

**SRM UNIVERSITY
FACULTY OF SCIENCE AND HUMANITIES**

DEGREE OF UNDER GRADUATE COURSES

Bachelor of Computer Science

REGULATIONS

SEMESTER PATTERN

(Effective from the academic year 2008 – 2009)

1. AIM OF THE COURSE

The courses strive to inculcate job-oriented value based quality education with basic knowledge in Information Technology, Accounting and Management. At the end of the courses, the students will be well-versed with excellent standards, particularly in core subjects, blended with discipline and impart quality in co-curricular and extra curricular activities.

2. ELIGIBILITY FOR ADMISSION

Candidates for admission to the first year of the Under Graduate Degree courses shall be required to have passed the Higher Secondary Examinations (Academic or vocational Stream) conducted by the Government of Tamilnadu or an Examination accepted as equivalent.

3 Years Under Graduation Courses

B.Com., B.B.A., & B.Sc(ISM)

A pass in +2 or its equivalent with individual pass in Accounts/Commerce/Maths/ Vocational Course having Commerce Subject/Computer Science/ Statistics

B.C.A., B.Sc(Computer Science)

Any group but first preference will be given to students who have studied Computer Science in +2 /Maths/Statistics/Business Maths.

B.Sc(Visual Communication)

A pass in +2 or an examination accepted as equivalent.

B.Sc. (Biotechnology)

A pass in +2 or an examination accepted as equivalent with Biology as one subject.

3. ELIGIBILITY FOR THE AWARD OF DEGREE

A candidates shall be eligible for the award of the degree only if he/she has undergone the prescribed course of study in the University for a period of not less than three academic years, passed the examination all the six semesters.

A student shall be declared to be eligible for the award of any Under Graduate course provided,

- a) The student has successfully completed the course requirements and has passed all the prescribed examination in all the three years within a maximum period of 5 years reckoned from the commencement of the first year to which the candidate was admitted.
- b) No disciplinary action is appending against the student.

4. COURSE DURATION

The Duration of the course is three academic years, consist six semesters.

- a) A student admitted under regular system with Higher Secondary Certificate is ordinarily expected to complete the Under Graduate Degree Programme in 3 academic years but in any case not more than 5 years after admission to the programme.
- b) Each academic year shall be divided into two semesters. The first academic year shall comprise the first and second semesters, the second academic year the third and fourth semesters and the third academic year the fifth and sixth semesters respectively.
- c) The odd semesters shall consist of the period from June to November of each year and the even semesters from December to April of each year. There shall be not less than 90 working days for each semester.

5. COURSE OF STUDY

The main subjects of study for Under Graduate Degree Course shall consist of the following.

1.Foundation Courses: The course shall comprise the study of,

- a) Part-I Tamil/Hindi/French/Sanskrit
- b) Part-II English

2. Core Courses :

- a) Main Subject
- b) Allied Subjects
- c) Application Oriented subjects related to the main subject of study and practical etc .if any

Structure of the Course

Paper Number	Paper Title	Lecture/Lab Hrs/Week	Exam Duration in Hr
I SEMESTER			
SHCS8101	Foundation Course : Tamil/Hindi/French/Sanskrit	05	03
SHCS8102	Foundation Course : English	05	03
SHCS8103	Allied : Mathematics I	05	03
SHCS8104	Major 1: C Programming	05	03
SHCS8105	Major 2: Introduction to IT	04	03
SHCS8106	Major Practical 1 : C Programming Lab	03	03
SHCS8107	Major Practical 2 : PC Software Lab	03	03
Total Hours : 30 Hrs			
II SEMESTER			
SHCS8201	Foundation Course : Tamil/Hindi/French/Sanskrit	05	03
SHCS8202	Foundation Course : English	05	03
SHCS8203	Allied : Mathematics II	05	03
SHCS8204	Major 1: C++ Using Data Structures	05	03
SHCS8205	Major 2: Operating System	04	03
SHCS8206	Major Practical 3 : C ++ Lab	03	03
SHCS8207	Major Practical 4 : UNIX Lab	03	03
Total Hours : 30 Hrs			
III SEMESTER			
SHCS8301	Statistics and their Applications –I	05	03
SHCS8302	Digital Logic and Fundamentals	05	03
SHCS8303	Java Programming	05	03
SHCS8304	Computer Architecture	05	03
SHCS8305	Design and Analysis of Algorithm	04	03
SHCS8306	Practical 5 : Digital Lab	03	03
SHCS8307	Practical 6 : Java Lab	03	03
Total Hours : 30 Hrs			
IV SEMESTER			
SHCS8401	Statistics and their Applications –II	05	03
SHCS8402	Microprocessor and its Applications	05	03
SHCS8403	Computer Graphics	05	03
SHCS8404	Computer Networks	05	03
SHCS8405	Advanced Java Programming	04	03
SHCS8406	Practical 7 : Microprocessor Lab	03	03
SHCS8407	Practical 8 : Advanced Java Lab	03	03
Total Hours : 30 Hrs			

V SEMESTER			
SHCS8501	Database Management System	05	03
SHCS8502	Visual Programming	05	03
SHCS8503	Software Engineering	05	03
SHCS8504	Multimedia System Design	04	03
SHCS8505	Artificial Intelligence and Expert Systems	05	03
SHCS8506	Practical 9 : Multimedia Lab	03	03
SHCS8507	Practical 10 : RDBMS Lab	03	03
Total Hours : 30 Hrs			
VI SEMESTER			
SHCS8601	Programming Languages	05	03
SHCS8602	Internet and Web Applications	04	03
SHCS8603	E- Commerce	05	03
SHCS8604	Data Communication and Network	05	03
SHCS8605	Object Oriented Analysis and Design	05	03
SHCS8606	Practical 11: Web and Internet Lab	03	03
SHCS8607	Practical 12: Mini Project	03	03
Total Hours : 30 Hrs			

6. REQUIREMENTS FOR COMPLETION OF AN ACADEMIC YEAR

A Candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirements for completion of an academic year.

- a) He/She secures not less than 75% attendances individual course in that year taking in to account the total number of periods in that course offered during that academic year. Condonation of attendance up tot 10% is permitted on medical grounds. Relaxation in attendance is permitted up tot 10% for students who represent the University in sports, games, cultural, symposium and other similar activities. The above two relaxations either individually or jointly should not exceed 10% but it is applicable for individual course.
- b) He/She earns a progress certificate from the Head of the Institution for having satisfactorily completed all the courses pertaining to that year, as judged by the internal assessment.
- c) His/Her conduct has been satisfactory throughout the academic year.
- d) Condonation should be applied for, through proper channel and should be approved by the Vice-Chancellor.
- e) A Candidate who is not permitted to appear for the University examinations due to lack of attendance requirements will have to reregister and do the courses when they are offered subsequently.

7. PASSING MINIMUM

A Candidate shall be declared to have passed in foundation courses (applicable only to UG courses) and in each paper/practical of the main subject of study wherever prescribed, if he/she secures NOT LESS THAN 40% of the total marks prescribed to UG courses and 50% of the total marks prescribed to PG course. He/She shall be declared to have passed the whole examination, if he/she passes in all the papers and practicals in internal and external separately.

8. CLASSIFICATION OF SUCCESSFUL CANDIDATES

a) Core Course (consist of (a) Main subject (b) Allied subjects (c) Application Oriented subjects related to the main subject of study and practical etc. if any).

Successful candidates passing the examinations for core courses together and securing the marks (i) 60 percent and above, (ii) below 60% percent in the aggregate shall be declared to have passed the examination in the FIRST and SECOND class respectively.

b) Ranking

Candidates who pass all the examinations prescribed for the course in the FIRST APPEARANCE ITSELF ALONE are eligible for Classification/ Ranking/ Distinction.

9. EXAMINATION

The semester examinations will ordinarily be conducted during November and April of each academic year. All practical Examinations will be conducted by internal and external examiners appointed by the University. The maximum marks for theory will be 100 comprising 20 marks for internal assessment and 80 marks for the final practical examinations and the maximum marks for practicals will be 100 comprising 20 marks for internal assessment and 80 marks for the final practical examinations.

a) PROCEDURES FOR AWARDING MARKS FOR INTENAL ASSESSMENT

THEORY COURSES

For regularity (Scoring 80% and above attendance)	- 04 Marks
For two assignment (Equal weightage)	- 06 Marks
For two tests to be conducted (Equal weightage)	- 10 Marks

Total	- 20 Marks

PRACTICAL COURSES

For regularity and satisfaction - 05 Marks

Completion of all Experiments prescribed for the course - 05 Marks

For model Examination at the end of the Semester - 10 Marks

Total - 20 Marks

A candidate who secures not less than 40% of total marks prescribed for any course shall be declared to have passed in the examination for that course.

b) SCHEME OF EXAMINATION FOR THEORY (MAXIMUM 80 MARKS)

Part – A

Ten Questions to be answered 10 x 2 marks = 20 Marks
- Two questions from each unit

Part – B

Five Questions to be answered 5 * 6 marks = 30 Marks
- Two questions from each unit in either or pattern

Part – C

Three questions to be answered out of five questions 3 * 10 marks = 30 Marks
- One question from each unit

Total = 80 Marks

C) SCHEME OF EXAMINATION FOR PRACTICALS

The external examiner will prepare a question paper on the spot with the help of the question papers supplied by the Controller's office of SRM University.

10. REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER

- a) Candidates shall register their names for the first semester Examination after the admission in the UG Courses.

- b) Candidates shall be permitted to proceed from the first semester up to Final semester irrespective of their failure in any of the semester examinations subject to the condition that the candidates should register for all the arrear subjects of earlier semesters along with current semester subjects.
- c) Candidates shall be eligible to go to subsequent semester, only if they earn sufficient attendance as prescribed therefore by the University from time to time. Provided in case of a candidate earning less than 50% of attendance in any one of the semesters due to any extraordinary circumstance such as medical grounds, such candidates who shall produce medical certificate issued by the Authorized Medical Attendant (AMA), duly certified by the principal of the college, shall be permitted to proceed to the next semester and to complete the course of study. Such candidates shall have to repeat the missed semester by rejoining after completion of final semester of the course, after paying the fee for the break of study as prescribed by the university from time to time.

11. TEMPORARY BREAK OF STUDY FROM A PROGRAMME.

- a) Candidate is not normally permitted to temporarily break the study. However if a candidate intends to temporarily discontinue the programme in the middle for valid reasons (such as accident or hospitalization due to prolonged ill health) and to rejoin the programme in a later year he/she shall apply to the Head of the Institution in advance but not later than the last date for registering for the final examinations of the year in question. Such applications should be routed through the Head of the Department and the Head of the Institution stating the reasons for break of study.
- b) The candidate permitted to rejoin the programme after the break shall be governed by the rules and regulations in force at the time of rejoining.
- c) The duration specified for passing all the courses for the purpose of classification vide (clause 3) shall be increased by the period of such break of study permitted.
- d) The total period for completion of the programme reckoned from, the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in clause irrespective of the period of break of study in order that he/she may be eligible for the award of the degree (vide clause 3)
- e) If any student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted 'Break of Study' and clause 10 is not applicable for this case.

12. DISCIPLINE

Every student is required to observe disciplined and decorous behavior both inside and outside the college and not to indulge in any activity which will tend to bring down the prestige of the University/College. Boys should wear decent dresses. No casual wear like T-shirts or jeans pant is permitted. Girls shall wear decent dresses like Churidars with Thuppattas and sarees.

13. REVISION OF REGULATION AND CURRICULAM

The University may from time to time revise, amend or charge the regulations, scheme of examinations and syllabi as found necessary.

14. SYLLABUS

SEMESTER I

PAPER CODE :SHCS8103

ALLIED: MATHEMATICS I

UNIT - I

ALGEBRA: Partial fractions, Binomial, Exponential and Logarithmic Series(Without proof), summation and approximate problems.

UNIT - II

MATRICES: Symmetric, skew symmetric, Hermitian, skew Hermitian, Orthogonal, Unitary matrices. Eigenvalues – Eigen vectors – Cayley – Hamilton Theorem(without proof) – Inverses.

UNIT - III

THEORY OF EQUATIONS: Polynomial equations, Irrational roots, complex roots, Reciprocal equations, Approximation of roots of a polynomial equation by Newton and Horner's methods.

UNIT - IV

DIFFERENTIAL CALCULUS: n^{th} derivatives – Leibnitz Thorem – Jacobians – radius of curvature(Cartesian Coordinates) – Maxima and minima of functions of two variables.

UNIT - V

TRIGONOMETRY: Expansions of Sinno, Cosno, Tanno. Expansions of Sinno, Cosno, SinnoCosno, Hyperbolic and inverse hyperbolic functions.

Books for Study and References:

1. Dr.P.R.Vittal : Allied Mathematics
2. Singaravelu.A : Allied Mathematics
3. Manikavasagam piallai and Narayanan : Ancillary Mathematics.

SEMESTER I

PAPER CODE : SHCS8104

C PROGRAMMING

Unit – I

C fundamentals- Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

Unit – II

Data input/output functions - Simple C programs - Flow of control –Control Structures- if, if-else, while, do-while , for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

Unit – III

Functions –Definition - prototypes - Passing arguments – Recursions- Storage Classes - Automatic, External, Static, Register Variables – Multi-file programs.

Unit – IV

Arrays - Defining and Processing - Passing arrays to functions – Multi-dimension arrays - Arrays and String- Structures - User defined data types - Passing structures to functions - Self-referential structures – Unions.

Unit – V

Pointers - Declarations - Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files : Creating , Processing ,Opening and Closing a data file-Bit wise Operations.

Text Books

1. E.Balaguruswamy, 1995,Programming in ANSI C, TMH Publishing Company Ltd.

Reference Books

1. B.W. Kernighan and D.M.Ritchie, 1988,The C Programming Language, 2nd Edition, PHI.
2. H. Schildt, C,2004, The Complete Reference, 4th Edition, TMH
3. Gottfried,B.S, 1996,Programming with C, Second Edition, TMH Pub. Co. Ltd., New Delhi .
4. Kanetkar Y., 1999,Let us C, BPB Pub., New Delhi.

SEMESTER I

PAPER CODE :SHCS8105

INTRODUCTION TO IT

Unit – I

It An Introduction-Information Systems-Software and Data IT in Business, Industry, Home, At play, Education, Training Entertainment, Arts, Science, Engineering and Maths-Computers in Sliding –GPS types of computers-Anatomy of a Computer-Foundations of Modern IT – CPU-memory-Buses-Communication with Peripherals.

Unit – II

I/O devices-Inputting text and graphics-pointing devices-Foundations of modern output-Display screens-Printers Foundations of modern output-Display screens-Printers Foundations of Model Storage-storage media-increasing data storage capacities-the smart card.

Unit – III

S/W Interfaces-Applications Programs-OS document centric computing –s/w issues-network computing-editing documents-word processing-features-formatting documents-desktop publishing-spreadsheet applications-database applications – queries-internet connectives.

Unit – IV

Network applications-foundation of modern networks-LAN-WAN-links between networks – high bandwidth connections-multimedia-tools of multimedia-delivering multimedia-multimedia on the web-corporate computing-transaction processing-management control-marketing-advertising, sales, design, production and manufacturing –business on the internet – outside computing careers-keeping up to date.

Unit –V

Programs – concepts of programming – programming techniques- corporate development-computers and health-viruses-computer crime-cryptography-business issue.

Text Books

1. D. P. Curtin, K. Foley, K. Sen, and C. Morin, Information Technology- The Breaking Wave, TMH Edition-1999.
2. Sawyer, Williams, A Hutchinson, Using Information Technology- Brief version, McGraw Hill International Edition-1999.
3. Fundamentals of Information Technology, Alexies Leon & Mathews Leon-Vikas Publishing House Pvt. Ltd. -1999

SEMESTER I

PAPER CODE :SHCS8106

C PROGRAMMING LAB

I Summation of Series :

1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)

II String Manipulation :

1. Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines
2. Reverse a string & check for palindrome.
3. Substring detection, count and removal
4. Finding and replacing substrings

III Recursion :

1. ${}^n P_r$, ${}^n C_r$
2. GCD of two numbers
3. Fibonacci sequence
4. Maximum & Minimum
5. Towers of Hanoi.

IV Matrix Manipulation :

1. Addition & Subtraction
2. Multiplication
3. Transpose, and trace of a matrix
4. Determinant of a Matrix

V Sorting and Searching :

1. Insertion Sort
2. Bubble Sort
3. Linear Search
4. Binary Search

SEMESTER I

PAPER CODE :SHCS8107

PC SOFTWARE LAB

MS Word

1. Text manipulations.
2. Usage of Numbering, Bullets, Footer and Headers.
3. Usage of Spell Check, Find and Replace.
4. Text Formatting.
5. Picture Inserting and Alignment.
6. creation of templates
7. Creation of documents, using templates.
8. Mail merge Concepts
9. Copying text and pictures from Excel

MS Excel

1. Cell editing.
2. Usage of Formulae and built I functions
3. File Manipulations
4. Data Sorting (both number and alphabets)
5. Work sheet preparation
6. Drawing Graphs
7. Usage of Auto formatting.

MS Power Point

1. Inserting clip arts and pictures
2. Frame movements of the above
3. Insertion of new slides
4. Preparation of Organization charts
5. Presentation using wizards
6. Usage of design templates

SEMESTER II

PAPER CODE :SHCS8203

ALLIED MATHEMATICS – II

UNIT – I

INTEGRAL CALCULUS: Integration of irrational and trigonometric function- Bernoulli's formula – reduction formula – $\int \sin^n x \, dx$ – $\int \cos^n x \, dx$. – properties of definite integral – valuation of double and triple integral – changing the order of integration.

UNIT -II

Fourier Series of periodic function on interval $[0, 2\pi]$ and $[-\pi, \pi]$

UNIT – III

Laplace transforms of standard functions – Inverse transform – Solving ordinary equations using laplace transforms (simple problems)

UNIT – IV

Differential Equation: Second order Differential Equation with constant coefficient. Partial Differential Equation: Eliminating arbitrary constants and functions – four standard types.

UNIT – V

VECTOR ANALYSIS: Gradient, divergence, curl, solenoidal irrotational vectors, directional derivatives unit normal to a surface – Operator – expansion formula – line Integral – Gauss, Stokes and Greens Theorm (without proof) simple problems.

Text Books:

1. Dr. P. R. Vittal, Allied Mathematics
2. Singaravelu. A, Allied Mathematics
3. Manikavasagam Pillai and Narayanan, Ancillary Mathematics

C++ USING DATA STRUCTURES**Unit - I**

Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Manipulators, Expressions and Control Structures in C++; Pointers - Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - Inline Functions - Friend and Virtual Functions

Unit – II

Classes and Objects; Constructors and Destructors; and Operator Overloading and Type Conversions - Type of Constructors - Function overloading. Inheritance : Single Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance. Pointers, Virtual Functions and Polymorphism; Managing Console I/O operations.

Unit - III

Working with Files: Classes for File Stream Operations - Opening and Closing a File - End-of-File Deduction - File Pointers - Updating a File - Error Handling during File Operations - Command-line Arguments. Data Structures: Definition of a Data structure - primitive and composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists.

Unit - IV

Stacks - Applications of Stack - Infix to Postfix Conversion, Recursion, Maze Problems - Queues - Operations on Queues, Queue Applications, Circular Queue. Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations, Applications.

Unit - V

Trees and Graphs: Binary Trees - Conversion of Forest to Binary Tree, Operations - Tree Traversals; Graph - Definition, Types of Graphs, Hashing Tables and Hashing Functions, Traversal - Shortest Path; Dijkstra's Algorithm.

Text Books:

1. E. Balagurusamy,1995,Object Oriented Programming with C++, Tata McGraw-Hill Publishing Company Ltd.
2. E.Horowitz and S.Shani,1999,Fundamentals of Data Structures in C++ , Galgotia Pub.

Reference Books

1. Robert Lafore, Object Oriented Programming in Microsoft C++, Galgotia publication.
2. H.Schildt, C++,1998,The Complete Reference-1998-TMH Edition, 1998
3. R. Kruse C.L. Tondo and B. Leung ,1997, Data Structures and Program design in C, PHI.
4. Cangsam,Augenstein,Tenenbaum,Data Structures using C & C++,PHI
5. D.Samantha,2005, Classic Data Structures, PHI,New Delhi.

OPERATING SYSTEM**Unit - I**

Introduction: Definition - Computer System Organization & Architecture - OS Structure & Operations - Process, Memory, Storage Managements - Protection and Security - Distributed Systems – Special-purpose systems- Computing Environments. System Structures: Operating System Services - User Operating System Interface – System Calls and Types – System Programs – OS design and implementation – Virtual Machines – OS Generation – System Boot.

Unit - II

Process Management: Process Scheduling – Operations on Processes – Interprocess Communication – Examples of IPC Systems – Communication in Client-Server Systems. Multithreaded Programming: Multithreading models – Thread libraries – Threading Issues – Linux threads. Process Scheduling: Basic Concepts – Scheduling criteria – Scheduling Algorithms – Multiprocessor scheduling – Thread Scheduling –Linux scheduling.

Unit – III

Process Coordination: Critical-Section problem – Peterson’s Solution – Synchronization Hardware – Semaphores – Classic Problems of Synchronization – Monitors - Synchronization in Linux. Deadlocks: System models – Deadlock Characterization – Methods for handling Deadlocks – Prevention, Avoidance, and Detection of Deadlock - Recovery from deadlock.

Unit – IV

Memory Management strategies: Swapping – Contiguous Memory Allocation – Paging –Page table – Segmentation. **Virtual** Memory Management: Demand Paging – Copy on write – Page Replacement – Allocation of Frames. Secondary Storage Structure: Overview of Mass-Storage Structure – Disk Structure, Attachment, Scheduling and Management – Swap-Space Management.

Unit – V

File System: Concept – Access methods – Directory Structure – File-system Mounting – File sharing - Protection. I/O Systems: I/O Hardware – Application I/O Interface – Kernel I/O subsystem – Transforming I/O Requests to Hardware Operations. Linux System: Linux history – Design Principles – kernel Modules – Process management – Scheduling – Memory Management – File systems – Input and Output – Interprocess Communication.

Text Books

1. Silberschatz A.,2006, Galvin P.B., Gagne G.- Operating System Principles, Seventh Edition, John Wiley & Sons.

Reference Books

1. H.M. Deitel ,1990, An Introduction to Operating System,- Second Edition,Addison Wesley.

C++ LAB

1. Implementation of Arrays(Single and Multidimensional)
2. Polynomial Addition and necessary overloaded operators.
3. Singly Linked Lists
4. Circular Linked Lists.
5. Doubly Linked Lists.
6. General Lists.
7. Implementation of Stack(Using Arrays)
8. Implementation of Queue(Using Pointers)
9. Implementation of Circular Queue (Using Arrays and Pointers)
10. Evaluation of Expressions – Infix to Postfix
11. Binary tree implementations and Traversal using recursion
12. Binary search trees.
13. Shortest path(Dijkstra's Algorithm)
14. Search methods in graph(DFS and BFS)using recursion.

UNIX LAB

1. Inter Process Communications(IPC) using message queues.
2. IPC using pipes.
3. Implementation of weight and signal using counting semaphores.
4. Implementation of weight and signal using binary semaphores.
5. Atomic counter update problem.
6. Counting semaphores at the user level using binary semaphores.
7. Signaling processes.
8. Deadlock detection(for processes passing messages).
9. Process scheduling -FCFS.
10. Process scheduling-Least Frequently Used.
11. Process scheduling – Round Robin
12. Producer-consume problem with limited buffers.
13. Dining philosopher problem.
14. Reader-writer problem
15. Two process mutual exclusion.

STATISTICAL METHODS AND THEIR APPLICATIONS- I

Note: The emphasis is solely upon the applicational understanding and practice of statistical methods, with specific reference to problems in physical, natural, and earth sciences.

UNIT - I

Nature and scope of statistical methods and their limitations- Classification, tabulation and diagrammatic representation of various types of statistical data- Frequency curves and O gives- Graphical determination of percentiles, quintiles and their uses, Lorenz curve.

UNIT - II

Measure of location – Arithmetic mean, median, mode, Geometric mean, Harmonic mean and their properties – merits and demerits

UNIT - III

Measure of dispersion – Range, mean deviation, quartile deviation, standard deviation, coefficient of variation, skewness and kurtosis – and their properties

UNIT - IV

Probability of an event – Finitely additive probability space addition and multiplication theorems – Independence of events – conditional probability – Bayes theorem

UNIT - V

Concepts of random variable – Mathematical expectation – Moments of random variables (raw and central moments)- Moment generating function – Chebycheff's inequality – Simple problems.

Books for Study and References

1. Mode, E.B. Elements of Statistics – Prentice Hall
2. Wilks, S.S. Elementary Statistical Analysis – Oxford and IBH
3. Snedecor, G.W., & Cochran W.G: Statistical Methods, Oxford and IBH
4. Simpson and Kakfa: Basic Statistics
5. Burr, W: Applied Statistical Methods, Academic Press.
6. Croxton, F.E and Cowden D.J. Applied General Statistics, Prentice Hall
7. Ostle, B: Statistics in Research, Oxford & IBH.

SEMESTER III

PAPER CODE: SHCS8302

DIGITAL LOGIC FUNDAMENTALS

UNIT – I

Number Systems – Conversion from one number system to another – Complements – Binary codes – Binary Logic – Logic gates – Truth tables.

UNIT – II

Boolean Algebra – Axioms – Theorems – Simplification of Boolean functions – Map Method (upto 5 variables) – MC Clausky tabulation method.

UNIT – III

Sequential logic – RS, JK, D and T Flip-flops – Registers – Shift Registers – Counters – Ripple counters – Synchronous counters – Design of counters.

UNIT – IV

Adders – Subtractors – Decoders – Encoders – Multiplexer – Demultiplexer – Design of circuits using decoders/Multiplexers – ROM – PLA – Designing circuits using ROM/PLA.

UNIT – V

Design of ALU – Design of status registers – Design of Accumulator – Introduction to Computer design.

Books for Study

1. M.M.Mano – Digital logic and Computer Design – PHI- 1994.
2. T.C.Bartee – Computer Architecture and Logic Design 0 McGraw Hill – 1991

SEMESTER III

PAPER CODE: SHCS8303

JAVA PROGRAMMING

UNIT – I Introduction to Java – Features of Java – Object Oriented Concepts – Lexical Issues – Data Types – Variables Arrays – Operators – Control Statements.

UNIT – II Classes – Objects – Constructors – Overloading method – Access Control – Static and fixed methods – Inner Classes – String Class – Inheritance – Overriding methods – Using super – Abstract class.

UNIT – III

Packages Access Protection – Importing Packages – Interfaces – Exception Handling – Throw and Throws – Thread – Synchronization – Messaging – Runnable Interface – Inter thread Communication – Deadlock – Suspending, Resuming and stopping threads Multithreading

UNIT – IV I/O Streams – File Streams – Applets – String Objects – String Buffer – Char Array – Java Utilities – code Documentation.

UNIT – V

Networks basics – Socket Programming – Proxy Server – TCP/IP Sockets – Net Address – URL – Data grams – Working with windows using AWT Classes – AWT Controls – Layout Managers and Menus

Books for Study

1. Cay S.Horstmann , Gary cornell – Core Java 2 Volume I – Fundamentals , 5th Edn.PHI , 2000.
2. P.Naughton and H.Schildt – Java2 (The complete Reference) – Third Edition, TMH 1999.
3. K.Arnold and J.Gosling – The Java Programming Language – Second Edition , Addison Wesley , 1996.

COMPUTER ARCHITECTURE**UNIT - I**

Computer Evolution: Pentium and Power PC Evolution. Computer System: Components – Function – Interconnection Structures – Bus Interconnection – Basics of PCI Bus. Memory: Characteristics – Hierarchy – Cache Memory – Principles – Cache Design – Locality of Reference.

UNIT - II

Main Memory: Static RAM – Dynamic RAM – Types of ROM – Memory Chip Organization – Types of DRAM. External Memory: Magnetic Disk – Basics of RAID – Optical Memory – Magnetic Tapes.

UNIT - III Input/Output: External Devices – I/O Module – Programmed I/O – Interrupt Driven I/O – DMA – I/O Channels & Processors. Computer Arithmetic: ALU – Integer Representation and Arithmetic – Floating Point Representation and Arithmetic. Instruction Set: Characteristics – Operand Types – Addressing Modes – Instruction Formats – Pentium and Power PC Operands, Operations, Addressing Modes Simple Examples.

UNIT - IV

CPU: Organization of Processors and Registers – Instruction Cycle – Instruction Pipelining – Pentium Processor. RISC: Characteristics – Large Register File – Register Optimization – Architecture – RISC Vs CISC Characteristics – Pipelining.

UNIT - V

Control Unit: Micro-Operations – Control of Processors – Hardwired Implementation – Micro Programmed Control Concepts – Microinstruction Sequencing – General Microinstruction Execution.

Books for Study and References

1. W.Stallings, 2003, Computer Organization and Architecture, 6th Edition – PHI, New Delhi
2. C.Hamacher, Z. Vranesic, s.Zaky, 2002, Computer Organization , 5th Edition, Mcgraw Hill.

DESIGN AND ANALYSIS OF ALGORITHM**UNIT – I**

Introduction – Definition of Algorithm – Pseudocode conventions – Recursive Algorithms – Time and Space Complexity – Big OH Notation – Practical complexities – Randomized Algorithms – Repeated element – Primality Testing – Divide and Conquer: General Method – Finding Maximum and Minimum – Merge Sort – Quick Sort – Selection.

UNIT – II

Divide and Conquer contd. – Strassen's Matrix Multiplication – Convex Hull Algorithms – Greedy Method : General Method – Knapsack problem – Tree vertex splitting – Job sequencing with dead lines – Optimal storage on tapes.

UNIT – III

Dynamic Programming : General Method – Multistage graphs – All pairs shortest paths – Single source shortest paths – String Editing – 0/1 Knapsack .

Search techniques for graphs – DTS – BFS – Connected components – Biconnected components and DFS.

UNIT – IV

Back Tracking: General Method – 8 – Queens – Sum of Subsets – Graph Coloring – Hamiltonian cycles. Branch and Bound: General Method – Travelling Method – Traveling Salesperson problem.

UNIT – V

Lower Bound Theory: Comparison tree Oracles and Advisory arguments – Lower bounds through reduction – Basic Concepts of Np – Hard and Np – Complete problems.

Books For Study and Reference

1. E.Horowitz; S.Sahni and S.Rajasekaran, Computer Algorithms, Galgotia – 1999.
2. G.Brassard and P.Bratley , Fundamentals of Algorithmics – PHI -1997.
3. A.V.Aho, J.E.Hopcraft, J.D.Ullmann, The Design and analysis of Computer Algorithms – Addison Wesley – 1999.

DIGITAL LAB

I. Study of Logic Gates

1. Logic gates using discrete components.
2. Verification of truth table for AND, OR, NOT, NAND, NOR and XOR gates
3. Realization of NOT, AND, OR, EX-OR gates with only NAND gates.
4. Realization of NOT, AND, OR, EX-OR gates with only NOR gates.

II. Implementation of Logic Circuits

1. Verification of Associative law for AND, OR gates.
2. Karnaugh's Map reduction and logic circuit implementation.

III. Adder and Subtractor

1. Verification of Demorgan's law
2. Implementation of Half – Adder and Half – Subtractor.
3. Implementation of Full – Adder and Full – Subtractor.
4. Four bit Binary Adder.
5. Four bits Binary Subtractor using 1s and 2s Complement.

IV. Shift Registers

1. Implementation of Shift Registers, Serial Transfer.
2. Ring Counter.
3. 4 – bit binary counter.
4. BCD Counter Counters for arbitrary sequence.

JAVA LAB

Application

1. Finding area and Perimeter of a circle. Use Buffered Reader class
2. Substring Removal from a String. Use String Buffer Class.
3. Determining the order of numbers generated randomly using Random Class.
4. Implementation of Point Class for Image Manipulation.
5. Usage of Calender class and Manipulation.
6. String Manipulation using Char Array.
7. Database Creation for storing e-mail addresses and manipulation.
8. Usage of Vector Classes.
9. Implementing Thread based applications & Exception Handling.
10. Application using synchronization such as Thread based, Class based and synchronized statements.

Applets

11. Working with Frames and various controls
12. Working with Dialogs and Menus.
13. Working with Panel and Layout.
14. Incorporating Graphics
15. Working with colors and Fonts.

SEMSTER IV

PAPER CODE:SHCS8401

STATISTICAL METHODS AND THEIR APP LICATIONS-II

Note: The emphasis is solely upon the applicational understanding and practice of statistical methods, with specific reference to problems in physical, natural , and earth sciences.

UNIT - I

Bivariate frequency table and its uses – Scatter diagram – Regression line – Rank correlation,rank correlation coefficient – Curve fitting by the method of least squares.

UNIT – II

Standard Distributions – Binomial, poisson and Normal Distributions – Fitting of distributions.

UNIT – III

Concept of sampling distributions – Standard error – Tests of significance based on t. Chi-square and F-Distributions – Theory of attributes and attributes and tests of independence in contingency table.

UNIT – IV

Sampling from finite population – Simple random sampling, stratified and systematic random sampling procedures.

UNIT – V

One way and two way classification Analysis of CRD and RBD – Latin square designs.

Books for Study and Reference

1. Statistical and Numerical methods : P.R.Vittal
2. Statistical Methods : S.P.Gupta
3. Practical Statistics : R.S.W.Pillai and Bhagavathy

SEMSTER IV

PAPER CODE:SHCS8402

MICROPROCESSOR AND ITS APPLICATIONS

UNIT-I

Introduction to micro computers, microprocessors and Assembly languages - Microprocessor architecture and its operations - 8085 MPU - 8085 instruction set and classifications.

UNIT-II

Writing assembly levels programs - Programming techniques such as looping, counting and indexing addressing nodes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging.

UNIT-III

Counters and time delays - Hexadecimal counter - Modul IO counter - Pulse Timings for flashing lights - Debugging counter and time delay program – stack – subroutine - conditional call and return instructions.

UNIT-IV

BCD to Binary and Binary to BCD conversions - BCD to HEX and HEX to BCD conversions - ASCII to BCD and BCD to ASCII conversions - BCD to Seven segment LED Code conversions - Binary to ASCII and ASCII to Binary conversions – Multibyte Addition – Multibyte subtraction – BCD addition – BCD Subtration – Multiplication and Division.

UNIT-V

Interrupt – Implementing interrupts – Multiple interrupt – 8085 – trap – Problems on implementing 8085 interrupt – DMA – Memory interfaces – Ram & Rom – I/O interface – Direct I/O – Memory mapped I10.

Books for Study and References

1. R. S. Gaonkar, “Microprocessor Architecture. Programming and Applications with 8085/8080A”, Wiley Eastern limited. 1990.
2. A.Mathur, 'Introduction to Microprocessor', Third Edition, Tata McGraw-Hill Publishing Co.Ltd.,1993.

SEMESTER IV

PAPER CODE:SHCS8403

COMPUTER GRAPHICS

UNIT – I

Introduction to Computer Graphics – Video display devices – Raster scan Systems – Random Scan Systems – Interactive input devices – Hard copy devices - Graphics software – Output primitives – Line drawing algorithms – Initializing lines – line function – Circle Generating algorithms.

UNIT – II Attributes of output primitives – line attributes – Color and Grayscale style – Area filling algorithms – Character attributes – Inquiry functions – Two dimensional transformation – Basic transformation – Composite transformation – Matrix representation – Other transformations.

UNIT – III Two – dimensional viewing – window – to view port co-ordinate Transformation – clipping algorithms – Interactive input methods – Physical input devices – Logical classification of input devices – Interactive picture construction methods.

UNIT – IV Three – dimensional concepts – Three dimensional display methods – parallel projection – Perspective Projection – Depth Cueing – visible line and surface identification – Three dimensional transformation.

UNIT – V Three dimensional viewing – Projection – Viewing transformation – implementation of viewing operations – Hidden surface and Hidden line removal – backface removals.

Books for study:

1. D.Hearn and M.P.Baker – Computer Graphics Prentice Hall of India – 1997.
2. W.M.Newman and R.F.Sproull – Principles of Interactive Computer Graphics, McGraw Hall International Edition – 1979.

SEMESTER IV

PAPER CODE:SHCS8404

COMPUTER NETWORKS

UNIT – I

Introduction – Uses of computer networks, network hardware, network software, reference models – The physical layer – Theoretical basis for data communication, transmission media, wireless transmission, narrow band ISDN broad band ISDN and ATM, cellular radio, communication satellite.

UNIT – II

The data link layer, data link layer design issues, error correction & error detection – Elementary data link protocols – Sliding window protocols.

UNIT – III

Medium access sub layers – The channel allocation problem, multiple access protocols, IEEE standard 802 for LANs & MANs satellite networks.

UNIT – IV

Network layer – Network layer design issues, routing algorithms – Congestion control algorithms – Internetworking – Internetwork architecture – Internet working issues – Internet protocol standards – Internet IP – IPv6.

UNIT – V

Transport layer – Transport services – Elements of Transport protocols – Internet Transport protocols (TCP/IP) – Application layer – Network, security, DNS, SMTP, electronic mail, world wide web, multimedia.

Books for Study

1. A.S.TANNENBAUM – Computer Networks – PHI,III Edition, 1996.
2. BEHROUZ FOROUZAN, Introduction to Data communications and Networking.
3. FRED HALSALL, Data Communications, Computer Networks and open systems – Addison Wesley.

SEMESTER IV

PAPER CODE:SHCS8405

ADVANCED JAVA PROGRAMMING

UNIT – I

Servlet overview – The java web server – Your first Servlet – Servlet chaining – Server side includes – Session management – Security – HTML forms – Using JDBC in servlets – Applet to servlet communication.

UNIT – II

Java Beans – The software component assembly model – The java beans development kit – Developing beans – Notable beans – Using infobus – Glasgow developments – Application Builder tool – JAR files – Introspection – Bound – Properties – Persistence – Customizers – java beans – APL.

UNIT – III

EJB architecture – EJB entity beans – Design and implementation – EJB session beans – EJB entity beans - EJB Clients deployment tips, tricks and traps for building distributed and other systems – implementation and future directions of EJB – Variable in perl – perl control structures and operators functions and scope.

UNIT – IV

RMI – overview – Developing applications with RMI: Declaring & Implementing remote interfaces – stubs & skeletons, Registering remote objects, Writing RMI clients – Pushing data from RMI servlet –RMI over Inter ORB Protocol.

UNIT – V

JSP – Introduction JSP – Examining MVC and JSP – JSP scripting elements – and directives – working with variables scopes – Error pages – using java beans in JSP working with JAVA mail-understanding protocols in javamail components – Java Mail API – Integrating into J2EE – Understanding Java Messaging services – Transactions.

Text Books

1. J.MCGOVERN,R.ADATIA,Y.FAIN, 2003, J2EE 1.4 Bible, Wiley-dreamtech India Pvt Ltd,New Delhi.
2. H.SCHILDT,2002, Java 2 Complete Reference, 5th Edition, Tata McGraw Hill, New Delhi.

Reference Books

1. KARL MOSS, Java Servlets – Tata McGraw Hill.
2. DUSTIN R.CALLAWAY , Inside Servlets – Addison Wesley.
3. JOSEPH O'NEIL, Java Beans Programming – TMH.
4. TOM VALESKY, Enterprises Java Beans – Addison Wesley.
5. CAY S. HORSTMANN, GARY CORNELL, Code Java 2, Volume – II, Advanced Features – Addison Wesley.
6. PESCHKO & MICHELE Dewolfe, Perl Developer's Guide – Tata McGraw Hill.

MICROPROCESSOR LAB

I) ADDITION AND SUBTRACTION

1. 8 – bit addition
2. 16 – bit addition

1. 8 – bit subtraction
2. BCD subtraction

II) MULTIPLICATION AND DIVISION

1. 8 – bit multiplication
2. BCD multiplication
3. 8 – bit division

III) SORTING AND SEARCHING

1. Searching for an element in an array.
2. Sorting in Ascending order.
3. Finding largest and smallest elements from an
4. Reversing array elements
5. Block move
6. Sorting in descending order.

IV) CODE CONVERSION

1. BCD to Hex and Hex to BCD
2. Binary to ASCII and ASCII to binary
3. ASCII to BCD and BCD to ASCII

V) APPLICATIONS

1. Square of a single byte Hex number
2. Square of a two digit BCD number
3. Square root of a single byte Hex number
4. Square root of a two digit BCD number
5. Traffic Signal controller.

SEMESTER IV

PAPER CODE: SHCS8407

ADVANCED JAVA LAB

1. HTML to Servlet Applications.
2. Applet to Servlet Communication.
3. Designing online applications with JSP.
4. Creating JSP Program Using Java Beans.
5. Working with Enterprise Java Beans.
6. Performing Java DataBase Connectivity.
7. Creating WEB Services with RMI.
8. Creating and Sending E-Mail with java.
9. Building Web Applications.

SEMESTER V

PAPER CODE: SHCS8501

DATA BASE MANAGEMENT SYSTEM

UNIT - I

Advantages and components of a database management systems-Feasibility study-Class diagrams-Data Types-Events-Normal Forms-Integrity-Converting Class Diagrams to Normalized tables-Data Dictionary.

UNIT - II

Query basics-computation Using Queries-Subtotals and GROUP BY command-Queries with multiple tables-Sub queries-joins-DDL & DML-Testing Queries.

UNIT - III

Effective Design of Forms and Reports-Form Layout-Creating Forms-Graphical Objects-Reports Procedural Languages-Data On Forms-Program to Retrieve and save Data-Error Handling.

UNIT - IV

Power of Application structure-User Interface Features-transaction-Forms Events-Custom Reports-Disturbing Application-Table Operation Data Clustering and Partitioning.

UNIT - V

Database Administration-Development Stages-Application Types-Backup and Security and privacy-Distributed Databases-Client/Server databases-Web as a Client/Server System-Objects-Objects Oriented Databases-Integrated Applications.

Text Books

1.G.V Post-Database Management Systems Designing and Building Business Application-McGraw Hill International edition-1999.

Reference Books

- 1.Raghu RamaKrishnan-Database Management Systems-WCB/MCGraw Hill-1998.
- 2.C.J.Date-An Introduction to Database Systyems-7th Edition-Addison Wesley-2000

VISUAL PROGRAMMING

UNIT - I

Customizing a Form-Writing Simple Programs-Toolbox-Creating Controls-Name Property-Command Button-Access Keys-Image Controls-Text Boxes-Labels-Message Boxes-Grid-Editing Tools-Variables-Data Types-String-Numbers.

UNIT - II

Display Information-Determinate Loops-Indeterminate Loops-Conditionals-Built-in Functions-Functions and procedures.

UNIT - III

Lists-Array-Sorting and Searching-records-Control Array-Combo Boxes-Grid Control-Projects With Multiple Forms-Do Events and Sub Main-Error Trapping.

UNIT - IV

VB Objects-Dialog Boxes-Common Controls-Menus-MDI Forms-Testing, Debugging and Optimization-Working with Graphics.

UNIT - V

Monitoring Mouse activity-File Handling-File System Controls-File System Controls-File System Objects-COM/OLE-Automation-DLL Servers-OLE Drag and Drop.

Books for Study

- 1 .GARY CORNELL, Visual Basic 6 from the Ground up-Tata MCGraw Hill,1999.
2. NOEL JERKE, Visual Basic 6 (The Computer reference)-Tata MCGraw Hill,1999.

SEMESTER V

PAPER CODE: SHCS8503

SOFTWARE ENGINEERING

UNIT - I

The Product-The Process-Project Management Concepts-Software Projects and Project Metrics

UNIT - II

Software Project Planning-Risk Analysis and Management-Project scheduling and Tracking-Software Quality Assurance.

UNIT - III

Software Configuration Management-System Engineering-Analysis Concepts and Principles-Analysis Modeling.

UNIT - IV

Design Concepts and Principles-Architectural Designs-User Interface Design.

UNIT - V

Component Level Design-Software Testing Techniques-Software Testing Strategies-Technical Metrics For Software.

Books for Study and Reference

1. R.S Pressman-Software Engineering A Practitioners approach-5th edition-MCGraw Hill.
2. Lan Sommerville-Software Engineering -5th edition-Addison Wesley.

MULTIMEDIA SYSTEM DESIGN**UNIT-1**

What is Multimedia: Definitions-CD-ROM and the multimedia Highway-Where to use Multimedia-Introduction to Making Multimedia: The Stages of a Project-What You Need-Multimedia Skills and Training: The team-Macintosh and Windows Production platforms: macintosh Versus PC-The Macintosh Platform-the Windows Multimedia PC Platform-Networking Macintosh and Windows Computers-Hardware Peripherals: Connection-Memory and Storage Devices-input Devices-Output Hardware-Communication Devices.

UNIT-II

Basic Tools: Text Editing and Word Processing Tools-OCR Software-Painting and Drawing Tools-3-d Modeling and Animation Tools-Image-editing Tools-Sound Editing tools-Animation, Video and Digital Movie Tools-Helpful Accessories-Making Instant Multimedia: Linking Multimedia objects-Office Suites-Word Processors-Spreadsheets-Databases-Presentation Tools. Multimedia Authoring Tools:Types of Authoring Tools-Card and Page Based authoring Tools-Icon –Based Authoring Tools-Time –Based authoring tools-Object-Oriented Authoring Tools-Cross-platform Authoring Notes.

UNIT-III

Text: The Power Of Meaning-About Fonts and Faces-Using Text in Multimedia-Computer and text-Font Editing and design Tools-Hypermedia and Hypertext-Sound: The Power Of Sound-Multimedia Systems Sound MIDI Verses Digital Audio-digital Audio-Making MIDI Audio-Audio File Formats-Working With Sound On the Macintosh –Notation Interchange File Format(NIFF)-Adding Sound to Your Multimedia project-Toward Professional sound: The Red Book Standard-production tips.

UNIT-IV

Images: Making Still Images-Color-Image File Formats. Animation: The Power of Motion-Principles Of Animation-Making Animation that Work-video: Using Video-How Video works-Broadcast Video standards- Intergrating Computers and Television-Shooting and editing Video-Video tips-Recording Formats-Digital Video.

UNIT-V

Planning and Costing: Project Planning-estimating-RFPs and Bid Proposals-Designing-producing: Designing-Producing-Content and talent: Acquiring Content-Using Content Created by Others-Using Content created for a Project-Using Talent-Delivering: Testing-Preparing For Delivery-Delivering on CD-ROM-Compact Disc Technology-Wrapping It Up-Delivering On The World Wide Web.

Books for Study

1. TAY VAUGHAN, Multimedia: Making it Work, Fourth edition-Tata MCGraw Hill Edition,1999.
2. JOHN F KOEGEL BUFORD, Multimedia Systems Addison Wesley-First Indian reprint,2000.
3. WALTER WORTH JOHN A-Multimedia technologies and Application, Ellis Horwood Ltd.,London,1991.

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS**UNIT I**

Introduction – Evaluation of Artificial Intelligence production Systems – search strategies. Hill climbing – back tracking graph search(Algorithm A and A”) properties of A* algorithm. Monotone restriction specialized production systems- AO* algorithm.

UNIT – II

Searching game trees : Minimax Procedure alphabeta pruning – Introduction to predicate calculus. Answer extraction – Introduction to knowledge based systems – knowledge processing techniques – Knowledge inference techniques.

UNIT – III

Expert System definition- various stages in developing expert system- knowledge Representation using semantic ness, predicate calculus, frames, scripts-knowledge acquisition techniques – factors to be considered while expert systems.

UNIT – IV

Forward chining, backward chining- tools for developing an experts system- explanation facilities- meta knowledge-fuzzy reasoning.

UNIT – V

Building various expert systems – case study denral, mycin etc. Introduction to various applications of AI. Natural language processing- natural language understanding – perception – learning using neural nets.

Text Books

1. Elaine Rich, Artificial Intelligence, MC Graw Hill International.
2. PH. Winston, Artificial Intelligence, Addison Wessley.
3. Fredrick Hayes Roth, Donald A Waterman and Douglas B. Leant, Building Expert System, Addison Wessley,1983.

Reference Books

1. N. J. Nilson, Spring Verlag, Principles of AI.1983.
2. David W. Rolston, Principles of AI & Expert Systems Development, MC Graw Hill.
3. Donald A Waterman, A guide to expert systems.

MULTIMEDIA LAB

Using FLASH and PHOTOSHOP.

FLASH

1. Drawing a semi circle by snap tool, a sine wave, 24 spokes on a Wheel, Five pointed star using , a flower by changing the center coordinates.
2. placing a text along a curved path.
3. changing on objects shape using shape tweening, text tweening.
4. application using buttons, animating the button
5. tweening a using the shape hints, motion tweening
6. an application to show the masking effect in flash
7. slide show presentation (minimum 5 slides)
8. creating smudge effect for an image using hybrid tweening.
9. applications using action scripts
10. usage of textbox, dynamic text box, buttons with action scripts.

PHOTOSHOP

1. Working with the clone stamp tool
2. Drawing watch using custom shapes
3. Testing lab mode
4. Using multichannel mode
5. Using the sponge tool
6. Antique framing
7. Creating a supernova
8. Adding an arrowhead
9. isolating a complex image
10. Removing an element from an image
11. Captain kirk myopia effect
12. Adjusting the focus
13. Creating Transformations
15. correcting brightness and contrast.

RDBMS LAB

Create database and perform the operations given below using a menu driven program:
(a)insertion,(b)deletion,(c)modification,(d)generating a reports(simple)
for the following systems using visual basic as a front end and ORACLE 8.0 as a backend,

- 1.Payroll
- 2.Mark sheet processing
- 3.Savings bank account for banking
- 4.Inventory system
- 5.Invoice system
- 6.library information system
- 7.Student information system
- 8.Income tax processing system
- 9.Electricity bill preparation system
- 10.Telephone directory maintenance.

PROGRAMMING LANGUAGES

UNIT - I

Introduction: History of Programming Languages – Criteria for language Design – Character Set – BNF – Syntax Graphs – Reliability.

UNIT- II

Variables – assignment Statement – Binding time – Storage Allocation – Constants – Initialization expressions – control statements – labels – introduction to ada. Data types – type coercion and equivalence – Types on Ada. Binding – Scope – Extent – Ada and Scope.

UNIT - III

Parameter passing and evaluation – call by name – objects in a procedure – Aliasing – overloading - Generic function – co – routines.

Data Abstraction in MODULA, Euclid, Ada and SIMULA 67 - Abstract data types.

UNIT - IV

Exception handling design issues – PL/1, ON – Conditions – Exception Handling in CLU, MESA and Ada. Semaphores – Monitors and Message Passing – concurrency in Ada.

UNIT - V

Function Programming – Basis of LISP – LIST interpreter – FUNARG. And FEXPRs PROG Feature – Delayed Evaluation. Data Flow Model – Language Design Goals – VAL – A data flow programming language.

Books for Study

1. E.Horowitz – Fundamentals of Programming Languages 2nd Edition – Galgotia Publications.
2. R.D.Tennent – Principles of Programming languages, Prentice Hall, 1981.

INTERNET AND WEB APPLICATION**UNIT – I**

Internet Basic- Introduction to HTML – List – Creating Table – linking Document – frames Graphics to HTML Doc – style Sheet basic – Add style to document – Creating Style Sheet Properties – Text – List – Color and background color – Box – Display properties.

UNIT – II

Introduction to Java Script – Advantage of Java Script Syntax – data type – Variable – Array – Operator and Expression – Looping constructor – Function – Dialog box.

UNIT – III

JAVA Script document object model – introduction – Object in HTML – Event handling – Window Object – Document object – Browser object – From Object- Navigator object – Screen object build in Object - user defined object
Cookies.

UNIT – IV

Internet concepts – Inter Services – type of Accounts – media for Internet – ISP – TCP/IP and connection Software – Disconnecting from the internet. Dial – up – Networking – setting up and internet connection – testing connection – Contenders – Issues in High – speed Connection – Connecting – via ISDN, ADSL and Cable modem – intranets – components of an Internet – Steps for creating Intranet – Maintenance – Connecting LAN to Internet.

UNIT – V

E- mails – Downloading E- mails – signatures and Stationery – Web Based E – mail – Email tasks – Outlook Express – Sending and Receiving files using Eudora- Outlook Express and Pine Multiple e- mail accounts – Sending from letters- formatting e-mail - E – mail mailing lists. Form of chat and conferencing – Internet Relay chat (IRC) – chatting in Microsoft Chat and v.chat – Starting and managing a channel – Web – Based Chat – Direct Chat systems – MUDs, MOOS and mussels – voice and video conferencing – Netscape navigator and communicator - Microsoft Internet Explorer.

Books for Study

1. I. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, Java Script, perl CGI, BPB Publications, 2000
2. J. J aworski, mastering Java Script , BPB Publications,1999
3. Margaret Levine Young – Internet – the Complete Reference – Millennium Edition – TMT Edition – 1999.
4. Harley Hahn – the Internet – completes Reference – Second Edition – TMH Edition.

E - COMMERCE

UNIT – I

Overview of electronic commerce: Introduction – Definition of electronic commerce – Potential benefits of electronic commerce – Internet and www as enablers of electronic commerce – Impact of electronic commerce on business models – Electronic commerce security – Organization of topics – Implication for the accounting.

Electronic commerce and the role of independent third parties: Introduction – Consulting practices and accountants – Independence – CPA vision problem – New assurance services identified by the aicpa – Impact of Electronic commerce on the traditional assurance function – third party Assurance of web based electronic commerce – Implications for the accounting. Regulatory environment: Introduction – Cryptography issues – privacy issues – web linking – domain name disputes – Internet sales tax – Electronic agreement and digital signature – internet service providers and international libel laws - implications for the accounting.

UNIT – II

Edi electronic commerce and Internet: Introduction – Traditional Edi system – Data transfer and standards – financial Edi – Edi system and the internet – Impact of Edi Internet applications on the accounting profession.

Risks of insecure system : Introduction – Overview of risks associated with internet transactions – Internet associated risk – Internet associated risk – social engineering – risks associated with business transactions – Risks associated with confidentially maintained archival – master file and reference data – risks associated with virus and malicious – Implication of the accounting .

Risks management: Introduction – Control Weakness Vs control risks – Risk management paradigm – Disaster recovery plans – implications of the accounting.

UNIT – III

Internet security standards: Introductions – Standard setting issues and Committees – Security committees and organization- Security protocols and languages – Messaging protocols – Secure electronic payments and protocols – the role of accountants in internet related standard setting process. Cryptography and authentication: Introduction – Message security issues Encryption techniques – key management- Additional authentication methods – Additional non – repudiation techniques – implications of the accounting.

UNIT – IV

Firewalls: Introduction – firewall defined – TCP/IP- Open system interconnect (OSI) – Components of firewall – typical functionality of firewalls 0 network topology – securing the firewall factors consider in firewall design – In – House solution Vs Commercial firewall software – Limitations of security prevention provided by firewall Implications of the accounting – Introduction – the set protocol – Magnetic strip cards – smart cards – Electronic check – Electronic cash – Implication of the accounting.

UNIT – V

Intelligent Agent: Introduction – Definition of intelligent agent – Capabilities Of intelligent agent – level of agent sophistication – Agent societies – intelligent agents and electronic commerce – Online information Chain – limitations agents – implication of the accounting.

Web based marketing: Introduction – the scope of marketing – business marketing and information technology – strategy congruence – the four Ps applied to internet marketing – the fifth “P” personalization – internet marketing techniques – Online adv Mechanisms – Web site design issues – intelligent agent and their impacts on marketing techniques – Implications of the accounting.

Books for Study

1. MARILYN GREENSTEIN, TODD.M.FEINMAN, “electronic Commerce”-TMH.
2. KALAKOTA & WINSTON, Frontiers of Electronic Commerce – Addison Wasley, fifth Indian reprint, 2000.

DATA COMMUNICATION NETWORK

UNIT - I

Introduction to Data Communication, Network, Protocols & standards and standards organizations – Line Configuration – Topology – transmission mode – Classification of Network – OSI Model- Layers of OSI Model.

UNIT – II

Parallel and Serial Transmission – DTE/DCE/such as EIA – 449, EIA -530, EIA - 202 and x.21 interface – Interface standards – modems – Guided media – Unguided Media – Performance – Types of ~; error Detection – error Corrections.

UNIT – III

Multiplexing – type of Multiplexing – multiplexing Application – Telephone system – Project 802- Ethernet – token Ring – FDDI- IEEE 802.6- SMDS – Circuit Switching - Packet Switching – message switching – connection Oriented and Connectionless services.

UNIT – IV

History of Analog and Digital Network – Access to ISDN – ISDN Layers- Broadband ISDN – x.25 Layers – Packet Layer Protocol –ATM – ATM Topology – ATM Protocol.

UNIT – V

Repeaters – 8 ridges – Routers – Gateway – Routing algorithms – TCP/IP Network, transport and Application Layers of TCP/IP- World Wide Web.

Books for Study

1. Behrouz and Forouzan – introduction to Data Communication and Networking – 2nd Edition – TMH- 2001.
2. Jean Walrand – communication Networks (a first course)- Second Edition -WCB/McGraw Hill – 1998.

SEMESTER VI

PAPER CODE: SHCS8605

OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT – I

System Development – Object Basics – Development Life Cycle – Methodologies- Patterns – Frameworks – Unified Approach-UML.

UNIT – II

Use – Case Models – object Analysis – object relations – attributes – methods – Class & Object responsibilities – case Studies.

UNIT – III

Design process - Design Axioms – class Design - Object Storage – Object Interoperability- Case Studies.

UNIT – IV

User inter face Design – view layer classes – Micro level Processes – View layer Interface – Case Studies.

UNIT – V

Quality Assurance Tests – Testing Strategies – Object orientation on testing – Test cases – Test plans – Continuous is testing – Debugging Principles- System usability- Measuring User Satisfaction – case studies.

Books for Study

1. GRADY BOOCH, Object Oriented Analysis and Design – Addison Wesley, 2000.
2. ALI BAHRAMI, Object Oriented systems Development McGraw Hill International Edition, 1999.

WEB AND INTERNET LAB**Web Application**

1. Create a simple page introducing yourself, how old you are ,what You like and dislike. Modify the introduction to include a bullet list of what you do and put list the 5 things you like most and dislike as numbered lists. Create another page about favorite hobby, and put s quote on one of your pages.
2. Put an existing image on a web page. Create a table, use a heading And at least one use of row span/col span. Color a page and some Text within the page.
3. Create a new file called index.html.
 - i. Put the normal HTML document tag in the file. Give it a title.
 - ii. At the bottom of the page (i.e. the last thing between the body tags) put the following.
 - iii. A horizontal rule.
 - iv. A Link to your email address (with your name between the tag) remember to put the link to email address tags.
 - v. A line break.
 - vi. The Data. (Have this same structure at the bottom of this page).
 - vii. Above this block (which is called the footer), put a title in heading tags.
 - viii. Add some text describing yourself. (You can sprit this into multiple headings and paragraphs if you wish).
4. Write a script to create an array of 10 elements and display its contents.
5. Write a function in java Script that takes a string and looks at it character.
6. Create a simple calculator using fields. Have two fields for Number entry & one field for the result. Allow the user to be able to use plus, minus, multiply & divide.
7. Create a document and add a link to it. When the user moves the Mouse over the link, it should load the linked document on it own. (User is not required to click on the link).

8. Create a document, which opens a new window without a toolbar, Address bar, or a status bar that unloads itself after one minute.
9. Create a document that accepts the user's name in text field form And displays the next time when the user visits the site informing Him that he has accessed the site for the second time, and so on.
10. Create a web form for an online library. This form must be able To accept the membership Id of the person borrowing a book, the Name of the book's author. On submitting the form, the user (the Person borrowing the book) must be thanked and informed of the Date when the book is to be returned. You can enhance the look Of the page by using various ASP.NET controls.

Internet Application

1. Creating an E-mail ID Using Yahoo.com
15. creating a text file and send to E-mail
16. Down loading files, text, picture from E-mail
17. Checking E-mail
18. Searching – Search Engine
19. Inserting a text file into web
20. Composing a E-mail
21. Sending a group of members to different user.
22. Chating
23. Voice & video conference

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MINI PROJECT

Each student will develop and implement an individually developed application software based on any of the latest technologies.