School of Engineering

Course Structure and Syllabi

B. Tech. (Information Technology)

Academic Programmes

July, 2013
### Course Structure

#### Semester III

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Contact Hours L-T-P</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT3001</td>
<td>Mathematics-III</td>
<td>3-1-0</td>
<td>4</td>
</tr>
<tr>
<td>CS3002</td>
<td>Data structures &amp; Algorithms</td>
<td>3-1-0</td>
<td>4</td>
</tr>
<tr>
<td>CS3003</td>
<td>Database Management System</td>
<td>4-0-0</td>
<td>4</td>
</tr>
<tr>
<td>CS3004</td>
<td>Software Engineering</td>
<td>3-0-0</td>
<td>3</td>
</tr>
<tr>
<td>CS3005</td>
<td>Digital Electronics</td>
<td>3-1-0</td>
<td>4</td>
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<tr>
<td>CS3007</td>
<td>DBMS Lab</td>
<td>0-0-2</td>
<td>1</td>
</tr>
<tr>
<td>CS3008</td>
<td>Data structure &amp; Algorithm Lab</td>
<td>0-0-2</td>
<td>1</td>
</tr>
<tr>
<td>CS3009</td>
<td>Digital Electronics Lab</td>
<td>0-0-2</td>
<td>1</td>
</tr>
<tr>
<td>G3002</td>
<td>Programming with C++ and Java</td>
<td>3-0-0</td>
<td>3</td>
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<tr>
<td>G3003</td>
<td>Computer Lab-III</td>
<td>0-0-2</td>
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#### Semester IV

<table>
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<th>Subject Code</th>
<th>Subject</th>
<th>Contact Hours L-T-P</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CS3001</td>
<td>Discrete Mathematical Structure</td>
<td>3-1-0</td>
<td>4</td>
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<tr>
<td>CS4002</td>
<td>Computer Organisation and Architecture</td>
<td>3-1-0</td>
<td>4</td>
</tr>
<tr>
<td>CS6003</td>
<td>Computer Networks</td>
<td>4-0-0</td>
<td>4</td>
</tr>
<tr>
<td>IT4001</td>
<td>Electronic Devices &amp; Circuits</td>
<td>3-1-0</td>
<td>4</td>
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<tr>
<td>IT4002</td>
<td>Information Theory and Coding</td>
<td>3-1-0</td>
<td>4</td>
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<tr>
<td>IT4003</td>
<td>EDC Lab</td>
<td>0-0-2</td>
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<tr>
<td>CS6008</td>
<td>Network Programming Lab</td>
<td>0-0-2</td>
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<tr>
<td>G4002</td>
<td>Web Designing Techniques</td>
<td>3-0-0</td>
<td>3</td>
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<tr>
<td>G4003</td>
<td>Computer Lab-IV</td>
<td>0-0-2</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>19-3-6</strong></td>
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# B.Tech. in Information Technology

## Course Structure

### Semester V

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Contact Hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IT5001</td>
<td>Microprocessor and Interfaces</td>
<td>3-1-0</td>
<td>4</td>
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<tr>
<td>CS5002</td>
<td>Design Analysis &amp; Algorithms</td>
<td>3-1-0</td>
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<tr>
<td>CS5003</td>
<td>Java Programming Language</td>
<td>3-0-0</td>
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<tr>
<td>CS5004</td>
<td>Theory of computation</td>
<td>3-1-0</td>
<td>4</td>
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<tr>
<td>CS4005</td>
<td>Computer Graphics</td>
<td>4-0-0</td>
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<tr>
<td>CS7102</td>
<td>Simulation and Modelling</td>
<td>3-0-0</td>
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<tr>
<td>CS5007</td>
<td>DAA Lab</td>
<td>0-0-2</td>
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<tr>
<td>CS5008</td>
<td>JAVA Lab</td>
<td>0-0-2</td>
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<tr>
<td>CS6009</td>
<td>Microprocessor Lab</td>
<td>0-0-2</td>
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<tr>
<td>CS4009</td>
<td>Computer Graphics Lab</td>
<td>0-0-2</td>
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<td><strong>TOTAL</strong></td>
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### Semester VI

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<tr>
<td>CS7002</td>
<td>Real Time System</td>
<td>4-0-0</td>
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<tr>
<td>CS6002</td>
<td>Artificial Intelligence</td>
<td>3-0-0</td>
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<tr>
<td>CS4003</td>
<td>Operating System</td>
<td>3-1-0</td>
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<tr>
<td>IT6001</td>
<td>Visual Programming</td>
<td>3-0-0</td>
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<tr>
<td>CS6005</td>
<td>Software Project Management</td>
<td>3-0-0</td>
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<td>IT6002</td>
<td>E-Commerce</td>
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<td>IT6003</td>
<td>Aptitude/Reasoning</td>
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<tr>
<td>CS4008</td>
<td>Operating System Lab</td>
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<tr>
<td>IT6004</td>
<td>Visual Programming Lab</td>
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<td>IT6005</td>
<td>GUI Programming Lab</td>
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Faculty of Engineering & Technology  
B.Tech. in Information Technology  

Course Structure

Semester VII

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<th>Subject</th>
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<tr>
<td>CS6001</td>
<td>Compiler Construction</td>
<td>3-1-0</td>
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<tr>
<td>CS7001</td>
<td>Information System Security</td>
<td>4-0-0</td>
<td>4</td>
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<tr>
<td>CS7003</td>
<td>Data Mining &amp; Warehousing</td>
<td>3-0-0</td>
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<tr>
<td>IT7001</td>
<td>Internet Programming</td>
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<tr>
<td>CS7103</td>
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<td>CS7104</td>
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<tr>
<td>CS7106</td>
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<tr>
<td>CS7107</td>
<td>Elective – I</td>
<td>3-0-0</td>
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<tr>
<td>IT7002</td>
<td>Practical Training Seminar</td>
<td>0-0-2</td>
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<tr>
<td>CS7004</td>
<td>Data Mining &amp; Warehousing Lab</td>
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<tr>
<td>IT7003</td>
<td>Minor Project</td>
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<td>Seminar</td>
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Semester VIII

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<td>CS8001</td>
<td>Major Project</td>
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Elective of semester 7

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<th>Code</th>
<th>Elective I</th>
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<tbody>
<tr>
<td>CS7107</td>
<td>Natural Language Processing</td>
</tr>
<tr>
<td>CS7106</td>
<td>Multimedia Technology</td>
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<tr>
<td>CS7103</td>
<td>Bio-informatics</td>
</tr>
<tr>
<td>CS7104</td>
<td>Human Computer Interaction</td>
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</tbody>
</table>

Faculty of Engineering & Technology
DIFFERENTIAL EQUATIONS - Linear differential equations of higher order with constant coefficients. Second Order ODE with Variable Coefficients, Homogeneous form, Exact Equations, Change of Dependent variable, Change of Independent Variable, Normal form, Variation of Parameters.

SERIES SOLUTIONS - Solution in series of second order LDE with variable coefficients (CF only).
PARTIAL DIFFERENTIAL EQUATION - Partial differential equation of first order, Lagrange’s form, standard forms, Charpit’s method

LAPLACE TRANSFORM - Laplace transform with its simple properties, Laplace transform of unit step function and periodic function, Convolution Theorem, inverse Laplace transform, applications to the solution of ordinary and partial differential equations having constant coefficient with special reference to heat equation and wave equation.

STATISTICS - Standard deviation, moments, skewness, kurtosis, Curve fitting methods- method of least squares, fitting of a straight line, parabola. Correlation and regression, line of regression.
FOURIER SERIES - Expansion of simple functions in Fourier series. Half range series, Change of intervals, Harmonic analysis.

FOURIER TRANSFORM - Complex form of Fourier Transform and its inverse, Fourier sine and cosine transform and their inversion. Applications of Fourier transform to solution of partial differential equations having constant co-efficient with special reference to heat equation and wave equation.

Books Recommended:
(2) “Higher Engineering Mathematics” by B.S.Grewal, Khanna Publisher.
B.Tech. in Information Technology

Data structures & Algorithms (CS3002)

Introduction: Data structure, abstract data types.

Linear Data Structures: Arrays, linked lists, stacks, queues, postfix, infix, prefix expressions and their conversion, evaluation of postfix expression, recursion, Tower of Hanoi problem, hashing and symbol tables, Huffman algorithm.

Non-Linear Data Structures: Trees and their traversals, binary trees, binary search trees, heaps, AVL trees, graph and their traversal.

Sorting and Searching: Sorting - insertion, selection, bubble, quick, heap, merge, shell, counting, bucket and radix sort, searching – sequential and binary.

Analysis of Algorithms: Time and space complexity of algorithms, Big oh, Theta and Omega notations, performance analysis, best, worst, average case analysis of simple algorithms, performance measurement.

Suggested Books:

1. DSA by Herbert Schildt, Tata McGraw Hills, 3rd Edition
Database Management Systems: (CS3003)

Overview of DBMS: File system versus DBMS, advantages of DBMS, database users, data abstraction, data independence, and database system structure. Data Models: Relational model, hierarchical model and network model.

Entity Relationship Model - overview of data design, entities, attributes and entity sets, relationship and relationship sets, features of the ER model – key constraints, participation constraints, weak entities, class hierarchies, aggregation, conceptual data base design with ER model – entity versus attribute, entity versus relationship, binary versus ternary relationship and aggregation versus ternary relationship.

Relational Algebra and Calculus: Relational algebra – selection, projection, set operations, renaming, joins, division, relational calculus, expressive power of algebra and calculus.

SQL Queries, Programming and Triggers: The forms of a basic SQL query, union, intersect and except, nested queries, correlated nested queries, set comparison operations, aggregate operators, null values and embedded SQL.

Schema Refinement and Normal Forms: Introduction to schema refinement, functional dependencies, normalization- decomposition, 1NF, 2NF, 3NF, BCNF, multi valued functional dependencies, 4NF.

File Organization: Secondary storage devices, RAID, buffer management, heap files, sorted files, hashing – static and dynamic, indexing- single level, multi level, static and dynamic, B-tree, B+-tree, ISAM.

Transaction Management: Transaction-concepts, states, ACID property, schedule, serializability of schedules, concurrency control techniques - locking, timestamp, deadlock handling, recovery-log based recovery, shadow paging.


Suggested Books:
4. C.J. Date: Data Base Design, Addison Wesley
5. Hansen and Hansen : DBM and Design, PHI

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Software Engineering (CS3004)

System Analysis: Characteristics, Problems in system Development, System Level project Planning, System Development Life cycle (SDLC), computer system engineering system analysis, modeling the architecture, system specification.

Software Project Management: Objectives, Resources and their estimation, LOC and FP estimation, effort estimation, COCOMO estimation model, risk analysis, software project scheduling. Software Development : Life Cycle (SWDLC), SWDLC models software engineering approaches


Software Design: Design fundamentals, Effective modular design: Data architectural and procedural design, design documentation.

Object Oriented Analysis: Object oriented Analysis Modeling, Data modeling. Object Oriented Design: OOD concepts and methods class and object definitions, refining operations. Class and object relationships, object modularization. Introduction to Unified Modeling Language

Suggested Books:

1. Software Engineering by Pankaj Jalote by New Age International Publishers
2. Software Engineering by Pressman
Programming with C++ and JAVA (G3002)

C++ Overview, C++ Characteristics, Object-Oriented Terminology, Polymorphism, Object-Oriented Paradigm, Abstract Data Types, I/O Services, Standard Template Library, Standards Compliance, Functions and Variables, Functions: Declaration and Definition, Variables: Definition, Declaration, and Scope, Variables: Dynamic Creation and Derived Data, Arrays and Strings in C++, Qualifiers, Classes in C++, Defining Classes in C++, Classes and Encapsulation, Member Functions, Instantiating and Using Classes, Using Constructors, Multiple Constructors and Initialization Lists, Using Destructors to Destroy Instances, Using Destructors to Destroy Instances, Operator Overloading, Operator Overloading, Working with Overloaded Operator Methods, Initialization and Assignment, Initialization vs. Assignment, The Copy Constructor, Assigning Values, Specialized Constructors and Methods, Constant and Static Class Members, Inheritance, Overview of Inheritance, Defining Base and Derived Classes, Constructor and Destructor Calls, Input and Output in C++ Programs, Input and Output in C++ Programs, Standard Streams, Manipulators, Unformatted Input and Output.

Introduction to JAVA Tools
Introduction to Object Orientated Programming, Abstraction, Object Oriented Programming Principles, Features of JAVA, Introduction to Java byte code, Java Virtual machine. Differences between C++ and JAVA

Suggested Books

1. Let Us C: Bala Guruswami, TATA McGraw Hill.
2. Programming with C, C++: Yashwant Kanitkar
Digital Electronics (CS3009)

**Introduction to Boolean algebra:** Binary connectives, Evaluation of truth functions, Truth – function calculus as Boolean Algebra, Duality, Fundamental theorems of Boolean Algebra and simplification of Boolean expressions. Realisation of Logic Circuits: Standard forms of Boolean Functions, Minterm and Maxterm, designation of functions. Simplification of functions on Karnaugh maps, incompletely specified functions.


**Counters and shift registers:** Ripple, decade, up-down counters, Mod-n counters and series, parallel registers. General characteristic of sequential circuits, clock, pulse and level mode sequential circuits. Analysis and design of sequential circuit. Synthesis of state diagrams, finite memory circuits, equivalence relations, equivalent states and circuits, determination of classes of in distinguishable states and simplification by implicant tables. Mealy and Moore machines, state assignment and memory element input equation, Partitioning and state assignment. General pulse-mode circuits, clock input counters, extended state tables.

**Asynchronous Mode Circuits:** Analysis of a fundamental mode circuits, Synthesis of flow tables, minimization, transition tables, excitation maps and output maps, Cycles and Races, Race free assignments, Hazards in sequential circuits. Introduction to A/D and D/A converters.

**Suggested Books:**

1. Digital Systems and Hardware and Firmware Algorithms: M.Ercegovac and T. Lang, Pearson.
5. Malvino leech: Digital Electronics

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B.Tech. in Information Technology
List of Experiments

1. Stating a database design & application problem.
2. Preparing ER diagram
3. Finding the data fields to be used in the database.
4. Selecting fields for keys.
5. Normalizing the database including analysis of functional dependencies.
6. Installing and configuring the database server and the front end tools.
7. Designing database and writing applications for manipulation of data for a standalone and shared database including concepts like concurrency control, transaction roll back, logging, report generation etc.
8. Get acquainted with SQL.
### Data Structures and Algorithms Lab (CS3008)

#### List of Experiments

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Write a simple C program on a 32 bit compiler to understand the concept of array storage, size of a word. The program shall be written illustrating the concept of row major and column major storage. Find the address of element and verify it with the theoretical value. Program may be written for arrays upto 4-dimensions.</td>
</tr>
<tr>
<td>2.</td>
<td>Simulate a stack, queue, circular queue and dequeue using a one dimensional array as storage element. The program should implement the basic addition, deletion and traversal operations.</td>
</tr>
<tr>
<td>3.</td>
<td>Represent a 2-variable polynomial using array. Use this representation to implement addition of polynomials.</td>
</tr>
<tr>
<td>4.</td>
<td>Represent a sparse matrix using array. Implement addition and transposition operations using the representation.</td>
</tr>
<tr>
<td>5.</td>
<td>Implement singly, doubly and circularly connected linked lists illustrating operations like addition at different locations, deletion from specified locations and traversal.</td>
</tr>
<tr>
<td>6.</td>
<td>Repeat exercises 2, 3 &amp; 4 with linked structures.</td>
</tr>
<tr>
<td>7.</td>
<td>Implementation of binary tree with operations like addition, deletion, traversal.</td>
</tr>
<tr>
<td>8.</td>
<td>Depth first and breadth first traversal of graphs represented using adjacency matrix and list.</td>
</tr>
<tr>
<td>9.</td>
<td>Implementation of binary search in arrays and on linked Binary Search Tree.</td>
</tr>
<tr>
<td>10.</td>
<td>Implementation of insertion, quick, heap, topological and bubble sorting algorithms.</td>
</tr>
</tbody>
</table>
List of Experiments

1. To write a simple program for understanding of C++ program structure without any CLASS declaration. Program may be based on simple input output, understanding of keyword using.

2. Write a C++ program to demonstrate concept of declaration of class with public & private member, constructors, object creation using constructors, access restrictions, defining member functions within and outside a class. Scope resolution operators, accessing an object’s data members and functions through different type of object handle name of object, reference to object, pointer to object, assigning class objects to each other.

3. Program involving multiple classes (without inheritance) to accomplish a task. Demonstrate composition of class.

4. Demonstration Friend function friend classes and this pointer.

5. Demonstration dynamic memory management using new & delete & static class members.

6. Demonstration of restrictions an operator overloading, operator functions as member function and/or friend function, overloading stream insertion and stream extraction, operators, overloading operators etc.

7. Demonstrator use of protected members, public & private protected classes, multilevel inheritance etc.

8. Demonstrating multiple inheritance, virtual functions, virtual base classes, abstract classes
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B.Tech. Information Technology
Digital Electronics Lab(CS3009)

List of Experiments

1. Truth table verification – NAND gate, NOR gate, OR gate, AND gate, NOT gate
2. Verifying if NAND gate is a universal gate.
3. Constructing XOR gate using NOR gate only.
4. Realizing given truth table using SOP form.
5. Realizing given truth table using POS form.
7. Design of binary-gray encoder.
8. Design of parity generator and detector.
Semester-4th

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B.Tech. in Information Technology

Discrete Mathematics Structure (CS3001)


Graph Theory: Graphs – Directed, Undirected, Simple, Adjacency & Incidence, Degree of Vertex, Subgraph, Complete graph, Cycle & Wheel Graph, Bipartite & Complete Bipartite Graph, Weighted Graph, Union of Simple Graphs, Complete Graphs. Isomorphic Graphs, Path, Cycles & Circuits Euclidian & Hamiltonian Graphs.

Planar Graph: Kuratowski’s Two Graphs, Euler’s Formula, Kuratowski’s Theorem. Trees: Spanning trees- Kruskal’s Algo, Finding Spanning Tree using Depth First Search, Breadth First Search, Complexity of Graph, Minimal Spanning Tree.

Semigroups, Groups and Coding: Binary Operations. Semigroups, Products and Quotients of Semigroups, Groups, Product and Quotients of Groups, Coding of Binary Information and Error Correction, Decoding and Error Correction.

Language of Logic: Proposition, Compound Proposition, Conjunction, Disjunction, Implication, Converse, Inverse & Contrapositive, Biconditional Statements, tautology, Contradiction & Contingency, Logical Equivalences, Quantifiers, Arguments.


Suggested Books


Central Processing Unit: General register organization, stack organization, Instruction formats, Data transfer and manipulation, program control. RISC, CISC characteristics. Pipeline and Vector processing: Pipeline structure, speedup, efficiency, throughput and bottlenecks. Arithmetic pipeline and Instruction pipeline.


Memory Organization: RAM, ROM, Memory Hierarchy, Organization, Associative memory, Cache memory, and Virtual memory: Paging and Segmentation.

Input-Output Organization: Input-Output Interface, Modes of Transfer, Priority Interrupt, DMA, IOP processor.

Suggested Books:
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B.Tech. in Information Technology

Computer Networks (CS6003)


Network Layer: Virtual circuits, datagram, IPv4, IP address classes, subnetting, supernetting, IP fragmentation, ARP, RARP, routing algorithms, RIP, OSPF, BGP, congestion control algorithms, leaky bucket, token bucket, ICMP, IPv6.

Transport Layer: Duties of the transport layer, Transport service primitives. TCP,TCP services, TCP header, UDP header. Elements of Transport protocols: addressing, connection Establishment, connection release, TCP connection establishment and release, transmission policy, timer management, Transactional TCP Flow control & Buffering, Multiplexing, Crash Recovery, UDP, RPC, RTP. Principles of Reliable Data Transfer: Reliable data transfer over a perfectly reliable channel, Channel with bit errors and Lossy Channel with bit errors.

Application Layer: Client/Server model, DNS, FTP, HTTP, SMTP, telnet. SONET/SDH: Synchronous transport signals, physical configuration, SONET layers, SONET frame, multiplexing STS frames and applications.

Suggested Books-

3. Peterson, Davie; Computer Networks, 4rd Ed., ELSEVIER
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Electronics Devices & Circuits (IT4001)

Diode circuits: Diode as a circuit. Element, load line concept Clipping & clamping circuits, voltages multipliers.

Devices: construction, characteristics and working principles of the following devices. Diodes BJT, JFET, MOSFET, UJT, photo diodes, LEDs, photo transistors Solar cells. Thermistor, LDR


Equivalent circuits and blessing of JFETs and MOSFETs Low frequency CS and CD JFET amplifiers. FET as a voltage variable resistor. Small signal amplifiers at low frequency: analysis of BJT and FET, dc and rc coupled amplifiers Frequency esponseMidband gain, gains at low and high frequency. Analysis of dc and differential amplifiers, Millers’ theorem cascading transistor amplifiers, Darlington and cascaded circuits. Emitter and source followers

Oscillators: concept of feedback classification, criterion for oscillation. Tuned collector, Hartley Colpitts

Rc- phase shift, Wein bridge and crystal oscillators, astable, monostable and bistable multivibrators. Schmitt trigger

Reference Books:

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B.Tech. in Information Technology

Web Designing Techniques (G4002)


The World Wide Web (WWW)
List: Numbered list, Non-Numbered lists, Definition lists

Formatting HTML Documents: Logical styles (source code, text enhancements, variables), Physical Styles (Bold, Italic, underlined, crossed),
Managing images in html: Image format (quality, size, type), Importing images (scanners), Tags used to insert images.
Frames
Tables in HTML documents: Tags used in table definition, Tags used for border thickness, Tags used for cell spacing, Tags used for table size, Dividing table with lines, Dividing lines with cells, Cell types: Titles cells, Data cells
Hypertext and Link in HTML Documents
URL/FTP/HTTP
Types of links: Internal Links, External Link, Link Tags, Links with images and buttons, Links that send email messages Special effects in HTML documents.

Web Designing with PHP (Introduction)
Information Theory & Coding (IT4002)

Elements Of Information Theory: Measure of information, average information, entropy, information rate. Communication channel, discrete and continuous channel

Shannon-Hartley theorem and its implications. Channel capacity, Gaussian channel and bandwidth-S/N tradeoff

Introduction of Coding: types of efforts, types of codes, error control coding, methods of controlling errors

Linear Block and Binary Cyclic Codes: matrix decryption of linear block codes, error detection and error correction. Capabilities of linear block codes. Hamming codes, structure of cyclic codes, encoding using an (n-k) bit shift register syndrome calculation, its error detection & correction, special classes of cyclic codes bch.

Burst and Convolution Codes: burst and random error correcting codes, encoders for convolution codes. Decoders for convolution codes

Recommended Books:

Faculty of Engineering & Technology

B.Tech. in Information Technology

EDC LAB(IT 4003)

List of Experiments

1. Study the following devices:
   (a) Analog & digital multimeters
   (b) Function/Signal generators
   (c) Regulated d. c. power supplies (constant voltage and constant current operations)
   (d) Study of analog CRO, measurement of time period, amplitude, frequency & phase angle using Lissajous figures.
2. Plot V-I characteristic of P-N junction diode & calculate cut-in voltage, reverse saturation current and static & dynamic resistances.
3. Plot V-I characteristic of zener diode and study of zener diode as voltage regulator. Observe the effect of load changes and determine load limits of the voltage regulator.
4. Plot frequency response curve for single stage amplifier and to determine gain bandwidth product.
5. Plot drain current - drain voltage and drain current – gate bias characteristics of field effect transistor and measure of Idss & Vp
6. Application of Diode as clipper & clamper
7. Plot gain- frequency characteristic of two stage RC coupled amplifier & calculate its bandwidth and compare it with theoretical value.
8. Plot gain- frequency characteristic of emitter follower & find out its input and output resistances.
9. Plot input and output characteristics of BJT in CB, CC and CE configurations. Find their hparameters.
10. Study half wave rectifier and effect of filters on wave. Also calculate theoretical & practical ripple factor.
11. Study bridge rectifier and measure the effect of filter network on D.C. voltage output & ripple factor.
Network Programming Lab(CS6008)

JAVA

1. Programs in java using TCP Sockets (like date and time server & client, echo server & client, etc.)
2. Programs in java using UDP Sockets (like simple DNS)
3. Programs in java using raw sockets (like packet capturing and filtering)
4. Programs in java using RPC

UNIX/LINUX

5. Implement the following forms of IPC.
   a) Pipes      b) FIFO
6. Implement file transfer using Message Queue form of IPC.
7. Design TCP Client and Server application to transfer file.
8. Design UDP Client Server to transfer a file.
9. Design TCP iterative Client and Server application to reverse the given input sentence.
10. Design TCP concurrent Client and Server application to reverse the given input sentence.
Develop a static html page using style sheet to show your own profile.

• Add a page to show 5 photos and
• Add a page to show your academics in a table
• Add a page containing 5 links to your favorite website
• Add navigational links to all above pages (add menu).

2. Update your homepage, by creating few html file.

3. Use Cascading Style Sheets to format your all pages in a common format.

4. Basic programs:
• Write a simple "hello word" program.
• Write a program to accept two strings (name and age) from user. Print welcome statement.
• Write a program to create a calculator, which can support add, subtraction and multiply and division operation.
• Write a program to take input parameters for a table (no. of rows and no. of columns), and create the desired table.
• Create a "Contact Me" page -
  • Ask user to enter his name, email ID,
  • Use Java-Script to verify entered email address.
  • Store submitted value in a MySql database.
• Display latest 5 submitted records in contact me page.
• Display above record with navigation support. (e.g. next, prev

Assembly Language and Programming in 8085: Instruction set, Program structures (sequential, conditional, iterative), Macros and subroutines, Stack, Counter and timing delay, interrupt structure and its programming.

Peripherals and their interfacing with 8085-I: Memory Interfacing, Interfacing I/O ports, Data transfer schemes (Synchronous, asynchronous, interrupt driven), Architecture & interfacing of PPI 8255, Data Converters and Timer 8254.

Peripherals and their interfacing with 8085-II: Architecture & interfacing of- DMA controller 8257, interrupt Controller 8259A, USART 8251, Level Converters MC 1488 and MC 1489, Current loop, RS 232 C and RS 422 A.

Comparative study of 8085 A, 8086 and 8088: Pinout, internal architecture, timing diagrams, Instruction format and addressing modes – Data and Branch related. Features of Pentium processor, MMX and Dual core processor.

Books:

1. Ramesh S.Gaonkar, Microprocessor architecture Programming and application
2. Micheal Slater, Microprocessor based system design, PHI
4. A.K.RAY, Advanced Microprocessors and Peripherals, TMH
Faculty of Engineering & Technology

B.Tech. in Information Technology

Design Analysis & Algorithms (CS5002)

Background: Introduction, algorithms specification, time and space complexity, performance analysis, recurrence relations. Basic Traversal and Search Techniques: Breadth first traversal, depth first traversal, breadth first search and depth first search.


Dynamic Programming: General method, 0/1 Knapsack problem, least common subsequence, matrix chain multiplication. Back Tracking: General method, 4-queen problem, sum of subset problem.


Suggested Books-

4. Brassard : Fundamental of Algorithmics, PHI.
Java Programming Language (CS5003)

The Genesis of Java: The importance of Java to Internet, Java’s magic-the bytecode, the Java buzzwords, the continuing revolution, Java and HTML, using blocks of code, lexical issues, the Java class libraries.

Data Types, Variables and Arrays: strongly typed language, the simple types, integers, floating-point types, characters, literals, variables, type conversion and casting, automatic type promotion in expressions, arrays, string, pointers, operators-arithmetic operators, the bitwise operators, relational operators, Boolean logical operators, the assignment operator, the ? operator, operator precedence, using parentheses, control statements-java selection statements, iteration statements, jump statements.

Classes: Class fundamentals, declaring objects, assigning object reference variables, introducing methods, constructors, the this keyword, garbage collection, the finalize () method, a stack class, overloading methods, using objects as parameters, a closer look at argument passing, returning objects, recursion, introducing access control, understanding static, introducing final, arrays revisited, introducing nested and inner classes, exploring the string class, using command-line arguments.

Inheritance: Inheritance basics, using super, creating a multilevel hierarchy, when constructors are called, method overriding, dynamic method dispatch, using abstract classes, using final with inheritance, the object class.

Package, Interfaces and Exception Handling: Packages, access protection, importing packages, interfaces, exception-handling fundamentals, exception types, uncaught exceptions, using try and catch, multiple catch clauses, nested try statements, throw, throws, finally, Java’s built-in exceptions, creating your own exception subclasses, using exceptions.

Multithreaded Programming: The Java thread model, the main thread, creating a thread, creating multiple threads, using isAlive () and join (), thread priorities, synchronization, interthread communication, suspending, resuming, and stopping threads, using multithreading.

I/O, Applets, and String Handling: I/O basics, reading console input, writing console output, the Print Writer class, reading and writing files, applet fundamentals, the transient and volatile modifiers, using instance of strictfp, native methods, problems with native methods, string constructors, string length, special string operations, character extraction, string comparison, searching strings, modifying a string, data conversion using value Of (), changing the case of characters within a string, String Buffer.

Suggested Books –

1. Herbert Schildt: JAVA 2 - The Complete Reference, TMH, Delhi
2. Deitel: How to Program JAVA, PHI
Faculty of Engineering & Technology

B.Tech. in Information Technology

Theory of Computation (CS5004)

Finite Automata and Regular Expression: Finite state systems, basic definitions, regular languages and regular expression, finite automata, Kleen theorem, pumping lemma for regular sets, decision algorithms, Myhill-Nerode theorem and minimization of finite automata.

Context-Free Grammars: Context-free grammars, union, concatenation of CFG, derivation trees, simplification of context-free grammars, Chomsky normal form, Greibach normal form, the existence of inherently ambiguous context-free languages.

Context-Free Languages and Pushdown Automata: Pushdown automata and context-free languages, pumping lemma for CFL, closure properties of CFL, decision algorithms for CFL.

Turing Machine: Turing machine model, techniques for turing machine construction, turing machines as language acceptor, combining turing machines, properties of recursive and recursively enumerable languages, universal turing machine.

Chomsky Hierarchy of Languages: Regular grammars, unrestricted grammars and turing machines, context-sensitive grammars and linear bounded automata.

Suggested Books-

1. Aho, Hopcroft and Ullman, Introduction to Automata Theory, Formal Languages and Computation, Narosa
Faculty of Engineering & Technology

B.Tech. in Information Technology

Computer Graphics(CS4005)

Introduction: Introduction to Raster scan displays, Storage tube displays, refreshing, flicking, interlacing, color monitors, display processors, resolution, Introduction to Interactive.

Computer Graphics: Picture analysis, Overview of programmer’s model of interactive graphics, Fundamental problems in geometry. Scan Conversion: point, line, circle, ellipse polygon, Aliasing, and introduction to Anti Aliasing (No anti aliasing algorithm).

2D & 3D Co-ordinate system: Homogeneous Co-ordinates, Translation, Rotation, Scaling, Reflection, Inverse transformation, Composite transformation. Polygon Representation, Flood Filling, Boundary filling, Point Clipping, Cohen-Sutherland Line Clipping Algorithm, Polygon Clipping algorithms.

Hidden Lines & Surfaces: Image and Object space, Depth Buffer Methods, Hidden Facets removal, Scan line algorithm, Area based algorithms.
Curves and Splines: Parametric and Non parametric Representations, Bezier curve, BSpline Curves.

Rendering: Basic illumination model, diffuse reflection, specular reflection, phong shading, Gourand shading, ray tracing, color models like RGB, YIQ, CMY, HSV


Suggested Books –

Simulation and Modelling (CS7102)

Introduction to Probability theory, Random variables, commonly used continuous and discrete distributions.

Introduction to Stochastic Process, Poisson process, Markov chains, steady state and transient analysis.


Introduction to Probabilistic modelling, Maximum Likelihood Variance reduction techniques: antithetic variates, control variates, common random numbers, importance sampling.

Analysis of Simulation results: confidence intervals, design of experiments Markov Chain Monte Carlo techniques

Suggested Books –

2. Donald E. Knuth: The Art of Computer Programming - Volume 2:
Faculty of Engineering & Technology

B.Tech. in Information Technology

DAA Lab (CS5007)

List of Experiments

1. Exploring a Binary Heap:
2. Merging two search trees:
3. Complete binary tree as an efficient data-structure:
4. Problems on Amortized Analysis
5. Computing a spanning tree having smallest value of largest edge
6. Shortest Path Problems:
7. A simple problem on sorted array
8. Finding the decimal dominant in linear time

Java Lab (CS5008)

List of Experiments

1. Develop an in depth understanding of programming in Java
2. Write Object Oriented programs
3. Develop understanding to developing packages & Interfaces
4. Develop understanding to developing Strings and exception handling
5. Develop applications involving file handling: I/O streams, File I/O.
6. Develop applications involving concurrency
7. Develop applications involving multi threading

Microprocessor Lab (CS6009)

List of Experiments

1. Add the contents of memory locations XX00 &XX01 & place the result in memory location XX02.
2. Add the 16 bit numbers stored in memory location & store the result in another memory location.
3. Transfer a block of data from memory location XX00 to another memory location XX00 in forward & reverse order.
4. Write a program to swap two blocks of data stored in memory.
5. Write a program to find the square of a number.
6. Write a main program & a conversion subroutine to convert Binary to its equivalent BCD.
7. Write a program to find largest & smallest number from a given array.
8. Write a program to Sort an array in ascending & descending order.
9. Write a program to multiply two 8 bit numbers whose result is 16 bit.
10. Write a program of division of two 8 bit numbers.
    Generate square wave from SOD pin of 8085 & observe on CRO.
11. Write a program to perform traffic light control operation.
Computer Graphics Lab(CS4009)

List of Experiments

1. To produce a single pixel and pre specified pattern on screen
2. To implement features like changing background color, foreground color, resizing of window, repositioning of window:
3. To implement mid point algorithm to draw circle and ellipse:
4. Use the line drawing & circle drawing programs to draw composite objects containing only circle & lines. You can take shapes like a cart, car etc.
5. To Implement Clipping (various algorithms).
6. Simple fonts, graphical fonts, scalable fonts.
7. Input a polygon by drawing lines,
Introduction: Definition, Typical Real Time Applications, concept of tasks, types of tasks and real time systems, block diagram of RTS, and tasks parameters – Release Times, execution time, period, Deadlines, and Timing Constraints etc. RTS requirements.


Periodic tasks scheduling: Clock Driven Scheduling – definition, notations and assumption, scheduler concepts, general scheduling structure, cyclic executives. Priority Driven Scheduling; notations and assumption, fixed priority verses dynamic priority, fixed priority scheduling algorithms (RM and DM) and their schedulability analysis, concept of schedulability tests – Inexact and exact schedulability tests for RM and DM, Optimality of the RM and DM algorithms, practical factors.

Aperiodic task scheduling; assumption and approaches, server based and non-server based fixed priority scheduling algorithms – polling server, deferrable server, simple sporadic server, priority exchange, extended priority exchange, slack stealing. Introduction to scheduling of flexible computations – flexible applications, imprecise computation model and firm deadline model.


Suggested Books –

3. C.M. Krisna & K. G. Shim- Real time systems- TMH

Faculty of Engineering & Technology
B.Tech. in Information Technology

Artificial Intelligence (CS6002)

Meaning and definition of artificial intelligence, Various types of production systems, Characteristics of production systems, Study and comparison of breadth first search and depth first search. Techniques, other Search Techniques like hill Climbing, Best first Search. A* algorithm, AO* algorithms etc, and various types of control strategies.

Knowledge Representation, Problems in representing knowledge, knowledge representation using propositional and predicate logic, comparison of propositional and predicate logic, Resolution, refutation, deduction, theorem proving, inferencing, monotonic and nonmonotonic reasoning.

Probabilistic reasoning, Baye's theorem, semantic networks scripts schemas, frames, conceptual dependency and fuzzy logic, forward and backward reasoning.

Game playing techniques like minimax procedure, alpha-beta cut-offs etc, planning. Study of the block world problem in robotics, Introduction to understanding and natural languages processing.

Introduction to learning, Various techniques used in learning, introduction to neural networks, applications of neural networks, common sense, reasoning, some example of expert systems.

Suggested Books-

2. Introduction to AI & Expert System: Dan W. Patterson, PHI.
3. Artificial Intelligence by Luger (Pearson Education)

Faculty of Engineering & Technology
Operating System (CS4003)

Overview: Definition, types of operating systems- mainframe, server, multiprocessor, personal computer, real-time, embedded and smart card, system calls and utilities. File Systems: File concept, user and system programmer view of file systems, different modules of a file system, disk organization, tape organization, disk-space allocation methods-contiguous, linked, indexed, directory structures, file protection, disk scheduling algorithms.

Process Management: Process concepts, threads, scheduling concepts, types of schedulers, scheduling algorithms, process state diagram, comparison of various algorithms.

Memory Management: Memory management techniques – partitioning, swapping, segmentation, paging, paged segmentation, comparison of techniques, techniques for supporting the execution of large programs - overlays, dynamic linking and loading, virtual memory- concepts, implementation by demand paging.

Process Synchronization: Real and virtual concurrency, mutual exclusion, synchronization, inter process communication, critical section problem and its solution to semaphores – binary and counting semaphores, wait / signal operations and their implementation.

Deadlocks: Deadlock problem, characterization, prevention, avoidance, recovery.

Input/output: Input/output devices, device controllers, interrupt handlers, device drivers and terminal drivers.

Suggested Books:

1. A. Silberschatz and Peter B Galvin: Operating System Principals, Wiley India Pvt. Ltd.
Objective: The objective of this paper is to introduce the concepts of windows programming, GUI programming using Microsoft Foundation Classes and to enable the students to develop programs and simple applications using Visual C++. Windows Programming:

Windows environment – a simple windows program – windows and messages – creating the window – displaying the window – message loop – the window procedure – message processing – text output – painting and repainting – introduction to GDI – device context – basic drawing – child window controls


ActiveX and Object Linking and embedding (OLE): ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX controls – Calendar Control – ActiveX control container programming – create ActiveX control at runtime – Component Object Model (COM) – containment and aggregation Vs. inheritance – OLE drag and drop – OLE embedded component and containers – sample applications


Books:

Software Project Management (CS6005)

Introduction: Definition, Life Cycle, Operation, Budgeting, Hierarchy, Strategic Management, Project Origination, Project feasibility


Project Execution, Monitoring & Control: Project Organization structure & culture, Project Staffing and HR related issues, Project Monitoring & Control, content Management & partner.

Project closure: Audit & closure, Public Project with reference to Indian context.

Case Studies: Current scenario cases to be considered.

Suggested Books –

1. Project Management by Khanna, New Age Publications

Faculty of Engineering & Technology
E-Commerce (IT6002)

**Overview:** Definition, scope of electronic commerce, trade cycle, electronic markets, electronic data interchange, Internet commerce and e-commerce perspectives.


**Electronic Payment Systems:** Types of payment systems based on-electronic, digital token, smart cards and credit card, risk in electronic payment systems, designing of electronic payment systems


**ERP & E-Commerce:** Future Directives- in ERP, ERP and Internet, Integrating ERP into organizational culture, guidelines for ERP Implementations.


Aptitude/Reasoning (IT6003)

Faculty of Engineering & Technology
Operating System Lab (CS4008)

List of Experiments

I. Exercises shall be given on simulation of algorithms used for the tasks performed by the operating systems. Following modules of the simulator may be used:
   - Scheduling
   - Deadlock
   - Memory Management Systems
   - File system simulator

Algorithms described in the text may be assigned. The simulation results such as average latency, hit & Miss Ratios or other performance parameters may be computed.

II. One exercise shall be on simulation of algorithms reported in the recent conferences/journals and reproducing the results reported therein.

Visual Programming Lab (IT6004)

Computer programming with Visual Basic.

Different constructs and applications, connecting with MS-ACCESS using data controls.
List of Experiments

1. Adding buttons, edit fields, and other child-window components.

2. Implement the CObject debugging ability and Common MFC problems

3. Implement GDI Functions, and the CDC class (Text, Drawing shapes, Bitmaps )

4. Implementing View class functions
   I. Interacting with the user   II. Event Handling
   III. Responding to events from different control types

5. Implementing View class functions
   I. GDI Functions, and the CDC class   II. Text
   III. Drawing shapes   IV. Bitmaps

6. Implementing Dialog Block class
   Creating a Dialog box   Invoking and displaying   Setting and retrieving values from a dialog box

7. Implementing Dialog Boxes, Completion Database Classes
   I. ODBC vs. DAO   II. Databases and Record sets   III. Queries (filtering and ordering)

8. Printing and Print Preview
   I. Database-style reports   II Common Dialog interface

Faculty of Engineering & Technology
Compiler, Translator, Interpreter definition, Phase of compiler introduction to one pass & Multipass compilers, Bootstrapping, Review of Finite automata lexical analyzer, Input, buffering, Recognition of tokens, Idea about LEX: A lexical analyzer generator, Error handling.

Review of CFG Ambiguity of grammars, Introduction to parsing, Bottom up parsing Top down parsing techniques, Shift reduce parsing, Operator precedence parsing, Recursive descent parsing predictive parsers. LL grammars & passers error handling of LL parser. LR parsers, Construction of SLR, Conical LR & LALR parsing tables, parsing with ambiguous grammar. Introduction of automatic parser generator: YACC error handling in LR parsers.

Syntax directed definitions; Construction of syntax trees, L-attributed definitions, Top down translation. Specification of a type checker, Intermediate code forms using postfix notation and three address code, Representing TAC using triples and quadruples, Translation of assignment statement. Boolean expression and control structures.

Storage organization, Storage allocation, Strategies, Activation records, Accessing local and non local names in a block structured language, Parameters passing, Symbol table organization, Data structures used in symbol tables.

Definition of basic block control flow graphs, DAG representation of basic block, Advantages of DAG, Sources of optimization, Loop optimization, Idea about global data flow analysis, Loop invariant computation, Peephole optimization, Issues in design of code generator, A simple code generator, Code generation from DAG.

Suggested Books –

1. Aho, Ullman and Sethi: Compilers, Addison Wesley.
2. Holub, Compiler Design in C, PHI.
Information System Security (CS7001)

Elements of Number Theory: Divisibility and Euclid Algorithm, Primes and the Sieve of Eratosthenes, testing for primes, Prime Number Theorem, Euler’s, Fermat’s Little theorems, Congruences, Computing Inverse in Congruences, Legendre and Jacobi Symbols, Chinese Remainder Theorem, Algebraic Structures in Computing (Definitions, properties and Elementary Operations Only): Groups, subgroup, order of group, cyclic group, ring, field, division algorithm, polynomial over a field. Galois Field


Suggested Books –


Faculty of Engineering & Technology
Data Mining & Warehousing (CS7003)

Overview, Motivation(for Data Mining), Data Mining—Definition & Functionalities, Data Processing, Form of Data Preprocessing, Data Cleaning: Missing Values, Noisy Data, (Binining, Clustering, Regression, Computer and Human inspection), Inconsistent Data, Data Integration and Transformation. Data Reduction—Data Cube Aggregation, Dimensionality reduction, Data Compression, Numerosity Reduction, Clustering, Discretization and Concept hierarchy generation.

Concept Description: Definition, Data Generalization, Analytical characterization, Analysis of attribute relevance, Mining Class comparisons, Statistical measures in large Databases. Measuring Central Tendency, Measuring Dispersion of Data, Graph Displays of Basic Statistical class Description, Mining Association Rules in Large Databases, Association rule mining, mining Single-Dimensional Boolean Association rules from Transactional Databases—Apriori Algorithm, Mining Multilevel Association rules from Transaction Databases and Mining Multi-Dimensional Association rules from Relational Databases.

What is Classification & Prediction, Issues regarding Classification and prediction, Decision tree, Bayesian Classification, Classification by Back propagation, Multilayer feed-forward Neural Network, Back propagation Algorithm, Classification methods K-nearest neighbour classifiers, Genetic Algorithm. Cluster Analysis: Data types in cluster analysis, Categories of clustering methods, Partitioning methods. Hierarchical Clustering—CURE and Chameleon. Density Based Methods—DBSCAN, OPTICS. Grid Based Methods—STING, CLIQUE. Model Based Method—Statistical Approach, Neural Network approach, Outlier Analysis

Data Warehousing: Overview, Definition, Delivery Process, Difference between Database System and Data Warehouse, Multi Dimensional Data Model, Data Cubes, Stars, Snow Flakes, Fact Constellations, Concept hierarchy, Process Architecture, 3 Tier Architecture, Data Mining.

Aggregation, Historical information, Query Facility, OLAP function and Tools. OLAP Servers, ROLAP, MOLAP, HOLAP, Data Mining interface, Security, Backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse.

Suggested Books –

1. Data Warehousing in the Real World – Anahory and Murray, Pearson Education.
2. Data Mining – Concepts and Techniques – Jiawei Han and Micheline Kamber.

Faculty of Engineering & Technology
Internet Programming (IT7001)


Ajax-enabled rich internet applications: introduction, traditional web applications vs Ajax application, rich internet application (RIAs) with Ajax, history of Ajax, “Raw” Ajax example using the XMLHttpRequest object, using XML and the DOM, creating a full-scale Ajax- enabled application, dojo toolkit Web Servers (IIS and Apache): introduction, HTTP transactions, multi tier application architecture, client-side scripting versus server-side scripting, accessing web servers, Microsoft internet information services (IIS), Apache HTTP server, requesting documents.

PHP: Introduction, PHP basics, string processors and regular expressions, form processing and business logic, connecting to a database, using cookies, dynamic content, operator precedence chart. ASP.NET 2.0 and ASP.NET: Ajax, introduction, creating and running a simple web form example, web controls, session tracking. Case study: connecting to a database in ASP.NET.

Java Server Faces Web applications: introduction, java web technologies, creating and running a simple application in NetBeans, JSF components, session tracking.

Suggested Books:
1. Internet & WWW, How to program, DEITEL P.J., H.M., Prentice Hall

Elective I (CS7103, CS7104, CS7106, CS7107)

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Natural Language Processing (CS7107)


Architecture of NLG systems, Generation tasks and representation, Applications of NLG Machine translation: Introduction, Design features of information retrieval systems Information retrieval models, Classical information retrieval models, Non classical models of IR, Alternative models of IR,


Suggested Books-

2. Winograd. Language as a Cognitive Process, PEARSON Education.
4. Gerald Gazdar and Chris Mellish, Natural Language Processing in Prolog, Addison Wesley.
Multimedia Technology (CS7106)

Computer Graphics: Introduction to computer graphics, Mathematical foundations, 2D translation, scaling, rotation, and shear, Windowing transformations, Instance transformations, Structured graphics, 3D translation, scaling, rotation,


Suggested Books-

Bio-informatics(CS7103)

**INTRODUCTION:** Bioinformatics objectives and overviews, Interdisciplinary nature of Bioinformatics, Data integration, Data analysis, Major Bioinformatics databases and tools. Metadata: Summary & reference systems, finding new type of data online. MOLECULAR BIOLOGY AND BIOINFORMATICS: Systems approach in biology, Central dogma of molecular biology, problems in molecular approach and the bioinformatics approach, Overview of the bioinformatics applications.

**THE INFORMATION MOLECULES AND INFORMATION FLOW:** Basic chemistry of nucleic acids, Structure of DNA, Structure of RNA, DNA Replication, -Transcription, -Translation, Genes- the functional elements in DNA, Analyzing DNA,DNA sequencing. Proteins: Amino acids, Protein structure, Secondary, Tertiary and Quaternary structure, Protein folding and function, Nucleic acid-Protein interaction.

**PERL:** Perl Basics, Perl applications for bioinformatics- Bioperl, Linux Operating System, Understanding and Using Biological Databases, Java clients, CORBA, Introduction to biostatics.

**NUCLEOTIDE SEQUENCE DATA:** Genome, Genomic sequencing, expressed sequence tags, gene expression, transcription factor binding sites and single nucleotide polymorphism. Computational representations of molecular biological data storage techniques: databases (flat, relational and object oriented), and controlled vocabularies, general data retrieval techniques: indices, Boolean search, fuzzy search and neighboring, application to biological data warehouses.

**BIOLOGICAL DATA TYPES AND THEIR SPECIAL REQUIREMENTS:** sequences, macromolecular structures, chemical compounds, generic variability and its connection to clinical data. Representation of patterns and relationships: alignments, regular expressions, hierarchies and graphical models.

**Suggested Books-**
1. Bryan Bergerson, Bioinformatics Computing, Pearson Education
3. David W. Mount, Bioinformatics: Sequence and Genome analysis, cold Spring Harbor Lab
4. Warren J. Ewens & Gregory R Grant, Statistical Methods in Bioinformatics, springer

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

Design process – Human Interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.


Suggested Books –

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann, Pearson Education Asia
4. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech
5. User Interface Design, Soren Lauesen, Pearson Education.

Practical Training Seminar(IT7002)
Data Mining & Warehousing Lab(CS7004)

List of Experiments

1. Gain insight for running pre-defined decision trees and explore results using MS OLAP Analytics.
2. Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.
3. Using Teradata Warehouse Miner – Create mining models that are executed in SQL
4. Publish and analyze a business intelligence portal.
5. Import metadata from specific business intelligence tools and populate a meta data repository.
6. Publish metadata stored in the repository.
7. Load data from heterogeneous sources including text files into a pre-defined warehouse schema.
8. Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications
9. Design and build a Data Warehouse using bottom up approach titled 'Citizen Information System'.

Minor Project(IT7003)

Seminar(IT7004)
Semester-8th

Major Project(IT8001)