THIRD SEMESTER

MAT 209 ENGINEERING MATHEMATICS III

Boolean algebra, Lattices and Algebraic systems, Predicate Calculus, Permutations and Combinations, Generating function, Principle of inclusion and exclusion, Partitions, Compositions Lexicographical and Fikes ordering of permutations; Algorithms for generating functions; Graph Theory, Dijkstra’s Algorithms; Group theory

References:

CSE 201 COMPUTER ORGANIZATION AND DESIGN

Computer types, Functional units, Basic operational concepts, Bus structures, Software, Performance, Numbers, arithmetic operations and characters, Memory locations and addresses, Memory operations, Addressing modes. Addition and subtraction of signed numbers, Adders, ALU design, Bit slice processor, Multiplication of positive numbers Signed operand multiplication, Fast multiplication, Integer division, Floating point numbers and operations Introduction, Basic concepts, Design methods Basic concepts, RAM memories, Read only memories, Speed size and cost,Cache memories, Performance considerations, Virtual memories, Memory, Management Requirements, Secondary storage, Accessing I/O devices, Interrupts, Direct memory access, Buses, Interface circuits

References:

CSE 203 SWITCHING THEORY & LOGIC DESIGN

Variables and functions, Inversion, Truth tables, Logic gates and networks, Boolean algebra, Introduction to VHDL, Synthesis using AND OR and NOT gates. Karnaugh map, Strategy for minimization, Minimization of POS forms, Incompletely specified functions, Multiple output circuits, NAND and NOR logic networks, Multilevel NAND and NOR circuits, Analysis of multilevel circuits, Positional number representation, Addition of unsigned numbers, Signed
numbers, Fast adders, Design of arithmetic circuits using VHDL, BCD representation. Multiplexer, Decoder, Encoder, Code converter, Arithmetic comparison circuits, VHDL for combinational circuits, Flip Flops, Registers, Counters, Overview of semiconductor diode, BJT, MOSFET, TTL – Standard, High speed, Low-power, Low-power schotky, CMOS logic-NAND, NOR.

References:

CSE 205 DATA STRUCTURES USING C
[3 1 0 4]

Introduction to data structures, algorithm specification, time and space complexity, asymptotic notation, pointer fundamentals, memory allocation functions, array of pointers, type definition, enumerated types, structures, recursion in C, tower of Hanoi, GCD, fibonacci series, efficiency of recursion, implementation of stacks in C, evaluation of expressions, multiple stacks and queues, infix, postfix and prefix and their conversions, linked lists representations, singly, doubly, header node, circular, linked stacks and queues, polynomial and long integer arithmetic, set union, intersection, binary tree representation, recursive and non-recursive traversals, binary search tree, operations on binary search tree, AVL trees, expression trees, terminology and representation of Graph, spanning trees, minimum, spanning tree, shortest path and transitive closure, sorting algorithms, hashing.

References:

CSE 207 OBJECT ORIENTED PROGRAMMING USING C++
[3 1 0 4]

Introduction to C++, Object-Oriented Programming Systems, Comparison of C++ with C, Classes and Objects, Member Functions and Member Data, Objects and Functions, Objects and Arrays, Nested Classes, Dynamic Memory Management, Dynamic Memory Allocation, and Deallocation, Constructors and Destructors, Inheritance, Base Class and Derived Class Pointers, Base Class Initialization, The Protected Access Specifier, Deriving by Different Access Specifiers, Different Kinds of Inheritance, Virtual Functions and Dynamic Polymorphism,
Stream Handling, Operator Overloading, Templates, Function Templates, Class Templates, Exception Handling, C-Style Handling of Error-generating Codes, C++ Style Solution – the try/throw/catch Construct, Limitation of Exception Handling.

References:

**CSE 209 SWITCHING THEORY & LOGIC DESIGN LAB USING VHDL**

Simulation of logic circuits using VHDL: Introduction to MAX+plus II, Verification of logic gates and Boolean algebra, Simplification of expressions using Kmap, Experiments on multilevel NAND, NOR circuits, Arithmetic circuits, Multiplexers Multiplexer Applications, Decoders and encoders, Code converters and comparator, Registers – Shift register, Counters – Synchronous and Asynchronous

References:

**CSE 211 DATA STRUCTURES USING C LAB**

Review of C, Recursion, Stacks, Queues, Singly, doubly, circular linked lists with and without header nodes, Trees, Graphs.

References:

**CSE 213 OBJECT ORIENTED PROGRAMMING USING C++ LAB**

Review of Functions, Structures, Character pointers, Classes & Objects, Friend Functions, static members, Constructors, Destructors, Dynamic Memory Management, Matrix class, Stack class, Singly and Doubly Linked List, Inheritance, Virtual Functions, Dynamic Polymorphism, Operator Overloading, Templates, Exception Handling
References:
FOURTH SEMESTER

MAT 212 ENGINEERING MATHEMATICS IV [4 0 0 4]

References :
2. K.S.Trivedi, “Probability, Statistics with Reliability, Queuing and Computer Science applications”, PHI
3. Miller, Freund and Johnson, “Probability and Statistics for Engineers”, PHI

CSE 202 FORMAL LANGUAGES AND AUTOMATA THEORY [3 1 0 4]

References:
CSE 204 RELATIONAL DATABASE MANAGEMENT SYSTEMS


References:

CSE 206 MICROPROCESSORS

8086 internal architecture, programming the 8086, Addressing modes, assembler and Assembler directives, Instruction timing and delay loops, String instructions, Procedures and Macros, 8086 Interrupts and Interrupt Responses, 8259 Priority Interrupt Controller, 8254 Software-Programmable Timer/counter, Software interrupts: DOS 21h functions, BIOS INT 10h display and input functions and Programming examples. Functional diagram, reset and wait state, Min and Max mode operation, timing diagrams. 8255- Programmable Parallel Interface, 8087 Math Coprocessor, ISA,PCI, USB Bus, AGP.80286, 80386, Pentium Processors-Architecture, Real PVAM mode, Task protection and Task Switching. Paging,68000 Architecture, addressing modes, Instruction set, Simple assembly language programs.

References:
CSE 208  EVENT DRIVEN PROGRAMMING USING JAVA


References:

CSE 210  MICROPROCESSORS LAB

Basics of Assembly Programming, Simple Programs using Addition, Subtraction and Branching Instructions, Operations on BCD and ASCII, Multiplication and Division List Operations (Arrays), String Operations, DOS and BIOS, Interfacingexperiments - Logic Controller , DAC, Keyboard Interfacing, Seven Segment Display, Stepper Motor, ADC, Elevator Interfacing

References:

CSE 212  JAVA PROGRAMMING LAB.

Programs on control statements and arrays, Programs on classes and methods, Programs on stacks and lists, Programs on strings, Programs on Inheritance and Packages, Programs on Interfaces, Programs on Exception Handling, Programs on Multithreaded programming, Programs on Input/Output Streams, Programs on Applet Class and Event Handling, Programs involving AWT, Programs involving Swings.
References:

CSE 214 RELATIONAL DATABASE MANAGEMENT SYSTEMS LAB

DB application development with MS Access, Experiments on DDL and Basic SQL, Advanced SQL, ER diagrams using DIA tool, Data Integrity Constraints and Built-in Functions, Design and Implementing the data requirements of a simple DB application, Experiments on Basic PL/SQL, PL/SQL Exceptions and PL/SQL Cursors, PL/SQL Procedures, Functions and Packages, DB application development with Java as front end.

References:

V SEMESTER

CSE 301 DESIGN AND IMPLEMENTATION OF PROGRAMMING LANGUAGES


References:

CSE 303 DESIGN & ANALYSIS OF ALGORITHMS


References:

CSE 305 SOFTWARE ENGINEERING

References:


CSE 307 COMPUTER GRAPHICS

Overview of graphics systems, Raster scan systems, Introduction to OpenGL, Graphics Output Primitives, Line drawing, Circles and Ellipses generating, Polygon fill algorithms, Scan line fill of convex polygons and regions with curved boundaries, Filling of areas with irregular boundaries. 2D transformations, Geometric transformations in 3D space, Affine transformations, Curve and Text clipping, 3D viewing pipeline, Projection transformations, Orthographic projections, Depth buffer, Scan line method, Depth sorting method, BSP tree method, Area subdivision method. Light sources, Ambient light, Diffuse reflection, Specular reflection and Phong model, Shadows, Displaying light intensities, Halftone patterns and Dithering techniques, Basic ray tracing algorithm. Animation

References:


CSE 309 OPERATING SYSTEM AND LINUX


References:


CSE 311 COMPUTER COMMUNICATION & NETWORKS [3 1 0 4]


References:

CSE 313 DESIGN AND ANALYSIS OF ALGORITHMS LAB [0 0 3 1]

Review of fundamental data structures, Fundamentals of algorithmic problem solving, Brute force techniques, Divide and Conquer, Decrease and Conquer, Transform and Conquer, Space and Time tradeoffs, Dynamic Programming, Greedy Technique, Backtracking, Branch and Bound

References:
**CSE 315  COMPUTER GRAPHICS LAB**

Understanding OpenGL and programs to draw objects, Line drawing algorithms, Midpoint Circle and Ellipse algorithms, Polygon filling algorithms, Line and Polygon clipping algorithms, 2D transformation functions, 3D transformation functions, Transformation of user defined objects in 2D and 3D, 2D curves, Effects of lighting in OpenGL, Programs for illustration of graphical principles using OpenGL, Creating animation programs

**References:**


**CSE 317  OPERATING SYSTEM AND LINUX LAB**


**References:**

VI SEMESTER

HSS 302 ESSENTIALS OF MANAGEMENT AND ENGINEERING ECONOMICS [3 1 0 4]


References:

CSE 302 LANGUAGE PROCESSORS [3 1 0 4]


References:

CSE 304 NETWORK PROTOCOLS [3 1 0 4]

IP Addresses, Introduction, Classful addressing, Subnetting Classless addressing, variable length blocks, Subnetting, address allocation, ARP operation, ARP package and RARP, Internet Protocol (IPv4), fragmentation, options, checksum, IP Package, ICMP, Types of messages, message format, error reporting, Query, Checksum, Debugging tools, UDP-checksum, operation, package, services, features, segment, connection, State transition diagram, Flow control, Error
control, Congestion control, timers, options, TCP package, SCTP services, features, packet format, association, state transition diagram, flow control, error control, congestion control, DNS, Name space, domain name space, DNS in the internet, resolution, DDNS messages, TELNET-NVT, mode of operation, user interface, security issues, FTP and TFTP, HTTP, Mobile IP, Ipv6- address space assignment, ICMPv6, Transition from IPv4 to IPv6.

References:

CSE 306 PARALLEL COMPUTER ARCHITECTURE AND PROGRAMMING


References:
4. Michael J Quinn, “Parallel Programming in C with MPI and OpenMP”, Tata McGraw Hill

CSE 308 LANGUAGE PROCESSORS LAB

Preliminary Scanning Applications, Design & Implementation of Lexical Analyzer, Design & Implementation of Parser, Implementation of Code Generator, Programs using LEX, Programs using YACC.
References:

CSE 310 COMPUTER NETWORKS LAB

Programs on UNIX/LINUX file API's, Client-Server Programming using TCP and UDP, Implementation of Data Encapsulation, De-capsulation, fragmentation in TCP/IP, Networking basics:(IN LINUX OS) Basic Network Configurations: Assigning IP address, Subnet Mask, gateway address, LAN behind proxy, Connecting to Internet Network Server Configurations:(IN LINUX OS) Web Server/Telnet/SSH Server, FTP/TFTP Server, DHCP Server, DNS Server, Database Server (MySQL/PostGreSql), Squid.

References:

CSE 312 PARALLEL PROGRAMMING LAB


References:
2. Michael J Quinn, “Parallel Programming in C with MPI and OpenMP”, Tata McGraw Hill
3. Online tutorial in https://computing.llnl.gov/tutorials/pthreads/
4. Online tutorial in https://computing.llnl.gov/tutorials/openMP/
VII SEMESTER

CSE 401 DISTRIBUTED COMPUTING SYSTEMS


References:

CSE 403 ADVANCED INTERNET TECHNOLOGY

Introduction to SQL, HTML, ASP, ASP.NET, The .NET Framework, The Visual Basic Language, Types, Objects, and Namespaces, Developing ASP.NET Applications—Visual Studio, Web Form Fundamentals, Web Controls, State Management, Tracing, Logging and Error Handling, Deploying ASP.NET Applications, Styles, Themes, and Master Pages, ADO.NET Data access, Data Binding, Data List, Data Grid, The Data Controls, Files and Streams, email, XML, Webservices architecture, Membership, Profiles, Advanced ASP.NET, Component-Based Programming, Caching, Implementing security

References:

References:

References:
CSE 409 OBJECT ORIENTED ANALYSIS & DESIGN LAB

Object Oriented Programs on Inheritance, Problem Statement and Requirements Elicitation, Class Diagram, Use case Diagram, Sequence Diagram, Collaboration Diagram, Activity Diagram, Component and Deployment Diagrams, Generate and implement the Code, Demonstration of the Project.

References:


CSE 411 SEMINAR

Each student has to present a seminar individually, on any technical topic related to the subject, but not covered in the syllabus. The time duration for presentation is 20 minutes and 10 minutes is devoted for question and answer session. Slides have to be prepared for the presentation. A seminar report has to be submitted a week before the day of the presentation.

References:
IEEE transactions, Technical journals, Proceedings of National and International Conferences, appropriate web sites.

NOTE: The seminar evaluation is carried out in 7th semester of B.E Course and grade is included in 8th semester grade sheet.
The Students are supposed to take up industrial training of 3-4 weeks duration before the beginning of the 7th semester. Training may be taken up in parts during vacations before 7th Semester. Internships/Training/Workshops of similar durations are to be considered for Industrial Training. The evaluation is carried out in 7th semester and the obtained grade included in 8th semester grade sheet.

The role of this course is not only to impart and induce practical know how but also extract the inherent capabilities and talents of an engineering student so as to apply in practical fields for the research and development. Project work incites a triggering impulse in an engineering student for onset of his future professional carrier as an engineer.

Students are required to undertake innovative and research oriented projects employing software engineering approach, which they can carry out either in an industry or reputed national research laboratory or in the college.

This course provides the students with the opportunity to work on a project from conception through implementation and testing of a prototype. The emphasis in this course is the analysis, design and implementation as per software engineering guidelines. It is expected that each project group will have a working prototype to demonstrate by the end of this course.

References:

PROGRAMME ELECTIVES

CSE 320 DIGITAL IMAGE PROCESSING


References:

CSE 322 ADVANCED DATABASE SYSTEMS


References:
CSE 324 CRYPTOGRAPHY AND NETWORK SECURITY


References:

CSE 326 BUILDING ENTERPRISE APPLICATION

Introduction, EA types, software engineering methodologies, life cycle of raising an enterprise application, skills required to build an enterprise application, key determinants of successful enterprise applications, measuring the success of enterprise applications, Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, nonfunctional requirements, requirements validation, planning and estimation, Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and designs, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Communication Protocols, Policies, Deployment Strategy, Software Construction Maps, testing, rolling out.

References:
CSE 328 UNIX SYSTEM PROGRAMMING


References:
2. T Chan, “Unix System Programming Using C++” PHI Publications

CSE 330 ADVANCED COMPUTER NETWORKS


References:

CSE 421 SOFTWARE TESTING AND ANALYSIS

Software Test and Analysis in a nut shell – Engineering Processes and Verification, A Framework for Test and Analysis – Validation and verification, Degrees of Freedom, Varieties of Software, Basic Techniques, Finite models, Dependence and data flow models, Inter-procedural analysis, Testcase selection and adequacy, Structural testing, comparing structural testing criteria, the infeasibility problem, Data flow testing, criteria, data flow coverage with complex structures, Model based testing, Deriving test cases from finite state machines, Testing
References:


CSE 423 ARTIFICIAL INTELLIGENCE


References:


CSE 425 C# PROGRAMMING AND .NET CONCEPTS

Introduction to .NET platform, .NET base class libraries,.NET binaries, CIL, assembly manifest, documenting source code via XML, preprocessor directives, value types and reference types, Interfaces, encapsulation and polymorphism, system.systemexception, system.applicationexception, handling multiple exceptions, garbage collection, systemGC type. Defining and Invoking interface members at the object level, interface implementation, interfaces as polymorphic agents, IConvertible interface, cloneable objects, custom enumerator, system.collections.Callback interfaces, delegate types, members of System.MulticastDelegate, events. Cross-language inheritance, building a shared assembly, installing/removing shared assemblies.
References:

CSE 427 DEVELOPING ENTERPRISE APPLICATION USING JEE TECHNOLOGIES
[3 1 0 4]


References:

CSE 429 STORAGE DEVICE TECHNOLOGY
[3 1 0 4]


References:

**CSE 431 NEURAL NETWORKS AND FUZZY SYSTEMS**

[3 10 4]


References:
1. B. Yegnanarayans, “Artificial Neural Networks”, PHI 2010

**CSE 433 DATA WAREHOUSING AND DATA MINING**

[3 10 4]

Introduction to Data warehousing and Data Mining, Data preprocessing, Data cleaning, Data Integration and Transformation, Multidimensional Data model, Warehouse schema, OLAP operations, Three tier data warehousing architecture, Knowledge discovery in databases, Data mining techniques, Association rules mining, Algorithms for mining frequent patterns, From association mining to correlation analysis, Introduction to classification and prediction, Decision Tree Induction, Bayesian Classification, Rule Based Classification, Back-propagation, Lazy Learners, Prediction, Accuracy and Errors, Ensemble methods, Introduction to cluster analysis, Partitioning methods, Hierarchical methods, Outlier analysis, Trends and applications in data mining

References:
CSE 435 MULTIMEDIA APPLICATIONS


References:


CSE 437 BUSINESS INTELLIGENCE AND ITS APPLICATION

Introduction to Business Intelligence;Types of digital data; Introduction to OLTP and OLAP, Evolution of BI, Applications, Components, Framework, Roles & Responsibilities, Data Warehouse, Data integration, Data quality, Data profiling and applications, Data flow and transformations, SSIS Architecture, Introduction to ETL using SSIS; Integration Services objects; Data flow components, Data and dimension modeling, multidimensional data model, Concepts of dimensions, facts, cubes, attribute, hierarchies, star and snowflake schema, Measures, Metrics, KPIs and Performance Management, Introduction to enterprise reporting, concepts of dashboards, balanced scorecards, Introduction to SSRS Architecture, enterprise reporting using SSRS, BI Road Ahead

References:

CSE 439 EMBEDDED SYSTEMS


References:

CSE 441 DESIGN OF UNIX OPERATING SYSTEM

System structure, User perspective, Operating system services, Buffer Headers, structure of the buffer pool, Scenarios for retrieval of a buffer Reading and writing disk blocks, Structure of a regular file, System calls for the file system, Directories, Conversion of a path name to an inode, Super block, Inode assignment to a new file, Allocation of disk blocks, Process states and transitions, Layout of system memory, SleepProcess creation, Signals, Process termination, Awaiting process termination, Invoking other programs, The user id of a process, Changing the size of process, The shell, System boot and the Init process. Process scheduling, System calls for time, ClockSwapping, Demand paging, A hybrid system with swapping and demand paging. Inter-process communication: IPC methods and messages, semaphores, shared memory and sockets.

References:
1. Maurice J. Bach, “The Design Of Unix Operating System”, Prentice Hall Of India, 1988,
CSE 443 SOFTWARE ARCHITECTURE

The Architecture Business Cycle: System quality attributes; Quality attribute scenarios in practice; Other system quality attributes; Introducing tactics; Availability tactics; Modifiability tactics; Performance tactics; Security tactics; Testability tactics; Usability tactics; Relationship of tactics to architectural patterns; Architectural patterns and styles. Pattern Categories, Relationship between Patterns, Pattern Description, Patterns and Software Architectures

References:
3. E. Gamma, R. Helm, R. Johnson, J. Vlissides, “Design Patterns- Elements of Reusable Object-Oriented Software”, Addison-Wesley, 1995.

CSE 445 BIO-INFORMATICS


Text books:
OPEN ELECTIVE

**CSE 330 PRINCIPLES OF PROGRAMMING LANGUAGES**


**References:**

**CSE 332 PROGRAMMING IN C++**


**References:**
CSE 334 PROGRAMMING IN JAVA


References:

CSE 336 LINUX BASICS AND PROGRAMMING


References:

CSE 338 WEB 2.0 and RICH INTERNET APPLICATIONS

Introduction to Web 2.0, Software as a Service (SaaS), Data and Web 2.0, Convergence, Iterative development, Rich User experience, Multiple Delivery Channels, Social Networking. Web Services, Understanding differences between HTML and Flex applications, Understanding how Flex applications work, Working with XML Framework fundamentals, Understanding
application life cycle, Bootstrapping Flex applications, Loading one flex application in to another, Understanding application domains, Understanding the preloader. Managing layout, Working with UI components, Examples: Building an RSS reader with AJAX, Building an RSS reader with Flex.

References:

CSE 340 INFORMATION RETRIEVAL

Introduction; Retrieval Strategies: Vector Space Model; Probabilistic Retrieval strategies, Language Models, Inference Networks, Extended Boolean Retrieval, Fuzzy Set Retrieval, Relevance feedback; Clustering; Passage-Based Retrieval; N-Grams; Regression Analysis; Thesauri, Semantic Networks, Parsing, Inverted Files, Boolean queries, Sequential searching, Pattern matching, Structural queries, Crossing the language barrier; Cross-Language retrieval strategies, utilities, Duplicate Document Detection, historical progression, Information retrieval as a relational application, Semi-structured search using a relational schema, Multi-dimensional data model, Parallel text scanning, indexing, Clustering and classification, Large parallel systems, distributed information retrieval, Other architectures, Multimedia IR-data modeling; Query languages, Spatial access methods, A general multimedia indexing approach, Automatic picture extraction.

References:

CSE 342 DATABASE MANAGEMENT SYSTEMS

References:

CSE 344 PRINCIPLES OF SOFTWARE ENGINEERING
[3 0 0 3]

References:

CSE 346 ESSENTIALS OF IT
[3 0 0 3]

References:

CSE 348 ESSENTIALS OF INDUSTRIAL COMPUTING

[3 0 0 3]

Objected oriented concepts, UML class diagrams, advanced concept in OOT, Object Oriented design methodology,Recent trends in OO technology,Analysis of Algorithms, space time complexities, apriori& posteriori analysis, Brute Force algorithms, Greedy Algorithms,Divide and Conquer Algorithms, Decreases and Conquer algorithms, Dynamic Programming algorithms., Code tuning techniques, SQL Tuning techniques ,User interface Design, System Development methodologies, Client server computing and Internetworking, Client server technologies,middle ware Technologies, DNS,VPN, proxy servers, firewalls, world wide web, MIME types, browsers and web servers, Application servers, Web security

References: