic of the project he can do so with approval of the Departmental Project Review Committee (DPRC). However the departmental review committee shall examine whether the change of topic/supervisor leads to a major change of his initial plans of the project proposal. If so, his date of registration for the project work shall start from the date of change of supervisor or topic as the case may be or whichever is earlier.

6.6 Three copies of the project report, certified by the supervisor shall be submitted to the College.

6.7 The Project report shall be adjudicated by one external examiner selected by the Principal, out of 5-member panel submitted by the HOD who are eminent in that field of study.

6.8 The viva-voce examination of the project shall be conducted by a board consisting of the External examiner, The Head of the Department and Supervisor. The Board shall jointly report students work as:

A Excellent
B Good
C Satisfactory

Head of the Department shall coordinate and make arrangements for the conduct of viva-voce examination.

6.9 If the work is not satisfactory, the student will revise and resubmit the Project report after three months. If he fails to get a satisfactory report again, the project shall be summarily rejected.

7.0 REMEDIAL PROGRAM FOR DEFAULTERS:

A Remedial programme during 8.40 - 10.20 a.m. / 3.20 - 5.00 p.m. in subsequent semesters is offered for those students who had taken the course earlier but failed to fulfill the attendance requirements and detained due to shortage of attendance in not more than two subjects. However, this facility shall not be extended to those candidates who are detained for want of attendance as per regulations 4.5.

7.1 Remedial programme shall be announced at the beginning of every semester. The announcement of subjects offered for the summer programme is at the discretion of the Principal. A student shall have to register within the time stipulated in the announcement by paying the prescribed fee.

7.2 The number of total contact hours and method of evaluation for any remedial program shall be the same as those for a regular semester.

7.3 It is desirable for a candidate to put up 100% attendance in all the subjects registered for the remedial programme. However 25% concession in attendance may be permitted at the discretion of the principal based on the merits of the individual case under extraneous conditions with proper evidence. No further condonation of attendance on par with the regular semester shall be permitted.

7.4 If a candidate fail to satisfy the attendance requirement in a course registered during remedial programme, then he has to repeat the course in the subsequent remedial programme when offered next.

7.5 The method of internal evaluation is same as for the regular M.C.A programme. I mid examination shall be completed by the end of IV weeks and II mid to be completed by the end of VIII weeks of the programme.

7.6 The earlier internal marks secured in the regular semester for the subjects registered in the remedial programme are nullified and internal marks from the latest remedial programme shall be final.

7.7 Attendance and completion of subjects during the remedial programme shall be suitably reflected in the consolidated marks memo.

7.8 *No student can register for more than two courses during a remedial programme.*

7.9 Withdrawal from a remedial program after registration will not entitle for any refund of fees.

7.10 The credits for the courses registered during the remedial programme can be earned from the end semester examinations following the corresponding regular semester.

8.0 AWARD OF DEGREE AND CLASS:

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of MCA Degree he shall be placed in one of the following three classes:

% of marks to be secured	Class Awarded
70% and above	First Class with Distinction
60% and above but less than 70%	First Class
50% and above but less than 60%	Second Class

The marks in internal evaluation and end examination shall be shown separately in the marks memorandum.

The grade of the dissertation shall also be mentioned in the marks memorandum.

9.0 WITHHOLDING OF RESULTS:

If the student has not paid any dues to the college or if any case of indiscipline is pending against him, the result of the student will be withheld and he will not be allowed into the next semester. The recommendation to the issue of degree is liable to be withheld in such cases.

10.0 TRANSITORY REGULATIONS:

Students who have discontinued or have been detained for want of attendance or who have failed after having undergone the course are eligible for admission to the same or equivalent subjects as and when the subjects are offered, subject to **5.4** and **2.0**.

11.0 GENERAL:

The academic regulations should be read as a whole for purpose of any interpretation.

11.1 In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman Academic Council is final.

11.2 The College may change or amend the academic regulations and syllabus at any time and the changes and amendments made shall be applicable to all the students with effect from the date notified by the college.

11.3 Wherever the word he, him or his occurs, it will also include she, her and her's.

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COURSE STRUCTURE

I SEMESTER

COURSE CODE	THEROY/ LAB	L	P	T	C
10CA3101	Computer programming through C	4	-	1	4
10CA3102	Computer Organization	4	-	1	4
10CA3103	Numerical Methods, Probability & statistics	4	-	2	4
10CA3104	Mathematical Foundations of Computer Applications	4	-	-	4
10CA3105	Accountancy and Financial Management	4	-	-	4
10CA3106	*Computer Organization Lab*	-	4	-	2
10CA3107	*Computer programming through C Lab*	-	4	-	2
	Total	**20**	**8**	**4**	**24**

II SEMESTER

COURSE CODE	THEROY/ LAB	L	P	T	C
10CA3108	Operating Systems	4	-	1	4
10CA3109	Operations Research	4	-	2	4
10CA3110	English Language Communication Skills	4	-	-	4
10CA3111	Oops through java	4	-	1	4
10CA3112	Data Structures Using C++	4	-	-	4
10CA3113	*Oops through java Lab*	-	4	-	2
10CA3114	*Data Structures Lab*	-	4	-	2
	Total	**20**	**8**	**4**	**24**

III SEMESTER

COURSE CODE	THEROY/ LAB	L	P	T	C
10CA3115	UNIX Programming	4	-	1	4
10CA3116	Design and Analysis of Algorithms	4	-	-	4
10CA3117	DBMS	4	-	1	4
10CA3118	Management Information Systems	4	-	-	4
10CA3119	Computer Networks	4	-	2	4
10CA3120	*UNIX & OS Lab*	-	4	-	2
10CA3121	*DBMS Lab*	-	4	-	2
	Total	**20**	**8**	**4**	**24**

IV SEMESTER

COURSE CODE	THEROY/ LAB	L	P	T	C
10CA3122	Software Engineering	4	-	2	4
10CA3123	Object Oriented Analysis and Design (using UML)	4	-	1	4
10CA3124	Data Warehousing and Mining	4	-	1	4
	Elective – I	4	-	-	4
10CA3125	Embedded Systems				
10CA3126	Distributed Operating Systems				
10CA3127	Perl Programming				
	Elective – II	4	-	-	4
10CA3128	Network Protocols				
10CA3129	Mobile Computing				
10CA3130	Introduction to Multi-Core Programming – Threading on Multi-Core Processors				
10CA3131	*UML Lab*	-	4	-	2
10CA3132	*English Language Communication Skills and Technical Document, Report writing Lab*	-	4	-	2
	Total	**20**	**8**	**4**	**24**

V SEMESTER

COURSE CODE	THEROY/ LAB	L	P	T	C
10CA3133	Multimedia Application Development	4	-	1	4
10CA3134	Web Technologies & Services	4	-	1	4
10CA3135	Information Security	4	-	2	4
	Elective – III	4	-	-	4
10CA3136	Software Project Management				
10CA3137	Middle Ware Technologies				
10CA3138	E-Commerce				
	Elective – IV	4	-	-	4
10CA3139	Software Testing Methodologies				
10CA3140	Storage Area Networks and Management				
10CA3141	Information Retrieval Systems				
10CA3142	*Web Technologies & Services Lab*	-	4	-	2
10CA3143	*Multimedia Application Development Lab*	-	4	-	2
	Total	**20**	**8**	**4**	**24**

VI SEMESTER

COURSE CODE	THEROY/ LAB	C
10CA3144	General Seminar	2
10CA3145	Dissertation/Thesis Excellent/Good/Satisfactory/Not Satisfactory	28

SYLLABI FOR I SEMESTER

COMPUTER PROGRAMMING THROUGH C

Course Code : 10CA3101

L	P	T	C
4	-	1	4

UNIT -I

Algorithm, Flow chart, Program development steps, Basic structures of C Language, C tokens, Data types and sizes, Declaration of variables, Assigning values, Arithmetic, Relational and Logical operators, Increment and decrement operators, Conditional operator, Bitwise operators, Type conversions, Expressions, evaluation, Input output statements, blocks.

UNIT-II

If and switch statements, while, do while and for statements. C programs covering all the above aspects.

UNIT -III

One dimensional and two dimensional arrays, Initialization, String variables declaration, reading, writing, basics of functions, parameter passing, String handling functions.

UNIT -IV

User defined functions, recursive functions, variables and storage classes, scope rules, block structure, header files, C preprocessor, Example C Programs.

UNIT -V

Pointers and arrays: Pointers and addresses, Pointers and arrays, Pointers and function arguments, address arithmetic, character pointers and functions

UNIT –VI

Pointers to pointers, multi-dimensional arrays, initialization of pointer arrays, command line arguments, pointers to functions, function pointers.

UNIT -VII

Structure definition, initializing, assigning values, passing of structures as arguments, arrays of structures, pointers to structures, self reference to structures, unions, type-defs, bit fields, C program examples.

UNIT -VIII

Console and file-I/O: Standard I/O, Formatted I/O, Opening and closing of files, I/O operations on files.

Text Books:

1. Complete Reference Using C, Herbert Schild, Tata McGraw Hill, 4th Edition, 2009.
2. Let us C, Yashawanth Kanethkar, BPB Publishers, 9th Edition, 2009.

Reference Books:

1. Computer Science, A structured programming approach using C B.A.Fouruzan and R.F.Gilberg,Thomson Publishers, 3rd Edition, 2008.
2. C Programming Language, B.W.Kerninghan and Dennis M. Ritche, Pearson Education, 2nd Edition, 2009.
3. Programming in C, Stephen G.Kochan, Pearson Education, 3rd Edition, 2005.
4. C & Data structures, N. B. Venkateswarlu, E. V. Prasad, S. Chand publications, 1st Edition, 2008.

COMPUTER ORGANIZATION

Course Code : 10CA3102

L	P	T	C
4	-	1	4

UNIT- I

BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional unit, Basic OPERATIONAL concepts, Bus structures, Software, Performance, multiprocessors and multi computers. Data Representation. Fixed Point Representation. Floating – Point Representation. Error Detection codes.

UNIT-II

BASIC CPU ORGANIZATION: Instruction formats-INTEL-8086 CPU architecture-Addressing modes - generation of physical address-code segment registers, Zero, one, two, and three address instructions.

UNIT -III

INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS: Data transfer instructions-input-output instructions, address transfer, Flag transfer, and arithmetic, logical, shift, and rotate instructions.

UNIT-IV

INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS: Conditional and unconditional transfer, iteration control, interrupts and process control instructions, assembler directives. Programming with assembly language instructions.

UNIT-V

THE MEMORY SYSTEM: Basic concepts semiconductor RAM memories. Read-only memories, Cache memories, performance considerations, Virtual memories, secondary storage.

UNIT-VI

INPUT-OUTPUT ORGANIZATION: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input –Output Processor (IOP) Serial communication; Introduction to peripheral component, Interconnect (PCI) bus.

UNIT-VII

PIPELINE AND VECTOR PROCESSING: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

UNIT-VIII

MULTI PROCESSORS: Characteristics or Multiprocessors, Interconnection Structures, Interprocessor Arbitration. InterProcessor Communication and Synchronization Cache Coherence. Shared Memory Multiprocessors.

Text Books :

1. Computer Organization, Carl Hamacher, Zvonks Vranesic, SafeaZaky, McGraw Hill, 5th Edition, 2009.
2. Computer Systems Architecture, M.Moris Mano, Pearson Education, 3rd Edition, 2006.

References :

1. Computer Organization and Architecture, William Stallings, Pearson Education, 6th Edition, 2006.
2. Structured Computer Organization, Andrew S. Tanenbaum, PHI/Pearson Education, 5th Edition, 2006.
3. Fundamentals of Computer Organization and Design, Sivaraama Dandamudi - Springer Int. Edition, Springer, 2009.

4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Elsevier, 4th Edition, 2009.
5. Computer Architecture – Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication, 1st Edition, 2010.
6. Computer Architecture and Organization, John P. Hayes, Tata McGraw hill, 3rd Edition, 2009.

NUMERICAL METHODS, PROBABILITY AND STATISTICS

Course Code : 10CA3103

L	P	T	C
4	-	2	4

UNIT- I

Solution of linear simultaneous equations – Gaussian Elimination, Gauss Jordan, Factorization Method, Gauss Seidel Iterative Method
(6.1,6.2, 6.3.2, 6.3.3, 6.3.6, 6.4 of [1])

UNIT-II

Solutions of algebraic and transcendental equations-Bisection method-Regula Falsi-Newton Raphson method, deductions from Newton Raphson method-finite differences-differences of polynomial-other difference operators.
(2.1, 2.2,2.3, 2.5, 3.3, 3.5of
[1])

UNIT- III

Interpolation-Newton's forward interpolation- Newton's backward interpolation-interpolation with unequal intervals-Lagrange's interpolation-Newton's divided interpolation, Inverse interpolation
(3.6, 3.9.1, 3.10.1 3.11 of [1])

UNIT-IV Empirical Laws and Curve Fitting

Introduction: Principle and Method of least squares, Fitting a straight line, parabola, Fitting of power curve and Fitting of exponential curve..
(4.2.1, 4.2.2 of [1])

UNIT-V (Discrete Random variables)

Random variables, mean and variance, Chebyshev's theorem, Binomial distribution, Poisson distribution
(4.1, 4.2, 4.4-4.7 of [2])

VI (Continuous Random variables)

Continuous random variable, normal distribution, normal approximation to binomial distribution, uniform distribution

(5.1-5.3, 5.5 of [2])

UNIT-VII

Sampling distribution of Means

Population and sample, sampling distribution of the mean, Point estimation, interval estimation

(6.1-6.3, 7.1, 7.2 of [2])

Inferences concerning mean

Null hypotheses and tests of hypotheses, inferences concerning one mean and two means

(7.3 - 7.5, 7.8 of [2])

UNIT-VIII (Inferences concerning Proportions)

Estimation of Proportions, Hypotheses concerning one Proportion, several Proportions.

(9.1 – 9.3 of [2])

Text Book:

1. Introductory Methods of Numerical Analysis by S. S. Sastry, Prentice Hall India Pvt., Limited, Fourth Edition, 2005.
2. Miller. Freund's "Probability and Statistics for Engineers", Richard A.Johnson, C.B.Gupta, Pearson education, Seventh edition 2005.

Reference Books:

1. "Elementary Numerical Analysis: An Algorithmic Approach", Samuel Daniel Conte, Carl W. De Boor, McGraw- Hill, 3rd edition, 2008.
2. "Fundamentals of Mathematical Statistics", S.C. Gupta and V.K. Kapoor, Sultan Chand & Sons Educational Publishers, Ninth Revised Edition, 2007.

MATHEMATICAL FOUNDATIONS OF COMPUTER APPLICATIONS

Course Code : 10CA3104

L	P	T	C
4	-	-	4

UNIT- I
MATHEMATICAL LOGIC-I

Statements and notations, connectives, Well formed formulas, tautologies, equivalence of formulas, Duality law, Tautological Implications, other connectives, Normal forms, Rules of inference, consistency of premises and Indirect method of proof.
(1-1, 1-2.1 to 1-2.4, 1-2.7 to 1-2.11, 1-2.14,1-3.1 to 1-3.4, 1-4.2, 1-4.3of [1])

UNIT- II
MATHEMATICAL LOGIC-II

Predicates, the statement function, variables and quantifiers, predicate formula, free and bound variables, universe of discourse, inference theory of the predicate calculus, Automatic theorem proving.
(1-5.1 to 1-5.4, 1-6.1, 1-6.3, 1-6.4, 1-4.4 of [1])

UNIT- III
RELATIONS

Relations, properties of binary relations in a set, Relation matrix and Graph of a relation, partition and covering of a set, equivalence relations, compatibility relation, composition of binary relations, partial ordering, partially ordered set.
(2-3.1 to 2-3.9 of [1])

UNIT- IV
LATTICES AND BOOLEAN ALGEBRAS

Lattices, Definition and examples, properties of lattices, some special

lattices, Boolean algebra-Definitions and Examples, Boolean forms and free Boolean algebra, Values Boolean Expressions and Boolean functions, representation of Boolean functions.
(4-1.1, 4-1.2, 4-1.5, 4-2.1, 4-3.1,4-3.2,4-4.1 of [1])

UNIT- V
ALGEBRAIC STRUCTURES
Algebraic systems: Definition and examples, Semi groups and monoids: Definitions and examples, Homomorphism of Semi groups and Monoids, Groups: Definitions, and examples, Subgroups and Homeomorphisms,
(3-1.1, 3-2.1, 3-2.2, 3-5.1, 3-5.2 of [1])

UNIT- VI
COMBINATORICS-I
Basics of counting, Combinations and permutations, Enumeration of Combinations and permutations , Enumerating Combinations and permutations with repetitions, Enumerating permutations with constrained repetitions, binomial coefficients, The binomial and Multinomial theorems, The principle of inclusion-exclusion
(2.1-2.8 of [2])

UNIT- VII
COMBINATORICS-II
Generating Functions of sequences, Calculating coefficients of generating functions, Recurrence relations, Solving Recurrence relations by substitution and generating functions, the method of characteristic roots,
(3.1-3.5 of [2])

UNIT- VIII
GRAPH THEORY
Basic concepts, Isomorphism and Subgraphs, Trees and their properties, spanning trees.
(5.1-5.4 of [2])

Text Books:

1. **"Discrete Mathematical Structures with Applications to Computer Science",** J.P Tremblay R.Manohar, Tata McGraw-Hill Publishing Company Limited, 1997.

2. "**Discrete Maths for Computer Scientists & Mathematicians**", J.L. Mott, A. Kandel, T.P. Baker, Prentice Hall of India Pvt Limited, New Delhi Second Edition.

References:

"Discrete Mathematics for Computer Science", Kenneth Bogart, Clifford Stein, Robert L.Drysdale, Springer International Edition, 2006.

ACCOUNTANCY AND FINANCIAL MANAGEMENT

Course Code : 10CA3105	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT -I

Introduction to Financial Accounting

Accounting: Principles, concepts, conventions, double entry book keeping, Journal, Ledger Trial Balance, Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments

UNIT- II

Introduction to Financial Management and Financial Statements Analysis

Introduction, nature and scope of financial management; Meaning and concept, objectives, types of financial statements: Comparative and common size statement of analysis

UNIT- III

Ratio Analysis

Introduction, Advantages and limitations of ratio analysis, Computation, Analysis and Interpretation of Liquidity ratios, Activity ratios, Solvency ratios and Profitability ratios (simple numerical problems)

UNIT- IV

Funds Flow and Cash Flow Statements

Introduction, meaning and importance of funds flow and cash flow statement, Procedure for preparing funds flow and cash flow statements. Comparison between funds flow and cash flow statements (simple numerical problems)

UNIT -V

Cost Analysis and Behavior

Costing- nature, importance and basic principles. Elements of cost, Absorption costing vs. marginal costing. Financial accounting vs. cost accounting vs. management accounting.

Cost Sheet preparation (simple numerical problems)

UNIT- VI

Marginal Costing

Marginal costing and Break-even Analysis: Nature, scope and importance - practical applications of marginal costing, limitations and importance of cost - volume, profit analysis, Short run decisions (simple numerical problems)

UNIT-VII

Budgeting and Capital Budgeting

Introduction to Budgeting: Production budget, Flexible budget and Cash budget

Definition, nature and scope of capital budgeting, features of capital budgeting proposals, methods of capital budgeting: traditional and modern methods (simple numerical problems)

UNIT-VIII

Computerized accounting system

Introduction to computerized accounting system: coding logic and codes, master files, transaction files, introduction documents used for data collection, processing of different files and Outputs obtained

Text Books:

1. Financial Accounting, A. Mukherjee and M. Haneef: Tata McGraw Hill, 2008.
2. Cost and Management Accounting, S P Jain & K L Narang, Kalyani Publishers, 2002.

Reference Books:

1. Accounting and Financial Management, Shashi K Gupta & R K Sharma Kalyani Publishers, 2002.
2. Financial Accounting, R L Gupta: Sultan Chand & Sons, 2002
3. Advanced Accounts, M C Shukla, Sultan Chand & Sons, 2002.
4. Financial Management, I M Pandey, Vikas Publishers, 2006.
5. Cost Accounting: Principles and Practice, SP Jain and KL Narang, Kalyani Publishers, 2002.
6. Management Accounting, S N Maheswari & S K Maheswari Vikas Publishers, 2006.
7. Management Accounting, Bhattacharya, Pearson Education, 2005.
8. Fundamentals of Financial Management, Chandra Bose, Prentice Hall, 2006.

COMPUTER ORGANIZATION LAB

Course Code : 10CA3106	L	P	T	C
	-	4	-	2

Write assembly language programs for the following using MASAM

1. Arithmetic Operations on Two Numbers.
   - Addition , Subtraction, Multiplication, Division

2. Write assembly language programs to evaluate the expressions:
   i) a = b + c –d * e
   ii) z = x * y + w – v +u / k
   - Considering 8-bit, 16 bit and as b, c, d, e.

   Take the input in consecutive memory locations and results also.

3 .Write an ALP of 8086 to perform Multibyte addition and Subtraction.

4. Write an ALP of 8086 to take N numbers as input. And do the following operations on them.
   - Arrange in ascending and Descending order.
   - Find max and minimum
   - Find average

   Considering 8-bit, 16 bit binary numbers.

5 .Write an ALP of 8086 to perform ASCII Arithmetic Operations.

6. Write an ALP of 8086 to perform following Logic Operations:
   - Shift & Rotate.
   - Converting Packed BCD to Un-Packed BCD and Vice-versa

7. Write an ALP of 8086 to take a string of as input and do the following Operations on it.
   - Find the length
   - Find it is Palindrome or not
   - Find whether given string substring or not.
   - Reverse a string
   - Concatenate by taking another string

8. Write the ALP to implement the above operations as procedures and call from the main procedure.

9. Write an ALP of 8086 to find the factorial of a given number as a Procedure and call from the main program which display the result.

10 A computer employs RAM chips of 256X8 and ROM chips of 1024 X 8. The computer needs 2K bytes of RAM, 4K bytes of ROM, and four interface units, each with four registers. A memory-mapped I/O configuration is used. The two highest-order bits of the address bus are assigned 00 for RAM, 01 for ROM, 10 for interface registers.
   a. How many RAM and ROM chips are needed?
   b. Draw a memory-address map for the system.
   c. Give the address range in hexadecimal for RAM, ROM and interface.

11. Obtain the complement function for the match logic of one word in an associative memory. Draw the logic diagram for it and compare with the actual match logic diagram.

12. A two-way set associative cache memory uses blocks of four words. The cache can accommodate a total of 2048 words from main memory. The main memory size is 128K X 32.

a. Formulate all pertinent information required to construct the cache memory.
b. What is the size of the cache memory?

13. A digital computer has a memory unit of 64K X 16 and a cache memory of 1K words. The cache uses direct mapping with a block size of four words.

    a. How many bits are there in each word of cache, and how are they divided into functions? Include a valid bit.
    b. How many bits are there in the tag, index, block, and word fields of the address format?
    c. How many blocks can the cache accommodate?

COMPUTER PROGRAMMING THROUGH C LAB

Course Code : 10CA3107

L	P	T	C
-	4	-	2

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.

d) Write a program which checks a given integer is Fibonacci number or not.

Exercise 2.

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

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

b)

i) To 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.

iv) Write program to calculate probability of head/tail by generating random numbers using random() function.

Exercise 4

a) The total distance travelled by vehicle in ‘t’ seconds is given by

distance = $ut+1/2at^2$ where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec2). 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 form 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 larges 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

iii) Checking symmetry of a square matrix. iv) Calculating transpose of a matrix in-place manner.

Exercise 6

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

i) To insert a sub-string in to 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/ 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.

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 this geometric progression:

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

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. Are any values of x also illegal? If so, test for them too.

Exercise 10

a) 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.

b) 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 using Structure:

i) Reading a complex number ii) Writing a complex number

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

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.)

SYLLABI FOR II SEMESTER

OPERATING SYSTEMS

Course Code : 10CA3108

L	P	T	C
4	-	1	4

UNIT-I

Operating System Introduction, Structures - Simple Batch, Multi programmed, time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating-System services, System Calls, Virtual Machines, System Design and Implementation.

UNIT-II

Process and CPU Scheduling - Process concepts and scheduling, Operation on processes, Cooperating Processes, Threads, and Inter process Communication Scheduling Criteria, Scheduling Algorithms, Multiple -Processor Scheduling, Real-Time Scheduling.

UNIT- III

Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Performance of Demanding Paging, Page Replacement, Page Replacement Algorithm, Allocation of Frames, Thrashing.

UNIT-IV

File System Interface and Implementation -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management, Directory Management, Directory Implementation, Efficiency and Performance.

UNIT-V

Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors.

UNIT-VI

Deadlocks - System Model, Dead locks Characterization, Methods for Handling Dead locks Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock.

UNIT-VII

Case Study-1- Windows XP- Design Principles, System Components, Environmental Subsystems, File System, Networking, Programmer Interface.

UNIT-VIII

Case Study-II-Linux System - Design Principles, Kernel modules, Process Management, Scheduling, Memory Management, File Systems, Input and Output, Inter process Communication, Network Structure , Security .

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne, John Wiley & sons, 7th Edition, 2006.
2. Operating systems - A Concept based Approach, D.M.Dhamdhere, TMH, 2nd Edition, 2010.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles William Stallings, Pearson Education/PHI, 5th Edition, 2005.
2. Operating Systems - A Design Approach, Charles Crowley, TMH, 1st Edition, 2009.

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OPERATIONS RESEARCH

Course Code: 10CA3109	L	P	T	C
	4	-	2	4

UNIT-I (Introduction to OR and LPP)
Introduction, Origin and Development of O.R, Scientific Method in OR, Modeling in O.R Advantages and Limitations of O.R, General Solution Methods For O.R models, Methodology of OR O.R and Decision making, Applications of O.R, Linear Programming, Mathematical Formulation of the problem, Graphical Solution.
(1.1 – 1.10, 2.1 – 2.3, 3.1- 3.3)

UNIT-II (Simplex method)
General LPP, Canonical and standard form of LPP Simplex Method: Introduction, Computational Procedure, Use of artificial variables, Degeneracy in LPP.
(3.4, 3.5, 4.1, 4.3 – 4.5)

UNIT-III (Duality in LPP)
Duality in LPP: Introduction, General Primal-Dual pair, Formulating a Dual Problem, Primal-Dual pair in Matrix form, Duality and Simplex Method, Dual Simplex Method.
(5.1 – 5.4, 5.7, 5.9)

UNIT-IV (Transportation Problem)
Introduction, LP formulation of Transportation Problem, The Transportation Table, Solution of Transportation problem, Finding IBFS, Test for Optimality, Degeneracy in Transportation problem, Transportation Algorithm, Some Exceptional cases.
(10.1, 10.2, 10.5, 10.8 – 10.10, 10.12, 10.13, 10.15)

UNIT-V (Assignment Problem)
Introduction, Mathematical Formulation of the Problem, Hungarian Assignment Method, Special Cases in Assignment Problems, The Traveling Salesman Problem.
(11.1, 11.2, 11.3.4, 11.4, 11.7)

UNIT-VI (Sequencing Problem and Queuing Theory)
Sequencing Problem: Introduction, Problem of Sequencing, Processing n jobs through two machines. Processing n jobs through k- machines.

Queueing Theory: Introduction, Queueing system, elements of Queueing system Operating characteristics of a Queueing system, Classification of queueing models: Model-I (M/M/1:(∞/FIFO)) ,Model-II (M/M/1:(∞/SIRO)),Model-III (M/M/1:(N/FIFO))
(12.1-12.5, 21.1-21.4, 21.7-21.9) (Proofs shall be omitted)

UNIT-VII (Inventory control)
Introduction, Types of Inventories, Costs associated with inventories, the concept of EOQ, Deterministic inventory problems with no shortages, with shortages.
(19.1-19.11) (Proofs shall be omitted).

UNIT-VIII (PERT/ CPM)
Introduction, Basic Components, Logical sequencing, Rules of Network Construction, Critical Path Analysis.
(25.1 – 25.6)

Text Book:

1. Operations Research, Kanthi Swarup, P.K.Gupta and Man Mohan, Sultan Chand & Sons New Delhi, Fourteenth Edition -2008.

Reference Book:

1. Operations Research, An Introduction, Hamdy. A. Taha, Pearson Education, Seventh Edition**.**

ENGLISH LANGUAGE COMMUNICATION SKILLS

Course Code: 10CA3110	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT -I

Features of Indian English - Correction of sentences - Structures - Tenses - ambiguity - idiomatic distortions.

UNIT-II

Informal conversation Vs Formal expression Verbal and non-verbal communication, barriers to effective communication – kinesics.

UNIT - III

Types of Communication - - Oral, aural, Writing and reading - Word-Power - Vocabulary- Jargon - rate of speech, pitch, tone - Clarity of voice.

UNIT - IV

Technical presentations - types of presentation –video conferencing--participation in meetings - chairing sessions.

UNIT - V

Formal and informal interviews – ambiance and polemics - interviewing in different settings and for different purposes e.g., eliciting and giving information, recruiting, performance appraisal.

UNIT - VI

Written communication - differences between spoken and written communication - features of effective writing such "as clarity, brevity, appropriate tone clarity, balance etc.- GRE. TOEFL models.

UNIT – VII

Letter-writing - business letters – proforma culture - format - style – effectiveness, promptness - Analysis of sample letters collected from industry - Email, fax.

UNIT – VIII

Technical Report writing - Business and Technical Reports – Types of reports - progress reports, routine reports - Annual reports - format - Analysis of sample reports from industry - Synopsis and thesis writing.

REFERENCE BOOKS:

1. Essentials of Business Communication, Rajendra Pal, J S KorlahaHi, Sultan Chand & Sons, New Delhi, 2008.
2. Basic Communication Skills for Technology, Andrea J. Rutherford, Pearson Education, New Delhi, 2008.
3. Advanced Communication Skills, V. Prasad, Atma Ram Publications, New Delhi, 2006.
4. Business Communication Theory & Application, All India Traveller Bookseller, New Delhi-51.
5. Business Communication, RK Madhukar, Vikas Publishing House Pvt Ltd, 2006.
6. English. for Technical Communication, K.R. Lakshminarayana, vols. 1 and 2, SCITECH Publications (India) Pvt. Ltd., T. Nagar, Chennai-600 017, 2008.
7. Writing Remedies: Practical Exercises for Technical Writing, Edmond H Weiss: Universities Press, 2006.
8. Cliffs Test Prep for GRE and TOEFL: Computer Based Test, IDG Books. India (P) Ltd. New Delhi-002. GRE and TOEFL; Kaplan and Baron's, 2011.
9. English in Mind, Herbert Puchta and Jeff Stranks, Cambridge, 2008.

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Course Code: 10CA311	L	P	T	C
	4	-	1	4

UNIT-I

Object oriented thinking :- Need for oop paradigm, A way of viewing world – Agents, responsibility, messages, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions, summary of oop concepts, coping with complexity, abstraction mechanisms.

UNIT-II

Java Basics History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT-III

Inheritance – Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes.

UNIT-IV

Packages and Interfaces : Defining, Creating and Accessing a Package,

Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces, Exploringpackages, java.io (Characterstreams, Bytestreams), Files,(Directories, randomaccessfiles), java.util(collections(vectors, hashmap, treemap, lists, sets,), calendar, regex(pattern matching), date, scanner).

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UNIT-V

Exception handling and multithreading - Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT-VI

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes. The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menu bar, graphics, layout manager – layout manager types – boarder, grid, flow, card and grib bag.

UNIT-VII

Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Swing – Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

UNIT-VIII

Networking – Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, Java .net package Packages – java.util

TEXT BOOKS :

1.Java; the complete reference, Herbert schildt, TMH. 7th Editon, 2010.
2. An Introduction to OOP, T.Budd, Pearson Education, 3rd Edition, 2009.

REFERENCES :

1. An Introduction to programming and OO design using Java, J.Nino and F.A. Hosch, John Wiley & Sons, 1st Edition, 2002.
2. Introduction to Java programming, Y. Daniel Liang, Pearson Education,7th Edition, 2010.
3. An introduction to Java programming and object oriented application development, R.A. Johnson, Course Technology, 1st Edition, 2009.
4. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, Pearson Education, 8th Edition, 2008.
5. Core Java 2, Vol 2, Fundamentals, Cay.S.Horstmann and Gary Cornell, 8th Edition, Pearson Education, 2008.
6. Object Oriented Programming through Java, P. Radha Krishna, University Press, 1st Edition, 2008.
7. Beginning in Java 2 JDK, Iver Horton Wrox publications, 5th Edition, 2009.

DATA STRUCTURES USING C++

Course Code: 10CA3112	L	P	T	C
	4	-	-	4

UNIT-I

Different strategies for problem solving , need for OOP, overview of OOP principles –Encapsulation, inheritance, polymorphism .C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete).

UNIT- II

Polymorphism and inheritance :Function Overloading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, virtual base class, function overriding , runtime polymorphism using virtual functions, abstract classes.

UNIT- III

Streams, libraries and error handling-stream classes hierarchy, console I/O, formatted I/O, file streams and string streams, exception handling mechanism , standard template library.

UNIT- IV

Searching and sorting- linear and binary search methods, sorting-bubble sort, selection sort, insertion sort, quick sort, merge sort.

UNIT- V

Introduction to data structures, singly linked lists, doubly linked lists, circular list, representing stacks and queues in C++ using arrays and linked lists, infix to post fix conversion, postfix expression evaluation.

UNIT-VI

Trees-binary trees, terminology, representation, insertion, deletion, searching, traversals, Binary search trees, definition, ADT, implementation, operations-searching, insertion and deletion, Balanced search trees- AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching.

UNIT -VII

Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Application-Heap Sort, Leftist Trees.

UNIT -VIII

Graphs- terminology, representation, traversal (BFS and DFS), minimal spanning trees, Kruskal's algorithm, prim's algorithm.

TEXT BOOKS:

1. Data structures, algorithms and applications in C++, S.Sahni, university Press(India) pvt ltd, 2nd Edition, 2005.
2. Data structures using C and C++, Langsam ,M. J. Augenstein, A. M. Tanenbaum , PHI Education, 2nd edition, 2008.

REFERENCE BOOKS:

1. Data structures and Algorithm analysis in C++, Mark Allen Weiss, Pearson Education, 2nd edition, 2010.
2. "C++: The complete Reference", Herbert Schildt, Tata McGraw Hill. 4th Edition, 2010.
3. "OOP with ANSI & Turbo C++", Ashok N. Kamthane, PEA, 1st Edition, 2010.
4. "Object Oriented Programming Using C++", Barkakati, PHI, 1st Edition, 2008.
5. Data Structures and Algorithms: Concepts, Techniques and Applications, GAV Pai, Tata Mcgraw Hill Publications, 2010.

OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

Course Code: 10CA3113

L	P	T	C
-	4	-	2

1. (Using java. math class)

a) Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant b2 -4ac is negative, display a message stating that there are no real solutions.

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

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

b) Write a Java program to multiply two given matrices.

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

3. (Using java.lang.FileInputStream and FileOutputStream)

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

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

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

4. Write a Java program that:

a) Implements stack ADT.

b) Converts infix expression into Postfix form

c) Evaluates the postfix expression

5. (packages)

Design a package to contain the class **Student** that contains data members such as name, roll number and another package contains the interface **Sports** which contains some sports information. Import these two packages in a package called **Report** which process both Student and Sport and give the report.

6.(Exception Handling and Multithreading)

a) Write a program that reads two numbers from the user to perform integer division into Num1 and Num2 variables. The division of Num1 and Num2 is displayed if they are integers. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException.

b) Create a user defined exception.

c) Write a Java program that correctly implements producer consumer problem using the concept of multithreading.

7. (Using java.awt.*)

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

b) Write a applet program that simulates a digital clock.

8. (Applets and Event Handling)

a) Develop an applet that displays a simple message.

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

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

9. (Swings and Event Handling)

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

b) Write a Java program for handling mouse events.

10. (Socket Programming)

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

11. a) Write a java program to create an abstract class named Shape that contains an empty method named numberOfSides ( ).Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides ( ) that shows the number of sides in the given geometrical figures.

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

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

DATA STRUCTURES LAB

Course Code : 10CA3114

L	P	T	C
-	4	-	2

1. 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

2. Write C++ programs that implement the following sorting methods to sort a given list of integers in ascending order:

   i) Bubble sort ii) Quick sort

3. Write C++ programs that implement the following sorting methods to sort a given list of integers in ascending order:

   i) Insertion sort ii) Merge sort

4. Write C++ programs that implement stack (its operations) using

   i) Arrays ii) singly linked list

5. Write C++ programs that implement Queue (its operations) using

   i) Arrays ii) singly linked list

6. Write a C++ program to implement Circular queue

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

   i) Converting infix expression into postfix expression

   ii) Evaluating the postfix expression

8. Write a C++ program to perform the following operations on singly linked list to implement priority queue on student record
   i) Creation ii) Insertion iii) Deletion iv) Traversal v) Reversal
9. Write a C++ program to perform the following operations on circular doubly linked list.
   i) Creation ii) Insertion iii) Deletion iv) Traversal in both ways
10. Write a C++ program to implement binary trees
    i) Creating a Binary Tree of integers
    ii) Insertion, searching
    iii) Traversing the above binary tree in preorder, inorder and postorder.
11. Write a C++ program to perform the following operations:
    i) Insert an element into a binary search tree.
    ii) Delete an element from a binary search tree.
    iii) Search for a key element in a binary search tree.
12. Write C++ programs for the implementation of bfs and dfs for a given graph.
13. Write C++ programs for the implementation of Prim's algorithm for shortest paths between every pair of nodes in the graph.
14. Write a C++ program to implement Kruskal's algorithm to generate a minimum cost spanning tree.

SYLLABI FOR III SEMESTER

UNIX PROGRAMMING

Course Code 10CA3115

L	P	T	C
4	-	1	4

UNIT-I

Unix Utilities-Introduction to Unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, cp, mv, ln, rm, unlink, mkdir, rmdir, du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, arp, ftp, telnet, rlogin.

UNIT-II

Text processing utilities and backup utilities cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, tar, cpio.

Problem solving approaches in Unix Simple commands, compound Commands, shell scripts, C programs, building own command library of programs.

UNIT-III

Working with the Bourne shell what is a shell, shell responsibilities, pipes and input Redirection, output redirection, here documents, the shell as a programming language, shell meta characters, shell variables, shell commands, the environment, control structures, shell script examples.

UNIT-IV

Unix Files Unix file structure, directories, files and devices, System calls, library functions, low level file access, usage of open, creat, read, write, close, lseek, stat, fstat, octl, umask, dup, dup2.

UNIT-V

The standard I/O (fopen, fclose, fflush, fseek, fgetc, getc, getchar, fputc, putc, putchar, fgets, gets), formatted I/O, stream errors, streams and file descriptors, file and directory maintenance (chmod, chown, unlink, link, symlink, mkdir, rmdir, chdir, getcwd), Directory handling system calls (opendir, readdir, closedir,rewinddir, seekdir, telldir)

UNIT-VI

Unix Process and Signals What is process, process structure, starting new process, waiting for a process, zombie process, process control, process identifiers, system call interface for process management-fork, vfork, exit, wait, waitpid, exec, system, Signals- Signal functions, unreliable signals, interrupted system calls, kill and raise functions, alarm, pause functions, abort, sleep functions.

UNIT-VII

Interprocess Communication Overview Introduction to IPC,IPC between processes on a single computer system, IPC between processes on different systems, file and record locking, other unix locking techniques, pipes, FIFOs, streams and messages, namespaces, introduction to three types of IPC(system-V)-message queues, semaphores and shared memory.

UNIT-VIII

Message Queues-Unix system-V messages, UNIX kernel support for messages, Unix APIs for messages, client/server example.

Text Books

1. UNIX and Shell Programming, Thomson, Behrouz A. Forouzan, Richard F. Gilberg, 1st Edition 2005. (unit 3)

2. Unix Network Programming, Pearson/PHI, W.R.Stevens; 4th Edition 2003. (units 7, 8)

3. Unix Concepts and Applications, Sumitabha Das; TMH, 3rd Edition, 2010. (units 1, 2)

4. Advanced Unix Programming, M.J.Rochkind; Pearson Education, 2nd Edition 2008. (units 4, 5, 6, 7)

Reference Books

1. UNIX system programming using C++, T.Chan; PHI, 2nd Edition, 2001.

2. Unix for programmers and users, Graham Glass, King Ables, Pearson Education, 3rd Edition, 2008.

3. Unix System-V Network Programming, Stephen A.Rago, Pearson Education, 2nd Edition, 2006.

4. UNIX programming environment, Kernighan and Pike, PHI. / Pearson Education, 1st Edition, 2007.

DESIGN AND ANALYSIS OF ALGORITHMS

Course Code 10CA3116	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

Introduction Algorithm, Psuedo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis.

UNIT-II

Divide and conquer General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT-III

Greedy method General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT-VI

Dynamic Programming General method, applications-Matrix chain multiplication, Optimal binary search trees,0/1 knapsack problem, All pairs shortest path problem, Traveling sales person problem, Reliability design.

UNIT-V

Searching and Traversal Techniques Efficient non recursive binary traversal algorithms, Graph traversal- Breadth first search and Depth first search, AND/OR graphs, game tree, Bi-connected components.

UNIT-VI

Backtracking General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT-VII

Branch and Bound General method, applications - Traveling sales person problem,0/1 knapsack problem-LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT-VIII

NP-Hard and NP-Complete problems Basic concepts, non deterministic algorithms, NP - Hard and NP- Complete classes, Cook's theorem.

Text Book

1. Fundamentals of Computer Algorithms, Ellis Horowitz,Satraj Sahni and S.Rajasekharam; Galgotia publications pvt. Ltd. 2nd Edition, 2005.

Reference Books

1. Introduction toAlgorithms,T.H.Cormen,C.E.Leiserson; R.L.Rivest,and C.Stein PHI pvt.Ltd., Pearson Education, 3rd Edition, 2009.

2. Algorithm Design Foundations, Analysis and Internet examples, . M.T.Goodrich and R.Tomassia, John wiley and sons; 3rd Edition, 2003.

3. Introduction to Design and Analysis of Algorithms A strategic approach, R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai; Mc Graw Hill 2nd Edition.

4. Data structures and Algorithm Analysis in C++, Allen Weiss; Pearson education, 2nd Edition, 2002

5. Design and Analysis of algorithms, Aho, Ullman and Hopcroft; Pearson Education, 3rd Edition, 2008.

6. Richard Johnson baugh and Marcus Schaefer-Algorithms; Pearson Education, 1st Edition, 2007.

DATA BASE MANAGEMENT SYSTEMS

Course Code 10CA3117

L	P	T	C
4	-	1	4

UNIT – I

Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor – History of Data base Systems Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT – II

Relational Model Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.

Relational Algebra and Calculus Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT – III

Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOTR – Impact on SQL Constructs – Outer Joins – Disallowing

NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT – IV

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – forth Normal Form.

UNIT – V

Overview of Transaction Management ACID Properties – Transactions and Schedules – Concurrent Execution of transaction – Lock Based Concurrency Control – Performance Locking – Transaction Support in SQL – Introduction to Crash recovery.

UNIT – VI

Concurrency Control Serializability, and recoverability – Introduction to Lock Management – Lock Conversions – Dealing with Dead Locks – Specialized Locking Techniques – Concurrency without Locking.

Crash recovery Introduction to ARIES – the Log – Other Recovery related Structures – the Write-Ahead Log Protocol – Check pointing – re3covering from a System Crash – Media recovery – Other approaches and Interaction with Concurrency control.

UNIT – VII

Overview of Storage and Indexing Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning.

UNIT – VIII

Storing data Disks and Files - The Memory Hierarchy – Redundant Arrays of Independent Disks – Disk Space Management – Buffer Manager – Files of records – Page Formats – record formats.

Tree Structured Indexing Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees A Dynamic Index Structure.

Hash Based Indexing Static Hashing – Extendable hashing – Linear Hashing – Exendble vs. Liner hashing.

Text Book

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke;TATA McGrawHill, 3rd Edition, 2003.

Reference Books

1. Data base System Concepts, Silberschatz, Korth, TATA McGraw Hill; 6th Edition, 2010.

2. Data base Management System, Elmasri Navrate; Pearson Education 4th Edition, 2007.

3. Introduction to Database Systems, C.J.Date; Pearson Education, 7th Edition, 2009.

4. Data base Systems design, Implementation, and Management, Cengage learning, Rob & Coronel; 1st Edition, 2008.

5. Data base System Concepts, Peter Rob, Carlos Coronel; 1st edition 2008.

6. Data base Systems, Connoley; Pearson education, 4th Edition, 2009.

MANAGEMENT INFORMATION SYSTEM

Course Code 10CA3118

L	P	T	C
4	-	0	4

UNIT -I

Introduction to Information Systems – Meaning, Scope of Information Systems, Concepts of system and organization, strategic uses, Evolution of MIS, Challenges and New opportunities

UNIT -II

Information System in the Enterprise – Major types of Systems in the organization; Systems from a functional perspective; Enterprise application – Enterprise systems, Systems for supply chain management, Customer relationship management and Knowledge management.

UNIT -III

Contemporary approaches to Information Systems – Technical Approach, Behavioral Approach, Socio-Technical Systems; Business Process Reengineering and Information Technology.

UNIT -IV

Application of Information Systems to Functional Business Areas – Significance of Information systems; Application of Operational Information System to Business; Application of Tactical and Strategic Information Systems to Business; Decision Support Systems and ERP.

UNIT- V

Planning and Development of Information System – Information System Planning and Strategies; Problems with determining information requirements; Methods for defining information requirements; Information planning grid and Management strategies.

UNIT -VI

Systems Analysis and Design – System development process; Systems analysis; Structured systems analysis and design; Alternative application development and evaluation.

UNIT VII

Security Issues of MIS, Pitfalls and Ethical and Societal Challenges – Societal and Ethical responsibility of a business, computer crime, privacy issues, health issues; Security Management of Information Technology; IT Act 2000.

UNIT -VIII

Managing International Information Systems – Growth of international information systems; organizing international information systems; Managing global information Systems.

Text Books

1. Management Information System, Kenneth C Laudon and Jane P Laudon, Prentice Hall of India Pvt. Ltd, 8th Edition, July 2003
2. Management Information System – TheManagers View, Robert Schultheis and Mary Sumner, Tata Mc Graw Hill, 20th reprint 2010.
3. Management Information System, James A. O' Brein, Tata Mc Graw Hill, 6th reprint 2003..

References

1. Management Information Systems, V.M.Prasad, Pearson Education, 9th Edition, 2005

2. Information Systems for Modern Management, Robert G Murdick, Joel E Ross, James R Claggett, Prentice Hall of India Pvt. Ltd, 3rd Edition, 2007

COMPUTER NETWORKS

Course Code 10CA3119

L	P	T	C
4	-	2	4

UNIT –I

Introduction Network Topologies WAN, LAN, MAN, Applications of Computer Networks, OSI, TCP/IP and other networks models, Examples of Networks Novell Networks, Arpanet, and Internet.

UNIT-II

Physical Layer Transmission media copper, twisted pair wireless, switching and encoding asynchronous communications; Narrow band, broad band ISDN and ATM.

UNIT-III

Data link layer Design issues, framing, error detection and correction, CRC, Elementary Protocol-stop and wait, Sliding Window, Slip, Data link layer in HDLC, Internet, and ATM.

UNIT-IV

Medium Access sub layer A LOHA, MAC addresses, Carrier sense multiple access. IEEE 802.X Standard Ethernet, wireless LANS, Bridges.

UNIT-V

Network Layer Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

UNIT –VI

Dynamic routing Broadcast routing. Rotary for mobility, Congestion, Control Algorithms – General Principles – of Congestion prevention policies. Internetworking The Network layer in the internet and in the ATM Networks.

UNIT –VII

Transport Layer Transport Services, Connection management, TCP and UDP protocols; ATM AAL Layer Protocol.

UNIT –VIII

Application Layer Network Security, Domain name system, SNMP, Electronic Mail; the World WEB, Multi Media.

Text Books

1. Computer Networks, Andrew S Tanenbaum, Pearson Education/PI, 4th Edition, 2006. (UNITs 1,2,3,4,5,7,8)

2. Data Communications and Networking, Behrouz A. Forouzan, TMH, 3rd Edition, 2005 (units 6)

Reference Books

1. An Engineering Approach to Computer Networks, S.Keshav, Pearson Education, 2nd Edition, 2001.

2. Understanding communications and Networks, William, A. Shay Thomson Publication, 3rd Edition, 2006.

Web References

http//www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Computer%20networks/New_index1.html

UNIX AND OPERATING SYSTEMS LAB

Course Code 10CA3120	**L**	**P**	**T**	**C**
	-	**4**	**-**	**2**

Week 1

1. a) Log into the System
   b) Use vi editor to create a file called myfile.txt which contains some text
   c) Correct typing errors during creation
   d) Save the file
   e) Logout the system

2. a) log into the system
   b) open the file created in the above program
   c) add some text
   d) change text
   e) delete some text
   f) save the changes
   g) log out the system

3. Commands to be practiced cp, mv, ln, rm, unlink, mkdir, rmdir.

Week 2 Commands to be practiced du, df, mount, umount, find, unmask, ulimit, ps, who, w, finger, arp, ftp, telnet, rlogin.

Week 3 Commands to be practiced on Files cat, tail, head, sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, tar, cpio.

Week 4

1. Write a shell script to accept two numbers and perform all arithmetic operations on it.
2. Write a shell script to find largest of three numbers using conditional execution operators

Week 5

3. Write a shell script to accept the name of the file from standard input and perform the following tests on it

a) File executable

b) File readable

c) File writable

d) Both readable & writable

Week 6

4. Write a shell script which will display the username and terminal name who login recently in to the Unix system.

5. Write a shell script to find number of files in a directory

6. Write a shell script to print the following format

1

12

123

…….

Week 7

7. Write a shell script which will display the number of days in the given month and year

8. Write a shell script to check whether a given number is perfect number or not

Week 8

9. Write a shell script for concatenation of two strings using arguments

10. Write a shell script to demonstrate break and continue statements

Week 9

11. Write a shell script to satisfy the following menu options

    a. Display current directory path

    b. Display today's date

    c. Display users who are connected to the Unix system

    d. Quit

12. Write a shell script to delete all files whose size is zero bytes from current directory

Week 10

13. Write a shell script to display reverse numbers from given argument list
14. Write a shell script to display factorial value from given argument list

Week 11

15. Write a shell script which will greet you “Good Morning”, “Good Afternoon”, “Good Evening” and “Good Night” according to current time
16. To implement the FCFS Algorithm

Week 12

17. To implement the Shortest Job First Algorithm
18. To implement Priority Algorithm

Week 13

19. To implement the round robin Algorithm
20. To implement the FIFO page replacement Algorithm

Week 14

21. To implement LRU page replacement Algorithm
22. To implement Resource Request Algorithm

Week 15

23. To implement First-Fit, Best-Fit, and Worst-Fit Algorithm

Week 16

24. To implement Random File Organization

DATABASE MANAGEMENT SYSTEMS LAB

Course Code 10CA3121

L	P	T	C
-	4	-	2

1) Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.

2) Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.

Example- Select the roll number and name of the student who secured fourth rank in the class.

3) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.

4) Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)

5) i) Creation of simple PL/SQL program which includes declaration section, executable section and Exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)

ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.

6) Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.

7) Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISEAPPLICATION ERROR.

8) Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.

9) Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.

10) Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.

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

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

13) Creating Reports

SYLLABI FOR IV SEMESTER

SOFTWARE ENGINEERING

Course Code 10CA3122	**L**	**P**	**T**	**C**
	4	**-**	**2**	**4**

UNIT-I

Introduction to Software Engineering The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, Process assessment, Personal and Team process models.

UNIT-II

Process models The waterfall model, Incremental process models, Evolutionary process models, The Unified process.

Software Requirements Functional and non-functional requirements, User requirements, System requirements, Interface specification, The software requirements document.

UNIT-III

Requirements engineering process Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models Context Models, Behavioral models, Data models, Object models, Structured methods.

UNIT-IV

Design Engineering Design process and Design quality, Design concepts, andThe design model.

Creating an architectural design Software architecture, Data design, Architectural styles and patterns, Architectural Design.

UNIT-V

Object-Oriented Design Objects and object classes, An Object-Oriented design process, Design evolution.

Performing User interface design Golden rules, User interface analysis and design, Interface analysis, Interface design steps, Design evaluation.

UNIT-VI

Testing Strategies A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, The art of Debugging.

Product metrics Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

UNIT-VII

Metrics for Process and Products Software Measurement, Metrics for software quality.

Risk management Reactive vs Proactive Risk strategies, Software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

UNIT-VIII

Quality Management Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

Text Books

1. Software Engineering, A practitioner's Approach, Roger S. Pressman, TMH, 7thEdition, 2008. (units 1, 4, 6,7, 8)
2. Software Engineering, Sommerville, Pearson Education, 7th Edition, 2008. (units 2, 3, 5)

Reference Books

1. Software Engineering, K.K. Agarwal & Yogesh Singh, New Age International Publishers, 3rd Edition, 2008.

2. Software Engineering, an Engineering approach, Witold Pedrycz James F. Peters, John Wiely Publications, 1st Edition, 2007.

3. Systems Analysis and Design, Shely Cashman Rosenblatt, Thomson Publications, 1st Edition, 2010.

4. Software Engineering principles and practice, Waman S Jawadekar, TMH, 1st Edition, 2006.

Web References

http//www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT%20Kharagpur/Soft%20Engg/New_index1.html

OBJECT ORIENTED ANALYSIS AND DESIGN (USING UML)

Course Code 10CA3123

L	P	T	C
4	-	1	4

UNIT-I

Introduction to UML Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT-II

Basic Structural Modeling Classes, Relationships, common Mechanisms, and diagrams.

Advanced Structural Modeling Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT-III

Class & Object Diagrams Terms, concepts, modeling techniques for Class & Object Diagrams.

UNIT- IV

Basic Behavioral Modeling-I Interactions, Interaction diagrams.

UNIT-V

Basic Behavioral Modeling-II Use cases, Use case Diagrams, Activity Diagrams.

UNIT-VI

Advanced Behavioral Modeling Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT-VII

Architectural Modeling Component, Deployment, Component diagrams and Deployment diagrams.

UNIT-VIII

Case Study The Unified Library application

Text Book

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education, 1st Edition, 2006.

Reference Books

1. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd, 2nd Edition, 2004.

2. Fundamentals of Object Oriented Design in UML, Meilir Page-Jones, Pearson Education, 1st Edition, 2006.

3. Modeling Software Systems Using UML2, Pascal Roques, WILEY-Dreamtech India Pvt. Ltd, 1st Edition, 2007.

4. Object Oriented Analysis & Design, Atul Kahate, McGraw-Hill Companies, 1st Edition, 2007.

5. Practical Object-Oriented Design with UML, Mark Priestley, TATA McGrawHill, 2nd Edition, 2005.

6. Appling UML and Patterns; An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education, 3rd Edition, 2007.

DATA WAREHOUSING AND DATA MINING

Course Code 10CA3124	**L**	**P**	**T**	**C**
	4	**-**	**1**	**4**

UNIT- I

Introduction Data mining-On what kinds of Data, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major issues in Data Mining.

UNIT-II

Data Preprocessing Descriptive data summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation

UNIT-III

Data Warehouse and OLAP Technology Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining.

UNIT-IV

Data Cube Computation and Data Generalization Efficient methods for Data Cube Computation, Further Development of Data Cube and OLAP Technology, Attribute-Oriented Induction.

UNIT-V

Mining Frequent Patterns, Association and Correlations Basic Concepts, Efficient and Scalable Frequent Item set Mining Methods, Mining Various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association.

UNIT- VI

Classification and Prediction-1 Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by backpropagation.

UNIT- VII

Classification and Prediction-2 Support Vector Machines, Association Classification, Other Classification Methods, Prediction, Accuracy and Error Measures, Evaluating the Accuracy of a Classifier or Predictor.

UNIT- VIII

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

Text Book

1. Data Mining – Concepts and Techniques, Jiawei han & Micheline Kamber, Morgan Kaufmann Publishers, 2nd Edition, 2008.

Reference Books

1. Data Mining Introductory and Advanced Topics, Margaret H Dunham, Pearson education, 6th Edition, 2009
2. Data Mining Techniques, Arun K Pujari, University Press, 1st Edition, 2005.
3. Introduction To Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Pearson Education, 1st Edition, 2009.
4. Data Warehousing in the Real World, Sam Aanhory & Dennis Murray, Pearson Education, 1st Edition, 2008.
5. Data Warehousing Fundamentals, Paulraj Ponnaiah Wiley student Edition, 1st Edition, 2007.
6. The Data Warehouse Life cycle Tool kitWiley student Edition, Ralph Kimball, 2nd Edition, 2005.

EMBEDDED SYSTEMS (ELECTIVE-I)

Course Code 10CA3125	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT – I

Embedded Computing Introduction, Complex Systems and Microprocessor, The Embedded System Design Process, Formalisms for System Design, Design Examples.

UNIT – II

The 8051 Architecture Introduction, 8051 Micro controller Hardware, Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts.

UNIT – III

Basic Assembly Language Programming Concepts The Assembly Language Programming Process, Programming Tools and Techniques, Programming the 8051.

Data Transfer and Logical Instructions.

UNIT – IV

Arithmetic Operations, Decimal Arithmetic. Jump and Call Instructions, Further Details on Interrupts.

UNIT –V

Applications Interfacing with Keyboards, Displays, D/A and A/D Conversions, Multiple Interrupts, Serial Data Communication.

UNIT – VI

Introduction to Real – Time Operating Systems Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in an RTOS Environment

UNIT – VII

Basic Design Using a Real-Time Operating System Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS like uC-OS (Open Source); Embedded Software Development Tools Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System; Debugging Techniques Testing on Host Machine, Using Laboratory Tools, An Example System.

UNIT – VIII

Introduction to advanced architectures ARM and SHARC, Processor and memory organization and Instruction level parallelism; Networked embedded systems Bus protocols, I^2C bus and CAN bus; Internet-Enabled Systems, Design Example-Elevator Controller.

Text Books

1. Computers and Components, Wayne Wolf, Elseveir, 1st Edition, 2008. (units 1, 8)

2. The 8051 Microcontroller, Third Edition, Kenneth J.Ayala, Thomson, 3rd Edition, 2009. (units 2,3,4,5)

3. An Embedded Software Primer, David E. Simon, Pearson Education, 1st Edition, 2009. (units 6, 7)

Reference Books

1. Embedding system building blocks, Labrosse, via CMP publishers.

2. Embedded Systems, Raj Kamal, TMH, 2nd Edition, 2010.

3. Micro Controllers, Ajay V Deshmukhi, TMH, 1st Edition, 2004.

DISTRIBUTED OPERATING SYSTEMS (ELECTIVE-I)

Course Code 10CA3126	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

Introduction to Distributed Systems

Distributed systems Goals Hardware Concepts Software - design

UNIT-II

Communication distributed systems

Layered Protocol ATM Networks client server model - remote procedure call - group communication.

UNIT-III

Synchronization

Clock synchronization - mutual exclusion - election atomic transactions - dead locks.

UNIT-IV

Process and Processors

Threads - System models processor allocation - scheduling fault tolerance - real time distributed systems.

UNIT-V

Distributed file systems

File system design and implementation - trends in distributed file systems.

UNIT-VI

Shared Memory

Introduction - bus based multi processors ring based multiprocessors switched multiprocessors - NUMA comparison of shared memory systems

UNIT-VII

Consistency models - page based distributed shared memory - shared variable distributed shared memory - object based distributed shared memory.

UNIT-VIII

Case studies MACH and CHORUS

Text Book

Distributed Operating System, Andrew S.Tanenbaum, Prentice Hall International Inc. 1st Edition, 1995.

PERL PROGRAMMIG (ELECTIVE-I)

Course Code 10CA3127

L	P	T	C
4	-	-	4

UNIT-I

Introduction to perl # ! , Basic I/O, Variables variables & Backslash Interpolation, Scalar/list control operators, operator procedure, if unless, loops, loop control (ch1, ch3, pg 60-65, 69-72, III-127)

UNIT-II

Debugging perl scripts Debugging commands, Debugger customization, Unattended execution, Debugging support, the perl profiler.

UNIT-III

Built in Function Perl functions by category, Perl functions in alphabetical order.

UNIT-IV

Regular expressions Pattern Matching, operators, Meta character and meta symbols. Character classes, quantifiers, Pointers, capturing & clustering, Alternation, staying in control.

UNIT-V

Subroutines Syntax Syntax, Semantics, parsing references, prototypes, subroutine attributes.

Formats Format variables, Fosters.

UNIT-VI

References Creating References, using hard references, symbolic references, Braces, Brackets and quotes.

Data Structure Arrays of Arrays, Hashes of arrays, Arrays of Hashes, Hashes of Hashes, Hashing as function , Elaborate records, Hashes of functions.

UNIT-VII

CGI Programming CGI Basic, Forms, Methods.

UNIT-VIII

Here Docs; More CGI Emailing, Cookies, File uploading, E-mail.

Text Books

1. Programming Perl, O'Reily, 3rd Edition,2010. (units 1, 2, 3, 4, 5, 6)

2. CGI Programming with Perl Scott Guelich, O'Reily, et al., SPD publication, 2nd Edition, 2008. (units 7, 8)

NETWORK PROTOCOLS (ELECTIVE-II)

Course Code 10CA3128	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

REVIEW OF IMPORTANT NETWORKING CONCEPTS

TCP/IP Networking and architecture, IP addresses, Data Link Protocols, Address Resolution Protocol (ARP) and RARP, IP Protocol (IP), Introduction to ICMP, PING and Traceroute, BOOTP and DHCP, IP Forwarding.

UNIT-II

DYNAMIC ROUTING PROTOCOLS

Introduction, Dynamic Routing, RIP Routing Information Protocol, RIP Version 2, OSPF Open Shortest Path First, BGP Border Gateway Protocol.

UNIT-III

TRANSPORT PROTOCOLS

TCP I (Connection Management), Introduction, TCP Services, TCP Header, TCP Connection Establishment and Termination, Timeout of Connection Establishment, Maximum Segment Size.

UNIT-IV

TCP II (Flow and Congestion Control)

Introduction, Congestion Example, Congestion Avoidance Algorithm, Congestion Example (Continued), TCP III (Error Control).

UNIT-V

UDP User Datagram Protocol

Introduction, UDP Header, UDP Checksum, A Simple Example, IP

Fragmentation, ICMP Unreachable Error (Fragmentation Required), Determining the Path MTU Using Traceroute, Path MTU Discovery with UDP, Interaction Between UDP and ARP, Maximum UDP Datagram Size, ICMP Source Quench Error.

UNIT-VI
LAN SWITCHING, NAT, DHCP

UNIT-VII
Domain Name System, IP Multicasting, SNMP (Simple Network Management Protocol), Structure of Management Information, Introduction to the Management Information Base.

UNIT-VIII
Other TCP/IP Applications
Finger Protocol, Whois Protocol, WAIS, Gopher, Veronica, and TCPDump.

Text Book

1. TCP/IP Illustrated, W. Richard Stevens, W. Stevens, Volume 1 The Protocols, Pearson Education Asia, 1st Edition, 2002.

Reference Books

1. Internetworking with TCP/IP Vol.1 Principles, Douglas E. Comer, Protocols, and Architecture, Pearson Education Asia, 4th Edition, 2000.

2. Internetworking with TCP/IP, Vol. III Client-Server Programming and Applications, Douglas E. Comer, David L. Stevens, Michael Evangelista, Linux/Posix Sockets Version, Pearson Education Asia, 2000.

MOBILE COMPUTING (ELECTIVE-II)

Course Code 10CA3129	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT – I

Introduction to Network Technologies and Cellular Communications

HIPERLAN Protocol architecture, physical layer, Channel access control sub-layer, MAC sub-layer, Information bases and networking

WLAN Infrared vs. radio transmission, Infrastructure and ad hoc networks, IEEE 802.11. Bluetooth. User scenarios, Physical layer, MAC layer, Networking, Security, Link management

GSM Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

Mobile Computing (MC) Introduction to MC, novel applications, limitations, and architecture

UNIT –II

(Wireless) Medium Access Control

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

UNIT –III

Mobile Network Layer

Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT – IV

Mobile Transport Layer

Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

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, and 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.

UNIT – VII

Mobile Ad hoc Networks (MANETs)

Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms, security in MANETs.

UNIT – VIII

Protocols and Tools

Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management) and J2ME.

Text Books

1. "Mobile Communications", Jochen Schiller; *Addison-Wesley*. (Chapters 4, 7, 9, 10, 11), 2nd Edition, 2004.

2. "Handbook of Wireless Networks and Mobile Computing", Stojmenovic and Cacute; *Wiley*, 2002, ISBN 0471419028. (Chapters 11, 15, 17, 26 and 27)

Reference Books

1. "Mobile Computing Principles Designing and Developing Mobile Applications with UML and XML", ISBN 0521817331, Reza Behravanfar, Cambridge University Press, October 2006,

INTRODUCTION TO MULTI-CORE PROGRAMMING - THREADING ON MULTI-CORE PROCESSORS (ELECTIVE II)

Course Code 10CA3130	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT - I

Introduction to Multi-core Architecture - An overview of Parallel Computing Platforms(SIMD & MIMD systems, Clusters, an Overview of Single-Core, Multi-Processor, Concurrency on Software; Fundamental concepts of Parallel Processing.

UNIT - II

Understanding performance of Sequential programs on Multi-Core Processors, An Overview of Tuned Mathematical Libraries; Compiler Optimization techniques on Multi-Core Processors, Effective use of Mathematical libraries on Multi-Core Processors, Speed Up, Performance, and Scalability analysis; Amdahl's Law, and Gustafson Law.

UNIT - III

Thread Basics; Why Threads? Threading APIs and Parallel Programming Constructs (Synchronization, Critical Sections, Deadlocks, Synchronization Primitives, Message Passing features, Key features of Threaded APIs); An Overview of Threading Multi-Core - An overview of Caches, Virtual Memory; Multi-Core Architectures).

UNIT - IV

An Overview of Hyper-threading technology- (Multi-threading issues) on Multi-Core Processor Systems; An overview of Threading APIs for Microsoft Windows; NUMA Programming; System View of Threading (Threading inside, the OS, Threading inside the Hardware, Threading above the Operating System); Programming Models and Threading.

UNIT - V

An Overview of POSIX Threads; Key features of POSIX Threads (Creating threads, Managing threads, Thread synchronization, Signaling); Multi-thread Optimization; An Overview of Java Concurrent APIs on Multi-Core Processors; Performance Issues based on POSIX threads for Matrix Computations.

UNIT - VI

Threading Building blocks; An Overview of Memory Allocators, An Overview of Intel Threading building blocks (Intel TBB); Intel TBB Containers, Intel TBB-Task Scheduling; Intel TBB Threads-Mutual Exclusion An Overview of Compiler Optimization techniques on Multi-Core Processors for Matrix Computations.

UNIT - VII

An Overview of OpenMP – A standard for Directive Parallel Programming; The OpenMP programming Model (Concurrent Tasks, Synchronization Constructs, Data Handling); Open libraries; OpenMP-Environment Variables; Explicit threads versus OpenMP based Programming on Multi-Core processors.

UNIT - VIII

Principles of Message Passing Programming; An overview of the Message Passing Building blocks (Sending and Receiving Operations); An Overview of Message Passing Interface-MPI 1.0, Point-Point Message Passing Communication Library calls; Collective communication and Computation library calls.

Text Books

1. Introduction to Parallel computing, Grama Ananth, Anshul Gupts, George Karypis and Vipin Kumar, Boston, MA Addison-Wesley, **2003**.
2. Multi-Core Programming – Increasing Performance through Software Multi-threading, Shameem Akhter, Jason Roberts; Intel PRESS, Intel Corporation, **April 2006**.
3. Intel Threading Building Blocks , James Reinde, O'REILLY series, **2007**.
4. Parallel Programming with **MPI** ,Pacheco S. Peter, University of Sanfrancisco, Morgan Kaufman Publishers, Inc., Sanfrancisco, California, **1992**.

Reference books

1. Parallel Programming in **OpenMP**, Chandra, Rohit, Leonardo Dagum, Dave Kohr, Dror Maydan, Jeff McDonald, and Ramesh Menon, San Fracncisco Moraan Kaufmann, (**2001**).
2. Parallel Programming in C with **MPI** and **OpenMP**, Michael J. Quinn, McGraw-Hill International Editions, Computer Science Series, McGraw-Hill, Inc. Newyork, (**2004**).
3. Foundations of Multithreaded, Parallel, and Distributed Progrmaming, Andrews, Grogory R., Boston, MA Addison-Wesley, (**2000).**
4. Programming with **POSIX Threads**, Butenhof, David R, Boston, MA Addison Wesley Professional, (**1997**).
5. MPI-The Complete Reference Volume 1, The **MPI** Core, Marc Snir, Steve Otto, Steyen Huss-Lederman, David Walker and Jack Dongarra, second edition, (**1998**).
6. MPI-The Complete Reference Volume 2, The **MPI-2** Extensions, William Gropp, Steven Huss-Lederman, Andrew Lumsdaine, Ewing Lusk, Bill Nitzberg, William Saphir and Marc Snir, Second Edition (**1998**).

UML LAB

Course Code 10CA3131

L	P	T	C
-	4	-	2

The student is expected to take up about five mini-projects and model them and produce Use Cases, Analysis Documents - both static & dynamic aspects, Sequence Diagrams and State-Charts, Database Design. A sample collection of ideas is given. Numerous other ideas can be found in the pages from the list of references given below.

Mini-Project - I A Point-of-Sale (POS) System

A POS system is a computerized application used to record sales and handle payments; it is typically used in a retail store. It includes hardware components such as a computer and bar code scanner, and software to run the system. It interfaces to various service applications, such as a third-party tax calculator and inventory control. These systems must be relatively fault tolerant; that is, even if remote services are temporarily unavailable they must still be of capturing sales and handling at least cash payments. A POS system must support multiple and varied client-side terminals and interfaces such as browser, PDAs, touch-screens.

Mini-Project - II Online Bookshop Example

Following the model of amazon.com or bn.com, design and implement an online bookstore.

Mini-Project - III A Simulated Company

Simulate a small manufacturing company. The resulting application will enable the user to take out a loan, purchase a machine, and over a series of monthly production runs, follow the performance of their company.

Mini-Project - IV An Auction Application

Several commerce models exist and are the basis for a number of companies like eBay.com, pricellne.com etc. Design and implement an auction application that provides auctioning services. It should clearly model the various auctioneers, the bidding process, auctioning etc.

Mini-Project - V A Multi-Threaded Airport Simulation

Simulate the operations in an airport. Your application should support multiple aircrafts using several runways and gates avoiding collisions/conflicts.

Landing an aircraft uses the runway, lands, and then taxis over to the terminal.

Take-Off an aircraft taxies to the runway and then takes off

ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

Course Code 10CA3132	**L**	**P**	**T**	**C**
	-	**4**	**-**	**2**

Introduction

The introduction of the English Language Lab is considered essential at MCA level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context. The proposed course should be an integrated theory and lab course to enable students to use 'good' English and perform the following

- Gathering ideas and information organizing ideas relevantly and coherently
- Engaging in debates
- Participating in group discussions
- Facing interviews
- Writing project/research/technical reports
- Making oral presentations
- Writing formal letters and essays
- Transferring information from non-verbal to verbal texts and vice versa
- Taking part in social and professional communication

Objectives

The Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets

- To improve the students' accuracy and fluency in English through a well-developed vocabulary, and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.

- To enable them communicate their ideas relevantly and coherently in writing.

TEXT BOOK LANGUAGE IN USE (Upper-Intermediate) by Adrian Doff and Christopher Jones, **Cambridge University Publications.**

UNIT I

- Reading and Listening comprehension – reading for facts, guessing meanings from context, scanning, skimming, inference, critical reading
- **(Lesson 2 Communicating)**

UNIT II

- Vocabulary building, Creativity & Innovation, Using Advertisements and Music, Case studies
- Decision-Making, Time Management, Positive Thinking
- **(Lesson 4 Sports and Games, Lesson 8 In The Market-Place)**

UNIT III

- Cross-Cultural Communication- Problems of Language, Lack of Language equivalency/difficulties in using English.
- Non-Verbal Communication across different Cultures.
- **(Lesson 13 Right and Wrong)**

UNIT IV

- Literary reviews- reviewing the choicest genres like science fiction, autobiographies, travelogues, modern poetry etc.

UNIT V

- Group Discussion – dynamics of group discussion , Lateral thinking, Brainstorming and Negotiation skills

(Lesson 10 Life, the universe and everything & Lesson 16 World Affairs)

UNIT VI

- Resume writing – structure and presentation, planning, defining the career objective
- Interview Skills – concept and process, pre-interview planning, opening strategies,
  Answering-strategies, interview through tele and video-conferencing

UNIT VII

- Writing essays for competitive examinations
- Media writing-writing headlines, analyzing newspaper articles
- Analytical writing

UNIT VIII

- Technical Report writing – Types of formats and styles, subject matter – organization, clarity, coherence and style, planning, data-collection, tools, analysis.- Progress and Project Reports.

Recommended Books on
Communications Skills

1. Effective Technical Communication, M. Ashraf Rizvi, Tata McGraw-Hill Publishing Company Ltd., 2005.
2. An Approach to Communication Skills, Bhanu Ranjan, DhanpatRai &Co, 2010.
3. Basic Business Communication Skills for Empowering The Internet Generation, Raymond V. Lesikar, Marie E. Flatley, 11th Edition, Tata McGraw-Hill, 2006.
4. Academic Writing- A Practical guide for students, Stephen Bailey, Rontledge Falmer, London & New York, 2004.
5. English Language Communication A Reader cum Lab Manual, Dr A. Ramakrishna Rao, Dr G.Natanam & Prof S.A. Sankaranarayanan, Anuradha Publications, Chennai, 2006.

6. Body Language- Your Success Mantra, Dr. Shalini Verma, S. Chand, 2006.
7. DELTA's key to the Next Generation TOEFL Test Advanced Skill Practice, Barron's, New Age International (P) Ltd., Publishers, New Delhi, Books on TOEFL/GRE/GMAT/CAT, 2011.
8. IELTS series with CDs, CUP, 2010.
9. Technical Report Writing Today, Daniel G. Riordan & Steven E. Pauley, Biztantra Publishers, 2005.
10. Basic Communication Skills for Technology, Andra J. Rutherford, 2nd Edition, Pearson Education, 2007.
11. Communication Skills for Engineers, Sunita Mishra & C. Muralikrishna, Pearson Education, 2007.
12. Cambridge Preparation for the TOEFL Test, Jolene Gear & Robert Gear, 2010.
13. Technical Communication, Meenakshi Raman & Sangeeta Sharma, OUP, 2010.
14. Cambridge English for the Media, Nick Ceremilla & Elizabeth Lee, CUP, 2010.

General Reading

1. Classic Short Stories (India Today group), A Reader's Digest Selection, 2004.
2. More Stories from the Raj and After, Saros Cowasjee, HarperCollins Publishers India, 1986.
3. Girish Karnad, Hayavadana, OUP, 1976.
4. A.P.J. Abdul Kalam Wings of Fire, Universities Press, 1999.
5. Apple Cart/Arms and the Man, Bernard Shaw, Orient Longman, 2010.
6. The Prophet - Rajapal & Sons, Khalil Gibran, 2008.

SYLLABI FOR V SEMESTER

MULTIMEDIA AND APPLICATION DEVELOPMENT

Course Code 10CA3133

L	P	T	C
4	-	1	4

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 in image and video color science, color models in images, color models in video.

UNIT-II

Fundamental concepts in video and digital audio Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT-III

Action Script I Action Script Features, Object-Oriented Action Script, Data types and Type Checking, Classes, Authoring an ActionScript Class

UNIT-IV

Action Script II Inheritance, Authoring an Action Script 2.0 Subclass, Interfaces, Packages, Exceptions

UNIT-V

Application Development An OOP Application Frame work, Using Components with Action Script Movie Clip Subclasses.

UNIT VI

Multimedia data compression Lossless compression algorithm Run-Length Coding, Variable Length Coding, Dictionary Based Coding,

Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zero tree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

UNIT VII

Basic Video Compression Techniques Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

UNIT-VIII

Multimedia Networks Basics of Multimedia Networks, Multimedia Network
Communications and Applications Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand(MOD).

Text Books

1) Fundamentals of Multimedia, Ze-Nian Li and Mark S. Drew, PHI/Pearson Education, 1st Edition, 2008.(units 1, 2, 6, 7, 8)
2) Essentials Action Script 2.0, Colin Moock, SPD O,REILLY; 1st Edition, 2009. (units 3, 4, 5)

Reference Books

1) Macromedia Flash MX Professional 2004 Unleashed, Pearson, 2004.
2) Multimedia and communications Technology, Steve Heath, Elsevier(Focal Press), 1999.
3) Multimedia Basics, Weixel Thomson, 2nd Edition, 2007.
4) Multimedia Technology and Applications, David Hilman, Galgotia, 2006.

WEB TECHNOLOGIES & SERVICES

Course Code 10CA3134	**L**	**P**	**T**	**C**
	4	**-**	**1**	**4**

UNIT-I

Introduction History of the Internet and World Wide Web – HTML 4 protocols – HTTP, SMTP, POP3, MIME, IMAP, Basic Tags of HTML, Creating Links, Tables, Frames, Forms, Form Tags.

UNIT-II

Document Object Model Concept and Importance of Document Object Model, Cascading Style Sheet (CSS). Java script Introduction, documents, forms, statements, functions, objects, event and event handling; Dynamic HTML with Java Script.

UNIT-III

XML Introduction Features of XML, Document Type Definition, XML Schemas, Presenting XML, DOM and SAX, Using XML Processors.

UNIT-IV

Java Beans Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's .

UNIT-V

Web Servers and Servlets Tomcat web server, Introduction to Servelets Lifecycle of a Servelet, JSDK, The Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT-VI

Introduction to JSP Features of JSP Pages, The Problem with Servelet, 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-VII

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

UNIT-VIII

Database Access Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

Text books

1. Web Programming, building internet applications, Chris Bates, WILEY Dreamtech, 2nd Edition, 2008. (units 1, 2, 3)
2. The complete Reference Java, Patrick Naughton and Herbert Schildt, TMH, 5th Edition, 2007. (units 4, 5)
3. Java Server Pages, Hans Bergsten, O'Reilly publication, 3rd Edition, 2008. (units 6, 7, 8)

Reference books

1. Internet & web technologies, Raj Kamal, Tata McGraw-Hill, 8th Edition, 2007.
2. web technology and design, Xavier. C, New Age International,1st Edition, 2011.
3. Programming world wide web, Sebesta, Pearson Education, 4th Edition, 2008.
4. Core servlets and java Server pages volume 1 core technologies, Marty Hall and larry Brown, Pearson Eduacation, 2nd Edition, 2007.
5. Internet and world wide web – how to program, Dietel and Nieto, PHI/Pearson Education, 1st Edition, 2003.
6. Jakarta struts cookbook, bill siggelko, O'Reilly publication, 1st Edition, 2007.
7. Murach's beginning java jdk 5, Murach, S P D, 1st Edition, 2007.
8. An introduction to web design and programming, Wang Katila, Thomson, 1st Edition, 2008.
9. Web applications technologies concepts and Real World Design, Knuckles, John Wiley, 2008.
10. Web warrior guide to web programming, Bai Ekedaw, Thomas Publication, 2010.
11. Beginning web programming with HTML, XHTML, Jon Duckett, Wrox Publication, 2nd Edition, 2008.
12. Java server pages, Pekowsky, Pearson Education, 2nd Edition, 2008.

INFORMATION SECURITY

Course Code 10CA3135	**L**	**P**	**T**	**C**
	4	**-**	**2**	**4**

UNIT-I

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT-II

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

UNIT-III

Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service

UNIT-IV

Email privacy Pretty Good Privacy (PGP) and S/MIME.

UNIT-V

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management

UNIT-VI

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET)

UNIT-VII

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3, Intruders, Viruses and related threats

UNIT-VIII

Firewall Design principles, Trusted Systems, Intrusion Detection Systems

Text Books

1. Network Security Essentials (Applications and Standards) Low Price Edition, William Stallings, Pearson Education, 2003. (units 1, 2, 3, 4, 5, 6, 7, 8)
2. Hack Proofing your network, Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permeh, wiley Dreamtech, 2nd Edition, 2008. (unit 1)

Reference Books

1. Fundamentals of Network Security by (Dreamtech press), Eric Maiwald, 1st Edition, 2008.
2. Network Security - Private Communication in a Public World, Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI, 2nd Edition, 2008.
3. Cryptography and network Security, Stallings, Third edition, PHI/Pearson, 3rd Edition, 2005.

SOFTWARE PROJECT MANAGEMENT (ELECTIVE-III)

Course Code 10CA3136	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

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.

UNIT-VII

Project Control and Process instrumentation The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Tailoring the Process Process discriminants.

UNIT-VIII

Future Software Project Management modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study The command Center Processing and Display system-Replacement (CCPDS-R)

Text Books

1. Software Project Management, Walker Royce, Pearson Education, 1st Edition, 2005.

Reference Books

1. Hill Software Project Management, Bob Hughes and Mike Cotterell, Tata McGraw- Edition, 4th Edition, 2006.

2. Software Project Management, Joel Henry, Pearson Education, 1st Edition, 2008.

3. Software Project Management in practice, Pankaj Jalote, Pearson Education, 1st Edition, 2005.

MIDDLEWARE TECHNOLOGIES (ELECTIVE-III)

Course Code 10CA3137	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

Introduction to client server computing Evolution of corporate computing models from centralized to distributed computing, client server models, Benefits of client server computing, pitfalls of client server programming.

UNIT-II

CORBA with Java Distributed programming with Java RMI; Overview of CORBA, CORBA IDL, Client/server programming with CORBA & Java.

UNIT –III

XML Technology

XML – Name Spaces – Structuring With Schemas and DTD – Presentation Techniques –Transformation – XML Infrastructure.

UNIT- IV

SOAP Overview of SOAP – HTTP – XML-RPC – SOAP Protocol – Message Structure –Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments.

UNIT- V

Web Services

Overview – Architecture – Key Technologies - UDDI – WSDL – eb XML – SOAP and Web Services In E-Com – Overview Of .NET And J2EE.

UNIT-VI

Agent and User Experience

Interacting with Agents - Agent From Direct Manipulation to Delegation - Interface Agent Metaphor with Character - Designing Agents - Direct Manipulation versus Agent Path to Predictable.

UNIT-VII

Agent Communication and Collaboration

Overview of Agent Oriented Programming - Agent Communication Language - Agent Based Framework of Interoperability - Agents for Information Gathering - Open Agent Architecture - Communicative Action for Artificial Agent

UNIT-VIII

Agent Architecture

Agents for Information Gathering - Open Agent Architecture – Communicative Action for Artificial Agent

Text Books

1. Web Services and The Data Revolution, Frank. P. Coyle XML, 1st Edition, Pearson Education, 2002. (units 3, 4, 5)
2. Software Agents, Jeffrey M. Bradshaw PHI, 1st Edition, 2010. (UNITs 6, 7, 8)

Reference Books

1. Distributed Computing, Principles and applications, M.L.Liu, Pearson Education, 1st Edition, 2008. (UNITs 2,4)
2. Developing Java Web Services, Ramesh Nagappan, Robert Skoczylas and Rima Patel Sriganesh, Willey Publishing, 1st Edition, 2004.

E- COMMERCE (ELECTIVE-III)

Course Code 10CA3138	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

Introduction Electronic commerce and physical commerce, the DIGITAL phenomenon, Looking at e-commerce form different perspectives, Different types of e-commerce, Examples of the types of e-commerce, Some e-commerce scenarios, changes brought by e-commerce, Advantages of e-commerce, Myths about e-commerce development and implementation.

UNIT-II

Internet and world wide web An overview of the internet, Brief history of the web, Web system architecture, Uniform resource locator, Overview of the Hyper text transfer Protocol, HTTP, Generation of dynamic web pages, Cookies, HTTP/1.1

UNIT-III

Basic cryptography for enabling e-commerce Security Concerns, Security requirements, encryption, two basic principles of private key encryption, public key encryption, Firewalls, different types of firewalls, Examples of firewalls, Introduction to mobile Agents, WAP.

UNIT-IV

Internet payment systems Characteristics of payment systems, 4C payment models, SET protocol for credit card payment, E-cash, E-check, Micropayment system, overview of smart card, overview of Mondex, Putting it all together for payments in the VBS.

UNIT-V

Consumer Oriented e-commerce Introduction, Traditional retailing

and e-retaining, Benefits of e-retailing, Key success factors, Models of e-retailing, Features of e-retailing, Developing a consumer-oriented e-commerce system, The PASS model.

UNIT-VI

Business oriented Commerce Features of B2B commerce, Business Models, Integration

UNIT-VII

E-Services Categories of e-services, Web-enabled Services, Matchmaking services, Information-selling on the web, E-entertainment, Auctions and other specialized services.

UNIT-VIII

Web advertizing and web publishing Traditional versus internet advertising, Internet advertising techniques and strategies, Business Models for advertizing and their revenue streams, Pricing models and measurement of the effectiveness of advertisements, Web-publishing-goals and criteria, Web site development methodologies, Web presence and visibility.

Text Books

1. E-Commerce Fundamentals and Applications, Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, 1st Edition Wiely INDIA Edition, 2009. (For all 8 units)

Reference Books

1. E-commerce- Electronic Communication for Business, S.Jaiswal, Galgotia Publication, 1st Edition, 2008.
2. E-commerce – A Management Perspective, Efrain Turbon, Lae Lee, David King, H. Michael chang, Pearson Education, 1st Edition, 2007

3. Electronic Commerce Course Technology, Gary P.Schneider, Thomson, 1st Edition, 2007
4. E-commerce – Buisiness, technology, Kenneth C.taudon, Carol Guyerico Traver Society, Pearson Education, 4th Edition, 2008
5. Frontiers of electronic commerce, Kalakata, Whinston, Pearson Education, 9th Edition, 2007.

Web References

http//ecommercetechnology.org/

SOFTWARE TESTING METHODOLOGIES (ELECTIVE-IV)

Course Code 10CA3139	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

Introduction- Purpose of testing, Dichotomies, model for testing, consequences of bugs, Taxonomy of bugs

UNIT-II

Flow graphs and Path testing- Basics concepts of path testing, predicates, Path predicates and achievable Paths, path sensitizing, path instrumentation, application of path testing.

UNIT-III

Transaction Flow Testing-Transaction flows, Transaction flow testing techniques, Dataflow testing- Basics of dataflow testing, Strategies in dataflow testing, Application of dataflow testing.

UNIT-IV

Domain Testing-Domains and paths, Nice & ugly Domains, domain testing, Domains and interfaces testing, Domain and interface testing, domains and testability.

UNIT-V

Paths, Path products and Regular expressions- Path products & path expression, Reduction procedure, Applications, Regular expressions & flow anomaly detection.

UNIT-VI

Logic Based Testing- Overview, Decision tables, Path expressions, KV charts, Specifications.

UNIT-VII

State, State Graphs and Transition testing- State graphs, Good & bad state graphs, State testing, Testability tips.

UNIT-VIII

Graph Matrices and Application-Motivational overview, Matrix of graph, Relations, Power of a matrix, Node reduction algorithm, Building tools. (Student should be given an exposure to a tool like JMeter or Win-runner).

Text Books

1. Software Testing techniques, Baris Beizer, Dreamtech, second edition, 2009.

Reference Books

1. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech, 1st Edition, 2005.
2. Software Testing in the Real World, Edward Kit, Pearson, 3rd Edition, 2008.
3. Effective methods of Software Testing, Perry John Wiley, 3rd Edition, 2008.
4. Art of Software Testing, Meyers, John Wiley, 2nd Edition, 2008.

STORAGE AREA NETWORKS AND MANAGEMENT (ELECTIVE IV)

Course Code 10CA3140

L	P	T	C
4	-	-	4

UNIT-I

Introduction to Storage Technology Information storage evolution of storage technology and architecture, data center infrastructure, key challenges in Managing information, information lifecycle. Storage system Environments components of storage system environment, Disk Drive components, Disk Drive Performance, fundamental laws governing disk performance, logical components of the host, application requirements and disk performance.

UNIT-II

Data Protection RAID Implementation of RAID, RAID array components, RAID levels, RAID comparison, RAID Impact on disk performance, host spares. Intelligent Storage System Components of an Intelligent Storage System, Intelligent Storage array, concepts in Practice EMC CLARiiON and Symmetrix.

UNIT-III

Direct – Attached Storage and Introduction to SCSI Types of DAS, DAS benefits and limitations, disk drive interfaces, introduction to parallel SCSI, SCSI command model. Storage Area Networks fibre channel, The SAN and Its evolution, components of SAN, FC connectivity, Fibre channel ports, fibre channel architecture, zoning, fiber channel login types, concepts in practice EMC Connectrix.

UNIT IV

Network attached storage general purpose servers vs NAS Devices,

benefits of NAS, NAS file I/O, components of NAS, NAS Implementations, NAS file sharing protocols, NAS I/O operations, factors effecting NAS Performance and availability, concepts in practice EMC Celerra.IP SAN iscsi, fcip.

UNIT V

Content – addressed storage Fixed content and Archives, types of archives, features and benefits of CAS, CAS Architecture, object storage and retrieval in CAS, CAS Examples, concepts in practice EMC Centera. Storage Virtualization Formas of Virtualization, SNIA Storage virtualization taxonomy, storage virtvalization configurations, storage virtualization challenges, types of storage virtualization, concepts in practice EMC Invista, Rainifinity.

UNIT VI

Introduction to business continuity information availability, BC terminology, BC planning life cycle, Failure analysis, business impact analysis, BC technology solutions, concepts in practice EMC Power path. Backup and recovery backup purpose, backup considerations, backup granularity, recovery considerations, backup methods, backup process, backup and restore operations , backup topologies, backup in NAS environments, backup technologies, concepts in practice EMC Networker, EMC Disk Library(EDL).

UNIT VII

Local replication Source and targets, uses of local replicas, data consistency, local replication technologies, restore and restart considerations, creating multiple replicas, management interface, concepts in practice EMC Timefinder and Emc snap view. Remote replication modes of remote replication, remote replication technologies, network infrastructure, concepts in practice EMC SRDF,EMC SAN Copy.

UNIT VIII

Securing the infrastructure storage security framework, storage security domains, security implementations in storage networking. Managing the Storage infrastructure Monitoring the Storage infrastructure, Storage management activities, Storage infrastructure management challenges, Developing an ideal solution, concepts in practice EMC control center.

Text Books

1. Information Storage and Management, EMC Corporation, Wiley publishing, G. Somasundaram, A. Shrivastava, 1st Edition, 2009.
2. "Storage Networks The Complete Reference", Robert Spalding, Tata McGraw Hill, Osborne, 1st Edition, 2003.

Reference Books

1. "Building Storage Networks", Marc Farley, Tata McGraw Hill, Osborne , 2nd Edition, 2001.
2. Storage Area Network Fundamentals, Meeta Gupta, Pearson Education Limited, 1st Edition, 2002.

INFORMATION RETRIEVAL SYSTEMS (ELECTIVE-IV)

Course Code 10CA3141	**L**	**P**	**T**	**C**
	4	**-**	**-**	**4**

UNIT-I

Introduction Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses.

UNIT-II

Information Retrieval System Capabilities Search, Browse, Miscellaneous

UNIT-III

Cataloging and Indexing Objectives, Indexing Process, Automatic Indexing, Information Extraction.

UNIT-IV

Data Structures Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

UNIT-V

Automatic Indexing Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

UNIT-VI

Document and Term Clustering Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-VII

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-VIII

Text Search Algorithms Introduction, Software text search algorithms, Hardware text search systems.

Information System Evaluation Introduction, Measures used in system evaluation, Measurement example – TREC results.

Text Book

1. Information Retrieval Systems Theory and Implementation, Kowalski, Gerald, Mark T Maybury, Kluwer Academic Press, 2nd Edition, 1997.

Reference Book

1. Information Retrieval Data Structures and Algorithms, Frakes, W.B., Ricardo Baeza-Yates; Prentice Hall, 1st Edition, 1992.

WEB TECHNOLOGIES & SERVICES LAB

Course Code 10CA3142	**L**	**P**	**T**	**C**
	-	**4**	**-**	**2**

Objective

To create a fully functional website with mvc architecture. To Develop an online Book store using we can sell books (Ex amazon .com).

Hardware and Software required

1. A working computer system with either Windows or Linux
2. A web browser either IE or firefox
3. Tomcat web server and Apache web server
4. XML editor like Altova Xml-spy [www.Altova.com/**XML**Spy – free] , Stylusstudio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system
7. BDK(Bean development kit) must be also be installed

Design the following static web pages required for an online book store web site.

1) HOME PAGE

The static home page must contain three **frames**.

Top frame Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame At least four links for navigation, which will display the catalogue of respective links.

For e.g. When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.

Right frame The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

<table>
<tr><td>Logo</td><td colspan="4">Web Site Name</td></tr>
<tr><td>Home</td><td>Login</td><td>Registration</td><td>Catalogue</td><td>Cart</td></tr>
<tr><td>CSE
ECE
EEE
CIVIL</td><td colspan="4">Description of the Web Site</td></tr>
</table>

Fig 1.1

2) LOGIN PAGE

This page looks like below

<table>
<tr><td>Logo</td><td colspan="4">Web Site Name</td></tr>
<tr><td>Home</td><td>Login</td><td>Registration</td><td>Catalogue</td><td>Cart</td></tr>
<tr><td>CSE
ECE
EEE
CIVIL</td><td colspan="4">Login
Password
Submit Reset</td></tr>
</table>

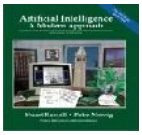
3) CATOLOGUE PAGE

The catalogue page should contain the details of all the books available in the web site in a table.

The details should contain the following

1. Snap shot of Cover Page.

2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	   	Book XML Bible Author Winston Publication Wiely Book AI Author S.Russel Publication Princeton hall Book Java 2 Author Watson Publication BPB publications Book HTML in 24 hours Author Sam Peter Publication Sam publication	$ 40.5 $ 63 $ 35.5 $ 50	Add to cart Add to cart Add to cart Add to cart

Note Week 2 contains the remaining pages and their description.

2

4) CART PAGE

The cart page contains the details about the books which are added to the cart.

The cart page should look like this

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	**Book name** **Amount** Java 2 $70 XML bible $40.5 $130.5	**Price** $35.5 $40.5	**Quantity** 2 1 **Total amount -**	

5) REGISTRATION PAGE

Create a "*registration form* "with the following fields

1) Name (Text field)
2) Password (password field)
3) E-mail id (text field)
4) Phone number (text field)
5) Sex (radio button)
6) Date of birth (3 select boxes)
7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
8) Address (text area)

3) VALIDATION

Write *JavaScript* to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern
   name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

Note You can also validate the login page with these parameters.

4) Design a web page using **CSS (C**ascading **S**tyle **S**heets**)** which includes the following

1) Use different font, styles
   In the style definition you define how each selector should work (font, color etc.).
   Then, in the body of your pages, you refer to these selectors to activate the styles.

For example

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {colorred; font-size22px; font-
familyarial; text-decorationunderline}
</style>
</HEAD>
<BODY>
<b>This is normal bold</b><br>
Selector {cursorvalue}
For example
<html>
<head>
<style type="text/css">
.xlink {cursorcrosshair}
.hlink{cursorhelp}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS
LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP
LINK</a>
</b>
</body>
</html>
<b class="headline">This is headline style
bold</b>
</BODY>
</HTML>
```

2) Set a background image for both the page and single elements on the page. You can define the background image for the page like this

```
BODY {background-imageurl(myimage.gif);}
```

3) Control the repetition of the image with the background-repeat property.
As background-repeat repeat Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

Alink
Avisited
Aactive
Ahover

Example

```
<style type="text/css">
Alink {text-decoration none}
Avisited {text-decoration none}
Aactive {text-decoration none}
Ahover {text-decoration underline; color red;}
</style>
```

5) Work with layers
For example

LAYER 1 ON TOP

```
<div style="positionrelative; font-size50px; z-
    index2;">LAYER 1</div>
<div style="positionrelative; top-50; left5; colorred; font-
size80px; z-                                    index1">LAYER 2</div>
```

LAYER 2 ON TOP
LAYER
LAYER 2

6) Add a customized cursor
Selector {cursorvalue}
For example

```
<html>
<head>
<style type="text/css">
.xlink {cursorcrosshair}
.hlink{cursorhelp}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS
LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP
LINK</a>
</b>
</body>
</html>
```

5) Write an XML file which will display the Book information which includes the following
1) Title of the book
2) Author Name
3) ISBN number

4) Publisher name
5) Edition
6) Price

Write a Document Type Definition (DTD) to validate the above XML file.
Display the XML file as follows.
The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.
Use XML schemas XSL and CSS for the above purpose.
Note Give at least for 4 books. It should be valid syntactically.
Hint You can use some xml editors like XML-spy

6) VISUAL BEANS
Create a simple visual bean with a area filled with a color.
The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.
The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window ".

7) Install TOMCAT web server and APACHE.
While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.
Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root. Access the pages by using the urls
http//localhost4040/rama/books.html (for tomcat)
http//localhost8080/books.html (for Apache)

8) User Authentication

Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servelet for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.

2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ".

Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

9) Install a database(Mysql or Oracle).

Create a table which should contain at least the following fields name, password, email-id, phone number(these should hold the data from the registration form).

Practice 'JDBC' connectivity.

Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

10) Write a JSP which does the following job

Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

11) Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount)) of each category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC.

12) HTTP is a stateless protocol. Session is required to maintain the state.

The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time(i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()).

Modify your catalogue and cart JSP pages to achieve the above mentioned functionality

MULTIMEDIA APPLICATION DEVELOPMENT LAB

Course Code 10CA3143	**L**	**P**	**T**	**C**
	-	**4**	**-**	**2**

1. Assigning actions to an object, and a button.
2. Creating Loops
3. Generation Random numbers
4. Creating a Function, calling a function
5. Detecting the Player Version
6. Detecting the operating system
7. Checking the System language
8. Detecting display settings
9. Tinting a movie clip's color
10. Controlling a movie clip's color with sliders
11. Drawing a circle
12. Drawing a rectangle
13. Filling a shape with a Gradient
14. Scripting masks
15. Converting angle measurements
16. Calculating the Distance between the two points
17. Formatting Currency amount
18. Converting between units of measurement
19. Determining points along a circle
20. Sorting or reversing an array
21. Implementing a custom sort
22. Creating a text field
23. Making a password input field

All the above programs are to be done in Flash MX 2004

Reference Books

1. Action Script cookbook, Joey Lott, SPD-Oreilly, 1st Edition, 2009.
2. Flash MX Action script for designers, Doug Sahlin, Dreamtech Weily, 1st Edition, 2008.
3. Flash MX Professional 2004 Unleashed, Dabid Vogeleer and matthew pizza, Pearson Education, 1st Edition, 2004.