Course Structure of Bachelor of Computer Applications

Semester – I

S.No.	Course Code	Course Name	Credits (L T P)
1.	LNG 301	Structured and Spoken English	3(2+1+0)
2.	GPT 301	Moral & Value Education	2(2+0+0)
3.	MAS- 341	Foundation Course in Mathematics	4(4+0+0)
4.	BAM 327	Business Communication	3(2+1+0)
5.	ECE 310	Basic Electronics	4(2+1+2)
6.	CSIT 404	Problem Solving & Programming in C	5(2+1+4)
7.	CSIT 405	Fundamentals of Computer Science	4(2+1+2)
8.	CSIT 409	Principles of Programming Languages	4(3-1-0)

Semester – II

S.No.	Course Code	Course Name	Credits (L T P)
1.	MAS 461	Numerical & Statistical Computing	4(3+0+2)
2.	ENV 415	Environmental Studies-I	2(2+0+0)
3.	BAM 213	Principles of Management	3(2+1+0)
4.	CSIT 406	Fundamentals of Computer Organization	4(3+1+0)
5.	CSIT 407	Algorithms & Data Structures through C	5(3+1+2)
6.	CSIT 417	Fundamentals of Operating System	5(3+1+2)
7.	CSIT 426	Data Communication	4(3+1+0)

Semester – III

S.No.	Course Code	Course Name	Credits (L T P)
1.	BAM 302	Principles of Accounting	3(2+1+0)
2.	BAM 317	Organization Behaviour	3(3+0+0)
3.	MAS 621	Discrete Mathematics	3(3-0-0)
4.	ENV 416	Environmental Studies-II	2(2+0+0)
5.	CSIT 408	Fundamentals of Database Management System	4(3-1-0)
6.	CSIT 416	System Analysis and Design	3(2+1+0)
7.	CSIT 418	Information Security	2(2-0-0)
8.	CSIT 503	Object Oriented Systems	5(3+1+2)

SEMESTER – IV

S.No.	Course Code	Course Name	Credits (L T P)
1.	BAM 431	Financial Management	4(3+1+0)
2.	CSIT 423	Programming with Java	5(3-0-4)
3.	CSIT 504	Internet and Web Technologies	5(3+0+4)
4.	CSIT 505	Relational Database Management System	4(2+1+2)
5.	CSIT 511	Principles of Computer Network	5(3-1-2)
6.	CSIT 515	Principles of Software Engineering	4(3-1-0)

Semester – V

S.No.	Course Code	Course Name	Credits (L T P)
1.	BAM 544	Management Information System	3(2-1-0)
2.	CSIT 506	Principles of Artificial Intelligence	4(3-1-0)
3.	CSIT 507	Computer Graphics and Multimedia	5(3+1+2)
4.	CSIT 510	.NET Framework and C#	5(3+1+2)
5.	CSIT 517	Computer Architecture	4(3+1+0)
6.	CSIT 641	XML Applications	4(3+1+0)
7.	CSIT 699a	Project (Project Formulation)	2(0+0+4)

Semester – VI

S.No.	Course Code	Course Name	Credits (L T P)
1.	CSIT 522	Data Warehousing	4(3-1-0)
2.	CSIT 601	Linux and Shell Programming	5(3+1+2)
3.	CSIT 602	Latest Trends in IT	4(3+1+0)
4.	CSIT 609	Enterprise Resource Planning	4(3-1-0)
5.	CSIT 699b	Project (Project Execution and Report)	6(0+0+12)

Structured and Spoken English

Code: LNG 301 **Credit: 3(2+1+0)**

Grammar:

- Use of Articles and Prepositions
- Figures of Speech
- Idioms and Phrases
- Vocabulary
  - Synonyms
  - Antonyms
  - One word Substitution
  - Homophones and Homonyms
- Punctuations

Composition:

- Letter Writing
- Application Writing
- Précis
- Eassy Writing
- Report Writing (With special stress on Scientific / Technical Reports)

References:

Wren and Martin, “High School English Grammar and Compositions”

T.P Mishra and M.C Gupta, “A new style to General English”

Dr.RaghunathThilak, “Letter Writing and Secretarial Practice”

Moral & Value Education

Code: GPT 301 **Credits: 2(2+0+0)**

My country and my people, the many Indians, being and becoming an Indian, Nationalism and Internationalism.

Some life issues – Love, Sex, and Marriage: Men and money-value of time, Meaning of work, human communication, Human suffering, Addiction, Ecology, Women's Issues

Understanding one's neighbour, neighbourhood groups: their structure and functions, patterns of social interaction of group dynamics

Preparation of career, choice of vocation, motivation for study and research, the present education system, curriculum and syllabus, teaching methods, examination and work experience

Definition of value education, moral and ethics, laws and morale based on Ten Commandments and two grate commandments

Discovery of self, self awareness, growth of intellect-man's spiritual nature emotions, will, respect the rights of life, Liberty, Property, Truth reputation

Sin, Origin of Sin, Manifestation of Sin, Results of Sin, The remedy of sin, Sin as an act, Sin as a state, Sin as a nature

Conscience-as defined in Oxford dictionary and Winston dictionary, types of consciousness (Such as evil, Convicted, Purged, Pure, Weak, Good, Void of offence)

Foundation Course in Mathematics

Code: MAS 341 **Credits 4(4+0+0)**

ALGEBRA

Elementary concepts of set – Theory: Types of sets, their representation by Venn – Diagrams.

Theory of quadratic & cubic equations, Sequence & Series: Arithmetic, Geometric & Harmonic Progressions (elementary problems only). Matrices: types, addition, subtraction, multiplication, adjoint and inverse. Evaluation of Determinants using their properties.Solution of homogeneous & non-homogeneous equations. Binomial-Theorem (for +ve index), Elementary-concepts of Permutations and Combinations and Probability

TRIGONOMETRY

Trigonometrical-ratios, Sum & difference relations of two angles, expression of product of ratios as their sum and difference of angles, Relation of multiple and sub-multiple angles, Complex numbers, De-Movires Theorem and elementary problems based on it.

DIFFERENTIAL CALCULUS

Functions, Limit, Continuity and Differentiability, Differential-Co-efficient of standard functions (algebraic, trigonometrical, Exponential, logarithmic etc), rules for differentiation, Differentiation of composite, inverse, implicit and parametric functions, Higher order derivatives

INTEGRAL CALCULUS

Indefinite integration, Integration by substitution, parts and partial-fraction, Integration of rational, irrational and Trigonometric functions, Definite- Integration and its properties.

VECTOR ALGEBRA

Vectors and Scalar quantities, identification, Linear-operations in vectors, Dot & Cross Products

COORDINATE GEOMETRY (2 DIM)

Standard equations of curves and their identifications.

References:

Hall and Night, “Algebra”

S.L Loney, “Trigonometry”

S.L Loney, “Co-ordinate Geometry”

Gorakh Prasad, “Differential Calculus and Integral Calculus”

Matambar&Sengar, “Vectors”

Business Communication

Code: BAM -327 **Credit: 3(2+1+0)**

- Concept of Communication
- Communication Process
- Barriers to Communication
- Written Communication-formal Reports, Technical report, Business Correspondence, Notices, research Papers.
- Oral Communication- Dyadic Communication, Meetings, Seminars & Conferences, G.D. Audio and Visual Aids.
- Non-Verbal Communication-Personal Appearance, Postures, Gestures, Facial Expressions, Eye Contact.

References:

Lesikar& Pettit, “Business Communication+

BASIC ELECTRONICS

CODE: ECE-310 **CREDITS 4 (2-1-2)**

1. Energy Bands in Solids:

Energy band theory of solids, Concept of forbidden gap, Insulators, Metals and Semiconductors.

2. Transport Phenomenon in Semiconductors:

Mobility and conductivity, electrons and holes in an intrinsic semiconductor, Donor and acceptor impurities, Fermi level, carrier densities in semiconductor, electrical properties of semiconductor, Hall effect, Diffusion.

3. Junction Diode:

P-N junction, depletion layer, V-I characteristics, diode resistance, capacitance, switching time, diode application as a rectifier (half wave and full wave), diode circuits (clipper, clamper, voltage multipliers) Breakdown mechanism, Zener& Avalanche, breakdown characteristics, Zener diode and its applications.

4. Bi-junction Transistor:

Bipolar junction Transistor, CE, CB and CC configuration, characteristic curves (cut off, active and saturation region), Requirement of biasing, biasing types and biasing analysis, stability.

5. Transistor as an Amplifier:

Graphical analysis of CE amplifier, concept of voltage gain, current gain and power gain, h-parameter (low frequency), computation of A_v, R_I, R_o and approximate formulae.

6. Operational Amplifiers:

Concepts of ideal op-amp, inverting, non-inverting and unity gain amplifiers, adders, difference amplifiers. , Integrators.

7. Switching Theory & Logic Gates:

Number systems, conversion of bases, Boolean algebra, Logic Gates, concept of universal gate, canonical forms, and minimization using K-map.

8. Electronic Instruments:

Multimeter, CRO and its Applications.

References:

1. Boylestad&Nashelsky/Electronic Devices & Circuits/ PHI.
2. Morris Mano/Digital Computer Design/ PHI.
3. Milliman, J. Halkias/Integrated Electronics/TMH.
4. Malvino& Leach/Digital Principles & Application/

List of Experiments:

1. Study of Diode characteristics.
2. Study of Common Base Transistor characteristics.
3. Study of Common Emitter Transistor characteristics.
4. Study of Half Wave Rectifier with effect of Capacitor and also calculate the ripple factor.
5. Study of Full- Wave Rectifier with effect of Capacitor and also calculate the ripple factor.
6. Study of Various Logic Gates.
7. Study of Clipping and clamping Circuits.
8. Study of C.R.O., Function generator, Multimeter.

PROBLEM SOLVING & PROGRAMMING IN C

Code: CSIT 404 **Credits: 5(2+1+4)**

Unit – I

Introduction: History of 'C' language, Algorithms and Flowcharts, Developing algorithm and flowchart for simple problems.

'C' basics: character set, Identifiers & keywords, Data types, Constants, Variables, Operators, Symbolic constants, Expressions, Compound statements, Structure of C program. Input and Output Statements.

Unit – II

'C' constructs: if statements & its forms, goto statement, while statement, for statement, do…while statement, break and continue statement, nesting concepts, switch statement.

Unit – III

Arrays: definition, types of Arrays, declaring Arrays, i/o operations on Arrays.

Functions: basics of functions, applications, function declaration, definition, scope, parameter passing and recursion.

Unit – IV

Pointers: definition, applications of pointers: pointer to Arrays, call by reference in functions.

Character Handling: Strings, standard library string functions, and two-dimensional array of characters, array of pointers to strings.

Unit-V

Structures: basics of Structures, Structure and Functions, pointers to structures, union.

File handling: file concepts, file creation, I/O operations on files, file functions, working with text files

TEXT:

1. YeshwantKanetkar, "Let us C", BPB Publications, 2002
2. B. Kernighan & D. Ritchie, " The ANSI C programming Language", PHI, 2000

REFERENCES:

1. E. Balaguruswamy, "Programming in ANSI C", TMH, 1999
2. AI Kelly and Ira Pohl, " A Book in C", (4th Edition), Addison Wesley, 1999.
3. R.G. Dromey, "How to solve it by computer", PHI, 1992

FUNDAMENTALS OF COMPUTER SCIENCE

CODE: CSIT-405 **Credits : 4(2+1+2)**

UNIT-1

Introduction to Computers: Need and Role of computers, Definition, Characteristics and Applications, Generations of Computer, Hardware: Basic block diagram, CPU, Primary and Secondary storage devices and I/O Devices.

UNIT-2

Information Concepts: Data and its representation, Information and its characteristics, Categories of information, Levels of information. Data storage and retrieval.Concept of file, record and field.

Number System: Basic concepts, Binary, Octal, Decimal, and Hexadecimal numbering system, conversion from one system to another.

UNIT-3

Introduction to Software: Definition, Types of Software, System software: Operating System, Functions of OS, Overview of DOS, Windows and Linux.

Application software: Word Processor, MS-Excel. Database concepts, Flat file versus Database.

UNIT-4

Computer Languages: Definition, Generations of computer languages, Types of Languages, Language Translators: Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs, Algorithm & flowchart.

UNIT-5

Computer Network Concepts: Introduction to Computer Networks, History and usage of Internet, Browser and its types, Domain Name System (DNS), WWW, Electronic Mail (e-mail) , Search Engines and Intranets**.**

Text Book:

P.K. Sinha& P. Sinha, “Foundation of Computing”, BPB

Chanchal Mittal, “Computer and Languages with C”, PragatiPrakashan

References:

V. K. Jain, “Fundamentals of IT and Computer Programming”, Katson Books

S. Sagman, “Microsoft Office 2000 for Windows”, Pearson

Yashavant P. Kanetkar “Unix Shell Programming”, BPB

Practical List:CODE: CSIT 405

1. **DOS commands:**
   Internal DOS Commands: MD, CD, DIR, TIME, DATE, DEL, TYPE, EDIT, COPY, EXIT, PATH, PROMPT, REM, REN, VER.

   External Dos Commands:ATTRIB, BACKUP, CHKDSK, COMP, DEBUG, DISKCOPY, DOSKEY, HELP, XCOPY, SHUTDOWN, SYSTEMINFO, UNDELETE.

2. Working with Windows Operating System.

3. Working with **MS-Word**:
   -Getting familiar with various tool bars.

   -Tables and Columns

   -Mail merge

   MS-Excel:

   -Working with Spreadsheets

   -Generating Charts

   -Creating Macros

   MS-PowerPoint:

   -Preparation/Presentation of Slides

4. **Exploring Internet:** WebPages, Website, Browser, URL, Surfing, Searching, creating mail accounts.

5. **Basic Linux Commands:** LS, DF, RM, PASSWD, CAL, DATE, TOUCH, FILE, CUT, CAT, WHO, VI, MORE, CLEAR, CP, MV, MKDIR, CD, RMDIR. EXIT, ED.

PRINCIPLES OF PROGRAMMING LANGUAGES

Code: CSIT 409 **Credits: 4 (3 –1-0)**

Unit -I

Introduction: Characteristics of Programming Languages, Factors influencing the evolution of programming language, developments in programming methodologies, desirable features and design issues. Programming Language Processors: Structure and operations of translators, software simulated computer, syntax, semantics, structure, virtual computers, binding and binding time.

Unit -II

Elementary and Structured Data Types: Data object variables, constants, data types, elementary data types, declaration, assignment and initialization, enumeration, characters, strings. Structured data type and objects: Specification of data structured types, vectors and arrays, records, variable size data structure, pointers and programmer constructed data structure, Sets, files. Sub Program and programmer defined data types: Evolution of data types, abstractions, encapsulations, information hiding, sub programs, abstract data types.

Unit -III

Sequence Control: Implicit and Explicit sequence control, sequence control with and within expression and statements, recursive sub programs, exception handling, co routines, Scheduled sub programs, concurrent execution.

Unit -IV

Storage Management: Major run time requirements, storage management phases, static storage management - stack based, heap based.

Syntax and translation: General syntactic criteria, syntactic elements of a language, stages in translation, formal syntax and semantics.

Unit -V

Programming Environment: Embedded system requirements, Theoretical models, Introduction to Functional Programming, Lambda calculus, Data flow language and Object Oriented language.

Text Book(s):

Terrance W Pratt, "Programming Languages: Design and Implementation" PHI

Reference Books :

1. Sebesta, "Concept of Programming Language", Addison Wesley
2. E Horowitz, "Programming Languages", 2nd Edition, Addison Wesley
3. Dr. Sachin Kumar, " Paradigms of Programming", Katson Books
4. UditAgrawal, " Paradigms of Programming Languages", DhanpatRai& Co.

Semester II

Numerical & Statistical Computing

Code: MAS 461 **Credits: 4(3+0+2)**

Introduction: Errors in Numerical Computation, Mathematical Preliminaries, Errors and their Analysis, Machine Computations, Computer Software.

Algebraic & Transcendental Equation: Bisection Method, Iteration Method, Method of False Position, Rate of Convergence, Method for Complex Root, Newton Raphson Method.

Interpolation: Introduction, Errors in Polynomial Interpolation, Finite Differences, Decision of Errors, and Newton's Formulae for Interpolation.

Curve Fitting, Cubic Spline & Approximation: Introduction, Method of Least Square Curve Fitting Procedures, Fitting a Straight Line, Approximation of functions.

Numerical Integration &Differentiation : Introduction, Numerical differentiation, Numerical Integration, Trapezoidal Rule, Simpson 1/3 Rule, Simpson 3/8 Rule.

Statistical Computation: Frequency Chart, Correlation, Regression Analysis, Least Square Fit, Polynomial Fit, Linear & Non Linear Regression, Multiple Regressions, And Statistical Quality Control Methods.

References:

1. Jain, Iyengar, Jain, "Numerical Methods for Scientific & Engineering Computation", New Age International.
2. Balaguruswamy, "Numerical Methods", TMH.
3. Sastry, "Introductory Method of Numerical Analysis", PHI.

Practical List:

1. To deduce error involved in polynomial equation.
2. To Find out the root of the Algebraic and Transcendental equations using Bisection, Regula-falsi, Newton Raphson and Iterative Methods. Also give the rate of convergence of roots in tabular form for each of these methods.
3. To implement Newton's Forward and Backward Interpolation formula.
4. To implement Gauss Forward and Backward, Bessel's, Sterling's and Evertt's Interpolation formula
5. To implement Newton's Divided Difference and Lang ranges Interpolation formula.
6. To implement Nuumerical Differentiations.
7. To implement Numerical Integration using Trapezoidal, Simpson 1/3 and Simpson 3/8 rule.
8. To implement Least Square Method for curve fitting.

Environmental studies- I

Code :ENV- 415 **CREDIT- 2 (2+0+0)**

i. The Multidisciplinary Nature of Environmental Studies

Definition, Scope and Importance

ii. Ecosystem

- Concept of an Ecosystem
- Structure and function of an Ecosystem
- Producers, consumers and decomposes
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, Characteristics features, structures and function of the following ecosystems:

(a) Forest Ecosystem
(b) Grassland Ecosystem
(c) Desert Ecosystem
(d) Aquatic Ecosystem (Ponds, streams, lakes, rivers, oceans, estuaries)

(ii) Social Issues and the Environment

- From Unsustainable of sustainable development
- Urban problems related to energy
- Water conservation, rain water harvesting, Water shed Management
- Resettlement and rehabilitation of people; Its problems and concerns Case studies
- Environmental ethics: Issues and possible solutions
- Climate Change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Case studies
- Wasteland reclamation
- Consumerism and waste products
- Environment Protection Act
- Air (Prevention and Control of Pollution) Act
- Visit to local polluted site- Urban/ Rural/ Industrial/ Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems- ponds, river, Hill slopes etc (Field work equal to 5 lecture hours)
- Issues involved in enforcement of environmental legislation; Public awareness.

Principles of Management

Code: BAM – 213 **Credit 3(2+1+0)**

- Nature and Functions of Management
- Development of Management Thought
- Co-ordination
- Planning
- Decision Making
- Organizing
- Delegation of Authority
- Staffing, Training & Development
- Direction
- Communication
- Leadership
- Controlling

Text Book Recommended:

- Essentials of Management – Koontz & Weirich
- Principles and Practices of Management – L. M. Prasad
- Management – Stoner, Gilbert & Freeman

Fundamentals of Computer Organization

Code: CSIT 406 **Credits: 4(3+1+0)**

UNIT-I

Introduction to Computers: Analog, Digital, Hybrid and Modern Digital Computers.

Digital Logic circuits and Components: Logic gates, Boolean algebra, K- maps, Half Adder, Full Adder, Coder, Decoder, Multiplexer, Demultiplexer, Flip-flop, Counters, Registers, Basic design of ALU.

UNIT-II

Data Representation: Data types, Complements, Fixed Point Representation, Floating Point Representation, Error Detection codes.

UNIT III

Register Transfer and Microperations: Register Transfer language, Bus and memory Transfer, Binary Adder, Binary Subtracter, Binary Adder – Subtracter, Binary Increment, Binary Decrement, Arithmetic Circuit, Addition and Subtraction Algorithms.

UNIT IV

Memory and Processor Organization: Memory Hierarchy, Main Memory (RAM & ROM) Associative memory, cache memory, Auxiliary memory, General Register Organization, Stack Organization, Addressing modes, Instruction Formats. RISC and CISC.

UNIT V

Introduction to Classification of Computers and Concepts of Pipeline : Flynn's Classification, Parallel Architecture Classification, Pipelining of processes.

Text Book:

Computer System Architecture – M. Mano, Pearson Ed.

Reference Books:

Digital circuits and Logic Design - M.Mano, Pearson Ed.

Digital Logic – T.C. Bartee ,Mcgraw Hill

William Stalling, "Computer Organization & Architecture", Pearson education Asia

Algorithm & Data Structure through 'C'

Code: **CSIT-407** Credits**: 5(3+1+2)**

Unit –I

Algorithm: Introduction, Characteristics, Notation and format conventions of Algorithms, Algorithm Complexity and Time-Space trade-off.

Data Structure: Definition and classification of data structures, description of various data structures.

Arrays: Definition, Representation and analysis, Single and Multidimensional Arrays, Application of Arrays.

UNIT-II

Stack: Basic concepts and operations. Implementation: sequential and linked representation. Applications: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression.

Queue: **Basic concepts and operations. Implementation: sequential and linked representation. Introduction to double ended Queues and Priority Queues. Applications of Queues.**

UNIT-III

Linked List: **Basic concepts and operations. Types of linked lists: Singly linked, Circular linked list, Doubly Linked list, and circular doubly linked list. Application of linked lists**

UNIT-IV

Binary Trees: Definition, terminology and Applications of Binary Tree. Representation and Basic operations of binary tree.Traversal algorithms. Binary Search Trees: BST

UNIT-V

Sorting: Notation, concepts and algorithms: Selection, Bubble, Merge and Quick Sort.

Searching: Basic search techniques: Sequential and Binary searching

Graphs: **Basic concepts, Representation and traversal algorithms: Breadth first search, Depth first search. Introduction of spanning trees, Applications of Graphs.**

Text Books :

A.M.Tenenbaum& M.J. Augenstein, "Data Structures using C&C++", PHI

Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd.

References:

Jean – Paul Trembley G. Sorenson, "Introduction of Data Structure with Applications",. TMT

RajniJindan, "Data Structures", Umesh Publications N.Delhi.

G.S. Baluja, " Data Structures Through C", DhanpatRai& Co.

Practical List :

Write Program in C for following:

- Sorting programs: Bubble sort, Merge sort, Insertion sort, Selection sort, and Quick sort.
- Searching programs: Linear Search, Binary Search.
- Array implementation of Stack, Queue, Circular Queue, Linked List.
- Implementation of Stack, Queue, Circular Queue, Linked List using dynamic memory allocation.
- Implement infix to postfix conversion and evaluation of postfix expression
- Implementation of Binary Search Tree and traversal algorithms (inorder, preorder, postorder)
- Implementation of Graph and traversal algorithms (BFS, DFS).

Fundamentals ofOperating Systems

Code: CSIT 417 **Credits: 5(3+1+2)**

UNIT -I

Introduction: Evolution of Operating System, Types of Operating System: Batch Processing, Multiprocessing, Time-sharing, Client Server, Distributed.

Linux OS: Introduction, Vi editor, commands, shell programming.

UNIT- II

Process Management: Process concepts, Process scheduling, Inter-process Communication. Process Synchronization: Critical Section Problem, Semaphores, classic problem of synchronization.

UNIT- III

CPU Scheduling: Scheduling concepts and criteria, Scheduling algorithms, Algorithm evaluations, Multiple processor scheduling.

Deadlock: Deadlock problem, Deadlock Characterization, Methods for handling deadlocks, Deadlock Prevention and Avoidance, Deadlock Detection and recovery.

UNIT -IV

Memory Management: Introduction, Swapping, Paging, Segmentation, Segmentation with paging. Virtual memory: Concept, Page replacement, Allocation of frames.

File System: File Concept, File-system structure, Access methods, Directory structure, File sharing and protection,

UNIT- V

Unix / Linux: History, shell programming, system administration, Vi Editor and other command level details of UNIX, Design principles: File system, I/O System, Inter process communication.

UNIT- V

Case study of Linux Operating System: History, Design principles, process management, Scheduling, Memory management, File System, System calls.

Text Book :

1. Shilberschatz, “Operating System Concept”, John Wiley & Sons (Asia) Pvt Ltd .

References:

1. Milan Millenkovic, “Opreating System”, TMH

2. A.S. Tanenbaum, ” Operating System”, Pearson

Note: You are requested to moderate the following practical list and submit the amended list to the office of HoD, DCS&IT, on or before 30 July 2009.

Practical List:

1. Simulation of the CPU scheduling algorithms a) Round Robin b) SJF c) FCFS d) Priority
2. Simulation of MUTEX and SEMAPHORES.
3. Simulation of Bankers Deadlock Avoidance and Prevention algorithms.
4. Implementation of Process Synchronization (Reader-Writer, Sleeping Barber and Dining Philosopher's Problem)
5. Simulation of page Replacement Algorithms a) FIFO b) LRU c) LFU
6. Simulation of paging techniques of memory management.
7. Simulation of file allocation Strategies a) Sequential b) Indexed c) Linked
8. Simulation of file organization techniques a) Single Level Directory b) Two Level c) Hierarchical d) DAG

Data Communication

Code: CSIT 426 **Credit:4(3-1-0)**

UNIT I :INTRODUCTION

Communication model, Data Communication, Data Communication Networking, TCP/IP Protocol Suite, OSI reference model.

UNIT II:DATA TRANSMISSION AND DATA ENCODING

Analog and Digital signals, Transmission impairments, Data rate, Noiseless channel and nosiy channel, Digital Transmission, Digital-to digital conversion, digital to analog conversion, Analog Transmission, Digital to analog conversion and analog to analog conversion

UNIT III: TRANSMISSION MEDIA

Guided Transmission media: Twisted pair, Optical Fibers, Wireless Transmission: radio waves, Microwaves, Infrared

UNIT IV DATA COMMUNICATION INTERFACE AND MULTIPLEXING

Asynchronous and Synchronous Transmission, Frequency Division Multiplexing, Wavelength Division Multiplexing, Synchronous Time Division Multiplexing, Statistical Time Division Multiplexing, Spread Spectrum

UNIT V DATA LINK CONTROL

Flow control (Stop and Wait Flow control and Sliding Window Flow control), Error Detection and correction, Error Control (Stop and Wait, Go back-N, Selective Reject ARQ), High Level data Link Control

Books :

1. Behrouz Forouzan, Introduction to data communication and networking, TMH.
2. William Stallings, Data and computer communication, Pearson

Semester III

Principles of Accounting

Code: BAM – 302 **Credit 3(2+1+0)**

- Meaning, Scope & Objectives of Accounting
- Principles of Accounting: Concepts & Conventions
- Journalizing Transactions
- Ledger, Subsidiary Books of Accounts Including Cash Book
- Bank Reconciliation Statement ™ Rectification of Errors
- Trial Balance
- Preparation of Final Accounts: Trading Account, Profit & Loss Account, balance Sheet, Capital and Revenue Expenditure & Income
- Depreciation

Text Book Recommended:

Modern Accountancy – Mukherjee & Hanif

Advanced Accountacy – Jain & Narang

An Introduction to Accountancy – S. N. Maheshwari & S. K. Maheshwari

ORGANIZATION BEHAVIOR

Code: BAM 317 **Credits : 3(3-0-0)**

- Nature of Organizational Behavior
- Theories of Organizational Behavior
- Organizational setting
- Group dynamics & organizational behavior
- Conflict Resolution & Intergroup Behavior
- Communication & Group Decision Making
- Leadership
- Management of Change
- Organizational Development Process
- ReamBuilding
- Organizational Climate & Culture
- Motivation
- Industrial Behavior : Ability, Personality, Attitude, Attitude Learning, Perception.

Text Books:

1. Organization Behavior - S.P. Rabbinbs
2. Organization Behavior - Luthans

References Books:

1. Jit S Chandan "Organizational Behavior", Vikas
2. M.N. Mishra :Organization Behavior", Vikas
3. Arnold, John, Robertson, Ivan 1. and Cooper, Cary, I.," Work Psychology:understanding human behavior in the workplace", Macmillan India Ltd., Delhi. 1996.
4. Dwivedi, RS., Human relations and organizational behavior: a global perspective, Macmillan India Ltd., Delhi, .1995.

DISCRETE MATHEMATICS

Code: MAS 621 **Credits: 3(3-0-0)**

1. **Propositions and logical operations**
   a. Notation, Connections, Normal Forms, Truth Tables
   b. Equivalence and Implications
   c. Theory of inference for statement calculus, predicate calculus
   d. Rules of logic
   e. Mathematical Induction and Quantifiers
2. **Sets, Relations and Digraphs**
   a. Review of set concepts
   b. Relations and digraphs
   c. Properties of relations
   d. Equivalence relations
   e. Computer representation of relations and digraphs
   f. Manipulation of relation
   g. Partially Ordered Sets (Posets)
3. **Graph theory**
   a. Definition, paths, circuits, reachability, connectedness
   b. Matrix representation of graphs, trees, spanning trees
   c. List structures and graphs, PERT related techniques
   d. Transitive closure, Warshall's Algorithms
   e. Eularian and Hamiltonian graphs
4. **Groups and applications**
   a. Monoids, semigroups
   b. Product and quotients of algebraic structures
   c. Isomorphism, homomorphism, automorphism
   d. Normal subgroups, codes and group codes

Text Books:

1. Discrete Mathematical Structure : Tremblay and Manohar, McGraw Hill
2. Discrete Mathematical Structure :Kolman, Busby and Ross, Printice HallIndia
3. Elements of Discrete Structures : C.L. Liu

Environmental Studies – II

Code: ENV- 416 **CREDIT- 2(2+0+0)**

1) Natural Resources

a) Forest Resources
b) Water Resources
c) Mineral Resources
d) Food Resources
e) Energy Resources
f) Land Resources

Role of an individual in conservation of natural resources, Equitable use of Resources for sustainable life style.

2) Biodiversity and its conservation

a) Introduction- Definition: genetic, species and ecosystem diversity
b) Biogeographical classification of India
c) Value of diversity: consumptive use, productive use, social, ethical aesthetic and optional values.
d) Biodiversity at global, National and Local levels.
e) India as Mega-diversity nation
f) Hot-spots of biodiversity
g) Threats to Biodiversity: habitat loss, poaching of wild life, man- wild life conflicts
h) Endangered and endemic species of India
i) Conservation of biodiversity: In- situ and Ex- situ conservation of biodiversity.

3) ENVIRONMENTAL POLLUTION

Definition of Pollution and Pollutant, Kinds and classification of pollutant and pollution

Causes, effects and control measures of

a) Air pollution
b) Water pollution
c) Soil pollution
d) Noise pollution
e) Thermal pollution

Solid Waste management: Causes, effect and control measures of urban and industrial wastes

Fundamentals of Database Management System

Code: **CSIT 408** Credits: **4(3+1+0)**

UNIT-I

Introduction : Database system concepts, Data Abstraction, Data Models, Schema and Instances, Data independence. Data Definition Language, Data Manipulation Language, Overall Database Structure.

Data Models: Introduction, Basic concepts and notations for E-R diagram, mapping constraints, keys: super key, candidate key, primary key, Generalization and Specialization, Aggregation, Reduction of an E-R diagram in to tables, extended E-R models

UNIT- II

Relational Data Model and Languages: Relational data Model Concepts, Query languages: Relational algebra, Tuple relational calculus, Domain relational calculus and SQL.

UNIT-III

Database Design: First Normal Form, Pitfalls in Relational -Database Design, Functional dependencies, Decomposition, Desirable properties of Decomposition, Normal Forms: First, Second, Third, BCNF and Fourth Normal form.

UNIT-IV

Transactions & Concurrency Control: Transaction concepts, ACID properties, Transaction States, Concurrent execution of transactions, Locking techniques for concurrency control and Protocols.

Recovery System: Failure classification, Recovery and Atomicity, Recovery Techniques: Log-Based and Shadow Paging.

UNIT-V

Introduction to Database System Architecture: Distributed database, object Oriented database management system, Client/server database, and Knowledge Database.

Text Books

Henry F. Korth, “Database system concept”, T MH

S.B. Navathe, “Database Management System”, Wesley Addition

References:

Vipin Desai, “Database Management System”, BPB

Date C J, “An Introduction To Database System”, Addision Wesley

Majumdar& Bhattacharya, “Database Management System”, TMH

Ramakrishnan, Gehrke, “Database Management System”, McGraw Hill

System Analysis and Design

Code: CSIT 416 **Credit: 3 (2+1+0)**

UNIT-I

Introduction: Definition of System, Characteristics of a System, Elements of a System, Types of System.

System Development: System Development Life Cycle, Phases of SDLC, Role of System Analyst

UNIT-II

Feasibility Study: Basic concepts, Steps in the feasibility study, Types of feasibility study, Feasibility report, Cost Benefit analysis, Procedure for Cost benefit determination.

System Analysis: Basic concepts, System planning and initial investigation, Information gathering, Information gathering tools, Tools for Structured Analysis: Data Dictionary, Data Flow Diagram, Decision Tree, Decision table.

UNIT-III

System Design: Basic concepts, Logical and Physical Design, Structured Design, Coupling, Cohesion, Structured Chart, Architectural Design, Data Design, User Interface Design.

UNIT-IV

System Testing: Testing Principles, Testing Objectives, Test Plan, Types of Testing: Black Box and White Box Testing, Unit Testing, Integration Testing, System Testing, Software Quality and Quality Standards.

UNIT-V

Quality Assurance: Software Quality Assurance, Software Quality Standards.

Implementation and Maintenance: Introduction, Conversion, Maintenance, Activities of maintenance procedure

Text Book:

1. Elias M. Awad, "System Analysis and Design", Galogotia Publications (P) Limited, 2nd Edition

Reference Books:

1. Jeffery L. Whitten, Lonnie D. Bentley and Kevin C. Dittman, "System Analysis and Design Methods" 5th Edition, 2000, McGraw-Hill.

Assignment: Students to present a case study (in groups of 4 to 5) on an existing system.

INFORMATION SECURITY

Code: CSIT-418 Credits: 2(2+0+0)

Unit 1:
Introduction- Computer Security, Threats to security, History of Computer security,Computer System Security and Access Controls (System access and data access).

Unit 2:
Threats - Viruses, worms, Trojan horse, bombs, trap doors, spoofs, email virus, macro Viruses, remedies, Intruders, Malicious software, Firewalls, vulnerabilities &
Threats, Network Denial of service attack.

Unit 3:
Communication security- Encryption, classical encryption techniques, data encryptions Standards, advance encryption techniques Network Security-Kerberos, X.509, some network security projects-SDNS, DISNet , Project MAX, Secure NFS

Unit 4:
Security- E-Mail Security, IP security, Web security
Server security- security for network server, web servers, mobile technologies (java and java script etc)

Unit 5:
Intrusion detection techniques – techniques to provide privacy in Internet Application and protecting digital contents(music, video, software) from unintended use, authentication.

Text Book:

Object Oriented Systems

Code: CSIT 503 **Credit: 5 (3 + 1 + 2)**

UNIT – I

Introduction: Introduction, Characteristics of Objects, Object Oriented Development, Object Oriented Themes – Abstraction, Encapsulation, Polymorphism and Inheritance.

UNIT – II

Basic C^{++} Concepts: Classes and objects, Constructors and Destructors, Function overloading, Operator Overloading, Friend Function.

UNIT – III

Object Modeling: Objects and Classes, Links and Associations, Generalization and Inheritance, Aggregations, Abstract Classes, Multiple Inheritance, Sample Object Model.

UNIT – IV

Dynamic Modeling: Events and States, Operations and Methods, State Diagrams, Concurrency, Relation of Object and Dynamic Models.

Functional Modeling: Functional Model, Data Flow Diagrams, Specifying Operations, Relation of Functional to Object and Dynamic Model.

UNIT – V

Advance C^{++} Concepts: Inheritance – Basic Concepts, types, Constructors and Destructors in derived classes. Pointers, Polymorphism – Compile Time and Run time.Introduction of Virtual functions and Abstract Classes.

Text Book :

1. Object Oriented Design and Modeling – James Rambaughetal, PHI.
2. Object Oriented Programming with C++ - E. Balagurusamy, TMH.

References:

1. Object Oriented Conceptual Modeling – Dillon and Lee, PHI.
2. Introduction to Object Oriented Analysis and Design – Stephen R. Shah, TMH.
3. The Waite's Group OOP using C++ - Robert S. Lafore, Galgotia Publications.

Note: You are requested to moderate the following practical list and submit the amended list to the office of HoD, DCS&IT, on or before 30 July 2009.

Practical List :

1. Write a function using variables as arguments to swap the values of a pair of integers
2. An election is contested by five candidates. The candidates are numbered 1 to 5 & marking the candidate number on the ballot paper does voting. Write a program to read the ballot & count the votes cast for each candidate using an array, variable count. In case, a number read is out side the range 1 to 5, the ballot should be considered as a ' spoilt ballot' and the program should also count the number of spoilt ballot.
3. Write a program to read a matrix of size m*n from the keyboard and display the same on the screen.
4. Write a macro that obtains the largest of three numbers.
5. As the practical 4, using inline function. Test the function using the main program.
6. Define a class to represent a bank account including the following members:-
   Data Members: Name of the depositors, Account number, Type of account, Balance amount in the account.

   Member function: To assign initial values, To deposit an amount , To withdraw an amount after checking the balance, To display the name and balance.

7. Create 2 classes OM and DB which store the value of distance. DM store distances in meters and cm and DB in feet and inches. Write a program that can read values for the class objects and add 1 object OM with another object of DB.
   Use a friend function to carry out the addition operation the object that stores the results may be a DM object or a DB object, depending upon the units in which the results are require. The display should be in the format of feet and inches or meters and cms depending on the object on display.
8. A book shop maintains the inventory of books that are being sold at the shop the list includes details such as author, title and publisher and stock position. Whenever a customer wants the book, the sales person inputs the title and author and the system search the list and display whether it is available or not. If it is not, a appropriate message is displayed, if it is, then the system displays the book details and requests for the number of copies require. If the requested are available, the total cost of the required copies is displayed: otherwise the message" Required copies not in stock"is displayed. Design a system using a class called books with suitable member functions and constructors. Use new operator in constructor to allocate memory space require.

9. Define a class string that could work as a user defined string type include constructors that will enable us to create an .un-initialized string
   String s1; :/ string with length 0

   And also to initialize an object with string constant at the time of creation like

   String s2("well done"); .

   Include a function that adds two strings to make a third string.

10. Create a class float that contains 2-float data member. Over load all the 4 arithmetic operators so that do operate on the objects of float.
11. Create a class MAT of size m*o. Define all possible matrix operation for MAT type objects.
12. Define 2 classes POLAR and RECTANGLE to represent points in the POLAR and RECTANGLE systems. Use conversion routines to convert from one system to the other.

13. Create a base class called shape use this class to store two double type values that could be used to compute the area of fig. Derive the specific class called TRIANGLE and RECTANGLE from the data shape. Add to base class, a member function get - data ( ) to initialize base class data members and another member and another member function display – area( ) to compute and display the area of the fig.. Make display – area ( ) as a virtual function and redefine function in the derived classes to suit their requirements.

Using these 3 classes design a program that will accept dimension of RECTANGLE or TRIANGLE interactivity and display the area. Remember the 2 values given as input will be treated as length of 2 sides in the case of rectangle and as base and height in the case of triangles and used as follows:

Area of rectangle = x*y

Area of triangle = 1/2 *x*y

Semester IV

Financial Management

Code: BAM – 431 **Credit 4(3+1+0)**

- Scope & Functions of Financial Management
- Financial Statement Analysis: Fund Flow; Cash Flow; Ratio Analysis
- Concept of Valuation
- Theories of Capitalisation
- Capital Structure: Financial & Operation Leverage
- Capital Budgeting
- Complex Investment Decision.

Text Book Recommended:

1. Financial Management – I. M. Pandey

2. Financial Management – Chandra

Programming with Java

Code: CSIT 423 **Credit: 5(3+0+4)**

UNIT – I :

Basics of Java

The genesis of java, importance of java.Security and Portability. Concept of javaBytecode and Java Virtual Machine. Characteristics of java.

UNIT – II :

Object-oriented Concepts

Objects and classes. Object oriented programming characteristics: Abstraction, Encapsulation, Inheritance and Polymorphism. Implementation of OOP in java: classes, access modifiers, extending classes, overloading and overriding.

UNIT – III :

Programming with Java

Data types, constants, variables, arrays, operators and control statements used in java.

Classes and Objects

Concept of class.The general form of class.Declaring objects.Introducing methods in a class.Constructors.Inner and outer class.Exploring the String class.

UNIT – IV :

Access control and modifiers

Public access control.Private access control.Protected access control.Implementation of static, this and super keywords.Understanding final keyword in java.

Inheritance

Basic concepts.Using super.Method overloading.Method overriding.Dynamic method dispatch.Using abstract classes.Using final with inheritance.

UNIT – V :

Advanced Concepts

Packages.Importing packages.Interfaces.Exception types. Exception handling: using try/catch statements, using throws statement. Multi-threaded programming.

Text Book:

"Programming with Java" by E Balaguruswamy.

Reference Books:

"Java-2, The Complete Reference" by Patrick Naughton and HerbertzSchidt.
"HTML 4 unleashed" by Rick Dranell, second edition, Techmedia publication.
"Dynamic web publishing" unleashed by Shelley Powers, second edition, Techmedia.
Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.
Decker &Hirshfield, "Programming.Java", Vikas Publication.

Internet and Web Technologies

Code: CSIT 504 **Credit: 5(3+0+4)**

Unit-1

Introduction to Internet

Introduction to Internet and Word Wide Web, History of Internet, Applications, Connection types, Internet domain, Working of Internet, Internet Service Providers, Uniform Resource Locator, E-mail, Search Engine, Web Browsers, Web Servers, HTTP, FTP and other Protocols.

Unit-2

HTML

Introduction to HTML, HTML tags, Structure of HTML Program, Text Formatting, Heading Style, Text Style, Controlling font Size and Color, Creating Lists, Creating Tables, Linking Documents, Frame, Creating Forms.

Unit-3

Dynamic HTML

Understanding Cascading style sheet, Attaching a style sheet to an HTML document, External style Sheets, Setting a default style sheet language, Making style Sheets Cascade, DIV and LAYER tags, Introduction to XML, Features and Applications, Data Interchange with an XML Document.

Unit-4

JavaScript

Introduction, The Document Object, Script Tags, Java Script Variables, Operators, Control Flow and Looping Constructs, Function, Arrays, Forms, Buttons, Script Event Handlers.

Unit-5

Server Side Scripting:

Introduction to Server Side Scripting Languages, Introduction to ASP, Active Server

Objects, Active Server Components, Database Management with ASP, Development

of Interactive commercial sites using ASP.

Text Books:

1. Ivan Bayross, " Web Enabled Commercial Application Development using: HTML, DHTML, JavaScript, Perl CGI", BPB

2. EvangelousPetroustsos, " Active Server Pages 3.0", BPB

References:

1. Web Publishing, D'Souza

2. HTML Complete, BPB

3. David Hunter et al, "Beginning XML", Wiley Publications.

4. ASP Professional, Wrox Publications.

Relational Database Management System

Code: CSIT 505 **Credit: 4(2+1+2)**

UNIT – 1Overview

Basic Database Concepts and characteristics, Relational Data base Concepts and its characteristics

Introduction to Oracle, Introduction to SQL (Structured Query Language) * Plus , SQL Data types

UNIT – 2Data Manipulation and Control

Data Definition language, Creating tables, Creating a table with Rows from another table, Inserting Values into table, Updating columns of a table, Deleting rows from a table, Querying Database tables, Conditional Retrieval of rows, Working with Null values, Matching a pattern with column from a table, Introduction to Sequences, Database security and privileges, GRANT Command, REVOKE Command, COMMIT and ROLLBACK commands

Querying Multiple Tables

Equi joins, Cartesian joins, Outer join, Self join, Set operator, Union, Intersect, Minus, Nested Queries

UNIT -3View

Introduction to views, Manipulation of Base table through views, Rules for DML statements on join views, Dropping a view

Functions

Column Functions, Arithmetic Functions, Character function, Data function, General Functions, Group functions.

SQL * Plus Reporting

Introduction to SQL * Plus reporting, SQL * Plus Environment Commands, Manipulating variables, Defining Header, Footer & Column Heading, Formatting columns, Control break reports

UNIT -4Embedding SQL Statements into Procedural Language (PL)

Introduction to PL/SQL, The advantages of PL/SQL, PL/SQL Block Structure, PL/SQL Architecture, PL/SQL Data types, Variables and Constants, Scope and Visibility of a variable, Assignments & Expressions, Referencing Non PL/SQL variables, Introduction to Built – in – functions, Conditional and Interactive Control, SQL within PL/SQL

Cursor and Exception handling

Introduction to cursor and its management in PL/SQL, Cursor manipulation, Implicit cursor & its attributes, Exception handling in PL/SQL, Predefined exceptions, User defined exceptions

Advanced features of procedural language for database applications

Subprogram in PL/SQL, Advantages of subprograms, Introduction to procedures, Introduction to functions. Stored packages, Advantages of packages, Dropping procedures, functions and packages

Triggers: Introduction to triggers, Types of triggers, Dropping triggers

UNIT 5Introduction to object relational database management system (ORDBMS)

What is an object, What is an object technology, Creation of objects, How to maintain database using objects

Text Books:

1. Ivan Byross, “SQL PL/SQL “, BPB

References:

1. Scott Urman, “ SQL PL/SQL Programming”, TMH

2. S.B. Navathe, “Database Management System”, Wesley Addition

Principles of Computer Network

Code: CSIT 511 **Credit: 5(3-1-2)**

Unit 1: Computer Network and the Internet: Introduction to Computer Network, Internet, History of Computer Networks, Layered Architecture, TCP/IP protocol Suite

Unit 2: Local Area Network: MAC address, LAN Topologies, LAN Architecture, IEEE 802.3 LAN: MAC Technique (CSMA/CD), Physical Layer Specification. Fast Ethernet, Hubs and Switches, IEEE 802.11 Wireless LAN: Architecture, MAC protocol, Physical Layer. Bluetooth.

Unit 3: Network Layer: Forwarding and Routing, Routers, IPv4 Addressing: Notations, Classful and Classless addressing, Subnetting, Network Address Translation. Internet Protocol: Header Format, Fragmentation, Routing, Routing Protocols (RIP, OSPF, BGP), Routing Algorithms: Distance Vector and Link State Routing. IPv6

Unit 4: Transport Layer: Transport Layer Services, Socket, Port Numbers, User Datagram Protocol (UDP), Transmission Control Protocol (TCP): TCP Segment Structure, Flow control, TCP Connection, Congestion Control

Unit 5: Application Layer: Domain Name System, The Web, HTTP, Web Caching, Electronic Mail, Mail Access Protocols, File Transfer Protocol

Text Book:

3. Data Communication Na Behrouz Forouzan, Introduction to data communication and networking, TMH.

Reference Books:

1. William Stallings, Data and computer communication, Pearson
2. James F. Kurose, Keith W. Ross, Computer Networking, A Top-down approach, Pearson

PRINCIPLES OF SOFTWARE ENGINEERING

Code : CSIT 515 **Credits : 4(3-1-0)**

Unit-I

Introduction: Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software applications, Software Crisis, Software engineering problems, Software Development Life Cycle, Software Process.

Unit-II

Software Requirement Specification: Analysis, Principles, Water Fall Model, The Incremental Model, Prototyping, Spiral Model, Role of management in software development, Role of matrices and Measurement, Problem Analysis, Requirement specification, Monitoring and Control.

UNIT-III

Software-Design: Design principles, problem partitioning, abstraction, top down and bottom up-design, Structured approach, functional versus object oriented approach, design specifications and verification, Monitoring and control, Cohesiveness, coupling, Forth generation techniques, Functional independence, Software Architecture, Transaction and Transform Mapping, Component – level Design.

Unit-IV

Coding: Top-Down and Bottom –Up programming, structured programming, information hiding, programming style and internal documentation.

Testing: Testing principles, Levels of testing, functional testing, structural testing, test plane, test case specification, reliability assessment, software testing strategies, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging.

Unit-V

Software Reliability & Quality Assurance: Reliability issues, Reliability metrics, Reliability growth modeling, introductory concepts of Software quality Assurance.

CASE (Computer Aided Software Engineering): CASE and its Scope, CASE support in software life cycle, documentation, project management, internal interface, Reverse Software Engineering, Architecture of CASE environment.

Text Book:

R. S. Pressman, Software Engineering: A Practitioners Approach, McGraw Hill.

Reference Books:

1. Rajib Mall, Fundamentals of Software Engineering, PHI Publication.
2. K. K. Aggarwal and Yogesh Singh, Software Engineering, New Age International Publishers.
3. Carlo Ghezzi, M. Jarayeri, D. Manodrioli, Fundamentals of Software Engineering, PHI Publication.
4. Ian Sommerville, Software Engineering, Addison Wesley.
5. PankajJalote, Software Engineering, Narosa Publication
6. Pfleeger, Software Engineering, Macmillan Publication.

Semester V

Management Information System

BAM – 544 **Credit 3(2+1+0)**

- Concepts of Management Information System
- Information Systems and System Organizations.
- Functions of Computer
- Computer and information Processing
- Information Systems Software
- Enterprise – Wide computing and Networking
- Alternate System Building methods
- Information and Knowledge work system
- Artificial Intelligence
- Controlling Information System
- Office Automation

Text Book Recommended:

1. Management Information System – Kennetch Laudon & Jane Laudon
2. Management Information System – Davis & Olson
3. Management Information System – Suresh Basandra

PRINCIPLES OF ARTIFICIAL INTELLIGENCE

CSIT-506 4(3+1+0)

Unit-1 Introduction

Definition, DIKW chain, History, Foundation, introduction to intelligent agents, examples, AI technique

Unit-2 AI Problems

Defining problems, production system, state space, problem characteristics, production system characteristics, issues in design of search problems

Unit-3 Knowledge Representation

Knowledge representations, introduction to knowledge base, structure based:- CD, Script, Frames, Associational graph, rule based:- predicate logic; FOPL, Resolution, unification, propositional logic, reasoning under uncertainty, Statistical reasoning

Unit-4 Search and Control Strategies

Search: -Informed search:- generate and test, Hill climbing, Best-First search, A*, Uninformed search:- DFS, BFS, control strategy

Unit-5 Advanced topics

Expert Systems, Game playing, Natural Language Understanding, learning, planning

Text Book: 1. Artificial Intelligence :- Elaine Rich and Kevin Knight

Reference Book: 1. Artificial Intelligence and Expert System:- Dan W Patterson
2. Artificial Intelligence, A modern Approach:- Stuart Russell and Peter Norvig

Computer Graphics and Multimedia

CSIT – 507 **5(3+1+2)**

Unit 1: Introduction

Definition. Application of Graphics in Computer Science. Interactive devices. Cathode Ray Tube. Color Generation in CRT. DVST displays. Computer Display: Flat-Panel Display:Plasma Display, TFT Display, LED and Liquid Crystal Display.

Unit 2: Output Primitives

Attributes, Points and Lines, Line Drawing Algorithms: DDA and Brasenham`s method. Mid point Circle Generation Algorithm, Ellipse Generation Algorithm. Polygons: Types, Representation, Inside outside test, Polygon filling Algorithms.

Unit 3: 2-D Transformations and Viewing

Matrix Representation and Homogenous Coordinates, Basic Transformations, Composite Transformations, Reflection and Shear, 2-D Viewing Pipeline, Clipping Operations, Point Clipping, Line Clipping, Polygon Clipping.

Unit 4:3-D Transformations and viewing

Basic Transformations, 3-D Viewing Pipeline, Projections: Parallel Projections and Perspective Projections

Unit5: Multimedia and its Applications

Multimedia Concept, Uses and Applications of Multimedia. Tools, Building Blocks, File Format, H/W Peripherals, S/W Requirement. Audio, Video, Compression, Compression Techniques (jpeg, mpeg), Animation. Principles of Animation, Animation Techniques: Concept of Key Frames. Morphing.

Text Book:

1.Computer graphics: - Hearn and Baker

2.Multimedia making it work: - Vaughan

Reference Books:

1.Fundamentals of Interactive Computer Graphics: - J.D.Foley

2.Principles of Multimedia: - Ranjan Parekh

3.Multimedia in Practice: Technology & Applications: - Judith Jeffcoate

.NET FRAMEWORK AND C#

CODE :CSIT 510 **4(2+1+2)**

Unit-I

The .NET framework:

Genesis of .Net , Features of .Net, .Net binaries, Microsoft Intermediate Language, Meta Data, .Net types and .net name spaces, Common Language Runtime, Common Type System, Common Language Specification, .Net Applications using command line compiler and visual studio .net IDE.

Unit-II

C# Basics:

Introduction, Features of C#, Data Types, Identifiers, variables & constants, C# statements, flow control and loops, Arrays and Strings, Object Oriented Concepts, Object and Classes, System Collections, Delegates and Events.

Unit-III

C# Using Libraries:

Namespace-System, Input Output, Threading, Error Handling, Windows Forms, Standard Controls and Components.

Unit-IV

Advanced Features Using C#:

Web Services, Windows services, Messaging, Reflection, and Localization. Distributed Application in C#.

Unit-V

Data Access with .NET:

Introduction to ADO.NET, Namespaces, Shared and Database-Specific classes, using Database connection. Fast Data Access: The Data Reader. Managing Data & Relationships: The DataSet Class.

Text Books

1. ShibiPanikkar and Kumar Sanjeev, “C# with **.**NET Frame Work”, Firewall Media.
2. Shildt, “C#**:** The Complete Reference”, TMH

Reference Books

3. Jeffrey Richter, “Applied Microsoft .Net Framework Programming”, (Microsoft)
4. Fergal Grimes, “Microsoft .Net for Programmers”, (SPD)
5. TonyBaer, Jan D. Narkiewicz, Kent Tegels, ChanduThota, Neil Whitlow, “Understanding the **.**Net Framework”, (SPD)
6. Balagurusamy, “Programming with C#”, TMH
7. Vikas Gupta “Comdex .NET Programming”, dreamtech Press
8. Christian Nagel, Bill Evjen “Professional C# 2005”, WILEY-dreamtech publishing.

COMPUTER ARCHITECTURE

Code : CSIT 517 **Credits : 4(3-1-0)**

UNIT -I

Introduction: Introduction to Parallel Computing, Need for Parallel Computing, Parallel Architectural classification schemes, Flynn's, Shores, Fengs classification, Performance of Parallel Processors. Amdahl Law Distributed Processing and Quantitative Approach.

UNIT-II

Memory: Processor & memory hierarchy, bus, cache & shared memory introduction to super scalar architectures, Quantitative evaluation of performance gains using memory, cache miss/hits.

UNIT-III

Pipeline Processing: Introduction to Pipeline Processing, SIMD parallel processors, Arithmetic pipelines, steady state analysis of pipeline, Pipelined instruction processing, interlocks, hazards, hazards detentions and resolution memory systems used in pipelines, scheduling of dynamic pipelines.

UNIT-IV

Synchronous Parallel Processing: SIMD Parallel algorithm, recurrence and matrix computations, Distributed array processor, Processor Arrays, Multiprocessors, parallel programming languages, mapping and scheduling.

UNIT-V

Interconnection Networks: Introductions, Elementary Permutations used in Interconnection Network, Network Classification - Cross bar network, Commonly used Interconnection Network, Data Manipulator, Network Routing, and Multistage Data Manipulator.

Text Book :

1. Hwang, "Advanced Computer Architecture", McGraw Hill.

Books & References:

1. Peterson & Heresy, "Quantitative approach to computer Architecture," "Morgan Kaufman".
2. Quin, "Parallel Computing, Theory and Practices," McGraw Hill.
3. Bhujde, "Parallel Computing," New Age International.
4. Englander, "Architecture of Computer Hardware & Software System," Jon Willey & Sons.

XML Applications

Course Code: CSIT- 641 Credit: 4(3-1-0)

Unit I: INTRODUCTION

Role Of XML, XML and The Web , XML Language Basics , SOAP , Web Services , Revolutions Of XML , Service Oriented Architecture (SOA).

Unit II: XML TECHNOLOGY

XML Name Spaces , Structuring With Schemas and DTD , Presentation Techniques , Transformation , XML Infrastructure ,X Query, X Path.

Unit III: SOAP

Overview Of SOAP , HTTP , XML,RPC , SOAP: Protocol , Message Structure , Intermediaries , Actors , Design Patterns And Faults , SOAP With Attachments.

Unit IV: WEB SERVICES

Overview , Architecture , Key Technologies , UDDI , WSDL , ebXML , SOAP And Web Services In E,Com , Overview Of .NET And J2EE.

Unit V: XML SECURITY

Security Overview , Canonicalization , XML Security Framework , XML Encryption , XML Digital Signature , XKMS Structure , Guidelines For Signing XML Documents , XML In Practice.

TEXT BOOKS:

1. Frank. P. Coyle, XML, Web Services And The Data Revolution, Pearson Education, 2002.

REFERENCES:

1. Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, " Developing Java Web Services", Wiley Publishing Inc., 2004.

2. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.

3. McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers,2005.

Semester VI

Data Warehousing

Course Code: CSIT-522 **Credit:** 4 (3 + 1 + 0)

UNIT – I

Data Warehousing: Introduction, Characteristics of a Data Warehouse, Data Warehouse Architecture , Data Mart, Types of Data Mart, Nature of Data in Data Mart, Fact Tables and Dimensions in Data Warehouse, Performance issues, Security in Data Mart.

UNIT – II

OLTP and OLAP Systems: Data Modeling, Data Warehouse Schemas, Difference between OLTP and OLAP, Types of OLAP Servers: ROLAP, MOLAP and HOLAP, OLAP operations, Managed Query Environment (MQE).

UNIT – III

Data Mining: Introduction, From Data Warehouse to Data Mining, Steps of Data Mining, Knowledge Discovery Databases, ETL Process, Data Mining Techniques: Classification, Association, Clustering: Decision Trees and Neural Networks.

UNIT – IV

Developing Data Warehouses: Building a Data Warehouse, Data Warehouse architectural strategies, Design considerations, Data content, Metadata distribution of Data, Tools for Data Warehousing, Performance considerations, Crucial decisions in designing a Data Warehouse, Various technological considerations.

UNIT – V

Applications : Applications of Data Warehousing and Data Mining, National Data Warehouses, Census

Data.

Text Book :

1. Data Mining: Concept and Techniques By Jiawei Han and Micheline Kamber Morgan Kaufmann Publishers
2. Data Warehousing – C. S. R. Prabhu, PHI.

References:

Data Warehousing and Knowledge Management – Mattison, TMH

LINUX & SHELL PROGRAMMING

Code: CSIT 601 **Credit: 5(3+1+2)**

Unit-I Introduction
Introduction to Unix, Unix system organization (the kernel and the shell), Files and directories, Library Functions and system calls, vi Editor , Introduction to open source

Unit-II Unix Shell Programming
Types of shells, Shell Metacharacters, Shell variables, Shell scripts, Shell commands, the environment, Integer arithmetic and string manipulation, Decision making and loop control, controlling terminal input, trapping signals, arrays.

Unit-III Portability with C

Introduction : 'C' programming in Unix Environment , Basics of Unix system calls and Libraries.

Process Management System calls: fork, exit, wait, exec, kill etc.

UNIT-IV Signals and IPC

Signals: Concepts, unreliable signals, Interrupted system calls, Reentrant Functions, Different signal handling functions.

Inter Process Communication: Pipes, Coprocessors, FIFOs, Semaphores, Shared Memory.

Unit-V Unix System Administration
File System, mounting and unmounting file system, System booting, handling user accounts, backup, recovery, security, creating files, storage of files, Disk related commands.

Text Books

1. Sumitabha Das, "Unix Concepts and applications", TMH.
2. W. Richard Stevens and Stephen A. Rago, Advanced Programming in the UNIX Environment, Second Edition, Addison Wesley, 2005

References:

1. YashwantKanitkar, "Unix Shell Programming", BPB.
2. Meeta Gandhi, TilakShetty, Rajiv Shah, "The 'C' Odyssey Unix- the open boundless C", BPB.
3. Prata, "Advance Unix Programming guide", BPB.

Latest Trends in IT

Code :CSIT 602 **Credits : 4(3-1-0)**

Aim: This course aims to upgrade the knowledge of students in respect of contemporary and innovative technologies/tools in the field of Information Technology. This course will also help the students to hone their skills to the requirements of the industry.

Some of the major areas of thrust (but not limited to) are as given below:

- Information Representation Technologies
- Computer Organization and Architecture
- Operating System
- Software Engineering
- Data Communication & Networking
- Data Base Management System
- Forensics
- Digital Libraries

Note: Students will also be required to give presentation on selected topics.

Enterprise Resource Planning

Code: CSIT 609 Credits: 4(3-1-0)

UNIT I:

Introduction – Related Technologies – Business Intelligence – E-Commerce and EBusiness – Business Process Reengineering – Data Warehousing – Data Mining – OLAP – Product life Cycle management – SCM – CRM

UNIT II:

Implementation Challenges – Strategies – Life Cycle – Pre-implementation Tasks – Requirements Definition – Methodologies – Package selection – Project Teams – Process Definitions – Vendors and Consultants – Data Migration – Project management – Post Implementation Activities.

UNIT III:

Operation and Maintenance – Performance – Maximizing the ERP System – Business Modules – Finance – Manufacturing – Human Resources – Plant maintenance – Materials Management – Quality management – Marketing – Sales, Distribution and service.

UNIT IV:

Marketplace – Dynamics – SAP AG – Oracle – PeopleSoft – JD Edwards – QAD Inc – SSA Global – Lawson Software – Epicor – Intutive.

UNIT V:

Enterprise Application Integration – ERP and E-Business – ERP II – Total quality management – Future Directions – Trends in ERP.

TEXT BOOKS:

1. Alexis Leon, "ERP DEMYSTIFIED", Tata McGraw Hill, Second Edition, 2008.
2. Mary Sumner, "Enterprise Resource Planning", Pearson Education, 2007.

REFERENCES:

1. Jim Mazzullo,"SAP R/3 for Everyone", Pearson,2007.
2. Jose Antonio Fernandz, " The SAP R /3 Handbook", Tata McGraw Hill, 1998.
3. Biao Fu, "SAP BW: A Step-by-Step Guide", First Edition, Pearson Education, 2003.