UNIVERSITY DEPARTMENTS

ANNA UNIVERSITY CHENNAI :: CHENNAI 600 025

REGULATIONS – 2008

CURRICULUM FROM III & IV SEMESTERS FOR

B.E. COMPUTER SCIENCE AND ENGINEERING

SEMESTER III

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
MA 9211	Mathematics III	3	1	0	4
EC 9211	Electronic Devices and Circuits	3	0	0	3
CS 9201	Design and Analysis of Algorithms	3	0	0	3
CS 9202	Database Management Systems	3	0	0	3
CS 9203	Programming and Data Structures II	3	0	0	3
CS 9204	Computer Architecture	3	1	0	4
PRACTICAL					
CS 9205	Database Management Systems Laboratory	0	0	3	2
CS 9206	Programming and Data Structures Laboratory II	0	0	3	2
CS 9207	Algorithms Laboratory	0	0	3	2
	TOTAL				**26**

SEMESTER IV

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
EE 9261	Electrical Engineering and Control Systems	3	0	0	3
CS 9251	Microprocessors and Micro controllers	3	0	0	3
CS 9252	Operating Systems	3	0	0	3
CS 9253	Web Technology	3	0	0	3
MA 9265	Discrete Mathematics	3	0	0	3
CS 9254	Software Engineering	3	0	0	3
PRACTICAL					
CS 9255	Microprocessors Laboratory	0	0	3	2
CS 9256	Web Technology Laboratory	0	0	3	2
CS 9257	Operating Systems Laboratory	0	0	3	2
	TOTAL				**24**

MA 9211 MATHEMATICS III
(Common to all branches of BE / B.Tech Programmes)

L	T	P	C
3	1	0	4

Aim:

To facilitate the understanding of the principles and to cultivate the art of formulating physical problems in the language of mathematics.

Objectives:

- To introduce Fourier series analysis which is central to many applications in engineering apart from its use in solving boundary value problems
- To acquaint the student with Fourier transform techniques used in wide variety of situations in which the functions used are not periodic
- To introduce the effective mathematical tools for the solutions of partial differential equations that model physical processes
- To develop Z- transform techniques which will perform the same task for discrete time systems as Laplace Transform, a valuable aid in analysis of continuous time systems

1. FOURIER SERIES **9+3**

Dirichlet's conditions – General Fourier series – Odd and even functions – Half-range Sine and Cosine series – Complex form of Fourier series – Parseval's identity – Harmonic Analysis.

2. FOURIER TRANSFORM **9+3**

Fourier integral theorem – Fourier transform pair-Sine and Cosine transforms – Properties – Transform of elementary functions – Convolution theorem – Parseval's identity.

3. PARTIAL DIFFERENTIAL EQUATIONS **9+3**

Formation – Solutions of first order equations – Standard types and Equations reducible to standard types – Singular solutions – Lagrange's Linear equation – Integral surface passing through a given curve – Solution of linear equations of higher order with constant coefficients.

4. APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS **9+3**

Method of separation of Variables – Solutions of one dimensional wave equation and one-dimensional heat equation – Steady state solution of two-dimensional heat equation – Fourier series solutions in Cartesian coordinates.

5. Z – TRANSFORM AND DIFFERENCE EQUATIONS **9+3**

Z-transform – Elementary properties – Inverse Z-transform – Convolution theorem – Initial and Final value theorems – Formation of difference equation – Solution of difference equation using Z-transform.

L: 45, T: 15, Total : 60

TEXT BOOKS

1. Grewal, B.S. "Higher Engineering Mathematics", Khanna Publications (2007)

REFERENCES

1. Glyn James, "Advanced Modern Engineering Mathematics, Pearson Education (2007)
2. Ramana, B.V. "Higher Engineering Mathematics" Tata McGraw Hill (2007).
3. Bali, N.P. and Manish Goyal, "A Text Book of Engineering 7th Edition (2007) Lakshmi Publications (P) Limited, New Delhi.

EC 9211 ELECTRONIC DEVICES AND CIRCUITS 3 0 0 3

1. VOLTAGE AND CURRENT LAWS

Nodes, Paths, Loops, and Branches; Kirchoff's Current Law, Kirchoff's Voltage Law, Single Loop Circuit, Single Node-Pair Circuit, Series and Parellel Connected Independent Sources, Resistors in Series and Parellel, Voltage and Current Division

2. CIRCUIT ANALYSIS TECHNIQUES

Linearity and Superposition, Sources Transformation, Thevinin and Norton Equivalent Circuits, Maximum Power Transfer, Delta-Wye Conversion, Single Phase and 3 Phase Circuits-Power Factor-Power-Concept of Phasor Diagrams.

3. SEMICONDUCTOR DEVICES

PN-Junction Diode- Drift and Diffusion Current-Zener Diode-Zener Regulator-BJT- V-I Charecteristics-CE Configuration-Current Equation h-Parameter Model.JFET- V-I Charesteristics- Current Equation- Transconductance MOSFET-Types DMOS, EMOS – V-I Charesteristics-Moll Current Equation Equalitine Treatment only.

4. RECTIFIER, AMPLIFIER AND OSCILLATOR

FWR-Filter-Capacitors Input Filter-Choke Input Filter – CE Amplification with and without feedback – Analysis and Frequency Response – CS MOSFET Amplifier - Analysis

5. OPERATION AMPLIFIER

Introduction of an Inverting Amplifier, Non Inverting Amplifier, Basic Application of Operation Amplifier: Subractor, Summing Amplifier, Digital to Analogue Convertor, Low Pass Filter, First Order Low Pass Filter, First Order High Pass Filter, Integrator, Differentiator.

TEXT BOOK

1. David A.Bell 'Electronic Devices and Circuit/ -Oxford press-2008.
2. Robert T.Paynter Introductory Electronic Devices and Circuits – Pearson Education-Sixth Edition

REFERENCE

1. Denal A.Neamar, Electronic Circuit Analysis and Design – Second Edition – Tata MCGraw Hill, 2002.
2. Adel S.Sedia Keanath Cswith Micro Electronic Circuit-Fourth Edition-Oxford University Press-1998.

CS 9201 DESIGN AND ANALYSIS OF ALGORITHMS 3 0 0 3

AIM:

The aim is to introduce the basics of algorithm design paradigms and analysis to enable designing of efficient algorithms.

OBJECTIVES:

- To introduce the basic concepts of algorithm analysis
- To introduce the design paradigms for algorithm design
- To introduce the basic complexity theory.

UNIT I 9

The Role of Algorithms in Computing-Getting Started-Growth of Functions – Recurrences-The Substitution Method- The Recurrence Tree Method-The Master Method -Probabilistic Analysis and Randomized Algorithms-The Hiring Problem-Random Variables-Randomized Algorithms.

UNIT II 9

Quicksort-Description-Performance-Randomized version-Analysis.Sorting in linear time-Lower bounds for sorting-Counting sort-Medians and order statistics-Minimum and maximum-Selection in expected linear time- Selection in worst-case linear time-Dynamic Programming – Matrix chain multiplication –Elements of Dynamic programming- Longest common sequences.

UNIT III 9

Greedy Algorithms-Activity selection problem-Elements of Greedy Strategy-Huffman code.Matrix Operations-Properties of matrices-Strassen's algorithm-Solving systems of linear equations-Inverting matrices.

UNIT IV 9

Linear Programming-Standard and slack forms-Formulating problems-Simplex algorithm-Duality-Initial basic feasible solution - String Matching-Naive string matching algorithm-Knuth-Morris-Pratt algorithm.

UNIT V 9

NP-completeness-Polynomial time-Polynomial-time verification-NP-completeness and reducibility-NP-completeness proofs - NP-completeness problems. Approximation Algorithms-The vertex-cover problem-The traveling-salesman problem.

TOTAL : 45

TEXT BOOKS

1. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, Cliford Stein, “Introduction to Algorithms”, Second Edition, Prentice Hall of India, 2007.

REFERENCE BOOKS:

1. Jon Kleinberg, Eva Tardos, “Algorithm Design”, Pearson Education, 2006.
2. Michael T. Goodrich, Toberto Tamassisa, “ Algorithm Design: Foundations, Analysis and Internet Examples”, Wiley Student Edition, 2007.
3. Anany Levitin, “Introduction to Design and Analysis of Algorithms”, Pearson Education, 2003.

CS 9202 DATABASE MANAGEMENT SYSTEMS 3 0 0 3

AIM:

To provide a strong foundation in database technology and an introduction to the current trends in this field.

OBJECTIVES

- To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram.
- To make a study of SQL and relational database design.
- To understand the internal storage structures using different file and indexing techniques which will help in physical DB design.
- To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- To have an introductory knowledge about the Storage and Query processing techniques

1. INTRODUCTION 9

Purpose of Database System -– Views of data – Data Models – Database Languages –– Database System Architecture – Database users and Administrator – Entity–Relationship model – E-R Diagrams -- Introduction to relational databases

2. RELATIONAL MODEL 9

The relational Model – The catalog- Types– Keys - Relational Algebra – Domain Relational Calculus – Tuple Relational Calculus - Fundamental operations – Additional Operations- SQL fundamentals - Integrity – Triggers - Security – Advanced SQL features –Embedded SQL– Dynamic SQL- Missing Information– Views – Introduction to Distributed Databases and Client/Server Databases

3. DATABASE DESIGN 9

Functional Dependencies – Non-loss Decomposition – Functional Dependencies – First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal Form- Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form

4. TRANSACTIONS 9

Transaction Concepts - Transaction Recovery – ACID Properties – System Recovery – Media Recovery – Two Phase Commit - Save Points – SQL Facilities for recovery – Concurrency – Need for Concurrency – Locking Protocols – Two Phase Locking – Intent Locking – Deadlock- Serializability – Recovery Isolation Levels – SQL Facilities for Concurrency.

5. IMPLEMENTATION TECHNIQUES 9

Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing –Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing – Query Processing Overview – Catalog Information for Cost Estimation – Selection Operation – Sorting – Join Operation – Database Tuning.

TOTAL = 45

TEXT BOOKS:

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, “Database SystemConcepts”, Fifth Edition, Tata McGraw Hill, 2006 (Unit I and Unit-V) .
2. C.J.Date, A.Kannan, S.Swamynathan, “An Introduction to Database Systems”, Eighth Edition, Pearson Education, 2006.(Unit II, III and IV)

REFERENCES:

1. Ramez Elmasri, Shamkant B. Navathe, “Fundamentals of Database Systems”, FourthEdition , Pearson / Addision wesley, 2007.
2. Raghu Ramakrishnan, “Database Management Systems”, Third Edition, McGraw Hill, 2003.
3. S.K.Singh, “Database Systems Concepts, Design and Applications”, First Edition, Pearson Education, 2006.

CS 9203 PROGRAMMING AND DATA STRUCTURES II 3 0 0 3

AIM:

The aim is to introduce the concepts Object Oriented Programming and analysis the implementation of Advanced Data Structures using Object Oriented Programming Language.

OBJECTIVES:

- To introduce the concepts of Object Oriented Programming language.
- To introduce the concepts of Templates and Error Handling.
- To introduce the concepts of Advanced Data Structures.

UNIT I 9

Introduction – Learning C++ - Design of C++ - History and Use – Programming Paradigms – Standard Library – Types and Declaration – Pointers, Arrays, Structures – Expressions and Statements – Functions – Namespaces and Exceptions – Source Files and Programs – Classes – User-Defined Types – Objects – Operator Overloading – Operator Functions – Complex Number

UNIT II 9

Type Conversion Operators – Friends – Large Objects – Essential Operators – Subscripting – Function Call – Dereferencing – Increment and Decrement – String Class – Derived Classes – Abstract Classes – Design of Class Hierarchies

UNIT III 9

Templates – Function Templates – Error Handling – Grouping of Exceptions – Catching Exceptions – Resource Management – Multiple Inheritance – Access Control – Run Time Type Information

UNIT IV 9

OO Perspective of List, Stack, Queue, and Search Tree ADTs – AVL Trees – Red Black Trees – Splay Trees – B-trees – Priority Queues (Heaps)

UNIT V 9

Disjoint Set ADT – Graph Algorithms – Topological Sort – Shortest-Path Algorithm – Network Flow Problems – Minimum Spanning Tree – Applications of Depth-First Search

TOTAL: 45

TEXT BOOKS:

1. Bjarne Stroustrup, “The C++ Programming Language”, 3rd ed., Pearson Education, 2007. (Units 1,2,3)
2. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, 2nd ed., Pearson Education, 2005. (Units 4,5)

REFERENCE BOOKS:

1. Ira Pohl, “Object-Oriented Programming using C++”, 2nd ed., Pearson Education, 1997.
2. Goodrich, Michael T., Roberto Tamassia, David Mount. Data Structures and Algorithms in C++. 7th ed, Wiley. 2004.

CS 9204 COMPUTER ARCHITECTURE 3 1 0 4

AIM : To understand the organization of a computer, and the hardware-software interface.

OBJECTIVES :

- To know about the various components of a computer and their internals.
- To comprehend the importance of the hardware-software interface, and instruction-set architecture.
- To understand the architectural features of superscalar processors.

1. BASIC STRUCTURE OF COMPUTERS 9+3

Functional units – Basic operational concepts – Bus structures – Performance and metrics – Instructions and instruction sequencing – Hardware – Software Interface – Instruction set architecture – Addressing modes – RISC – CISC. ALU design – Fixed point and floating point operations.

2. BASIC PROCESSING UNIT 6+3

Fundamental concepts – Execution of a complete instruction – Multiple bus organization – Hardwired control – Micro programmed control – Nano programming.

3. PIPELINING AND ILP 12+3

Basic concepts – Data hazards – Instruction hazards – Influence on instruction sets – Data path and control considerations – Performance considerations – Exception handling – Advanced concepts in pipelining –Exploitation of more ILP – Hardware and software approaches – Dynamic scheduling – Speculation – Compiler approaches – Multiple issue processors.

4. MEMORY SYSTEM 9+3

Basic concepts – Semiconductor RAM – ROM – Speed – Size and cost – Cache memories – Improving cache performance – Virtual memory – Memory management requirements – Associative memories – Secondary storage devices.

5. I/O ORGANIZATION 9+3

Accessing I/O devices – Programmed Input/Output -Interrupts – Direct Memory Access – Buses – Interface circuits – Standard I/O Interfaces (PCI, SCSI, USB), I/O devices and processors.

TOTAL = 45 +15

TEXT BOOKS:

1. Carl Hamacher, Zvonko Vranesic and Safwat Zaky, “Computer Organization”, Fifth Edition, Tata McGraw Hill, 2002.
2. David A. Patterson and John L. Hennessy, “Computer Organization and Design: The Hardware/Software interface”, Third Edition, Elsevier, 2005.

REFERENCES:

1. William Stallings, “Computer Organization and Architecture – Designing for Performance”, Sixth Edition, Pearson Education, 2003.
2. John P. Hayes, “Computer Architecture and Organization”, Third Edition, Tata McGraw Hill, 1998.
3. V.P. Heuring, H.F. Jordan, “Computer Systems Design and Architecture”, Second Edition, Pearson Education, 2004.
4. Behrooz Parhami, “Computer Architecture”, Oxford University Press, 2007.

CS 9205 DATABASE MANAGEMENT SYSTEMS LAB 0 0 3 2

Experiments in the following topics:

1. Data Definition, Manipulation of base tables and views
2. High level programming language extensions.
3. Front end tools
4. Forms
5. Triggers
6. Menu Design
7. Importing/ Exporting Data
8. Reports.
9. Database Design and implementation (Mini Project).

CS 9206 PROGRAMMING AND DATA STRUCTURES LABORATORY II 0 0 3 2

Experiments in the following:

1. Data abstraction, Implementation of any one of the following List, Stack, Queue ADTs, using Header files, Separate compilation of implementation and application. Search ADT, Binary Search Tree., Header files, Separate compilation.

2. Use of Standard Template Library: Strings, Containers

3. Use of STL: Iterators

4. Operator Overloading

5. Templates,

6. Exception handling, Class Hierarchies

7. AVL Tree

8.Splay Tree

9. B Tree

10. Graph algorithms

CS 9207 ALGORITHMS LABORATORY 0 0 3 2

Implement the following:

1. Simple recursive programs like Towers of Hanoi ,Generating Permutations.
2. Sort algorithms.
3. Randomized quicksort algorithm.
4. Merge sort using Divide and Conquer approach.
5. Generation of Huffman code using Greedy Approach.
6. Floyd's Algorithm -Dynamic Programming
7. Simplex Method.
8. String matching algorithms.
9. Study of Benchmarking algorithms.
10. Study of Algorithms Tools.

EE9261 ELECTRICAL ENGINEERING & CONTROL SYSTEMS 3 0 0 3

AIM

To provide knowledge in the basic concepts of circuits, electrical machines, linear control theory and its analysis.

OBJECTIVE

- To impart knowledge on Network theorems.
- Principle of electrical machines.
- Different system representation, block diagram reduction and Mason's rule.
- Time response analysis of LTI systems and steady state error.
- State variable analysis.

1. ELECTRIC CIRCUITS 9

Dependent and independent sources – Kirchoff's laws – mesh current and node voltage methods – theorems – Thevenin's – Norton's - superposition - maximum power transfer- Phasors – sinusoidal steady state response of simple RLC circuits.

2. ELECTRICAL MACHINES AND TRANSFORMERS 9

Principles of operation of single phase transformers – equivalent circuits – efficiency – DC motor – principle of operation – torque equation – load characteristics of DC shunt motor – single-phase induction motor – double field revolving theory – equivalent circuits – starting methods.

3. MATHEMATICAL MODELS OF PHYSICAL SYSTEMS 9

Definition & classification of system – terminology & structure of feedback control theory – Differential equation of physical systems – Block diagram algebra – Signal flow graphs.

4. TRANSFER FUNCTION ANALYSIS 9

Frequency response – Bode plots –Time Response analysis of II order system – Time and frequency domain specifications.

5. STATE VARIABLE ANALYSIS 9

Concept of state variable – State models for linear & continuous time systems – State variable realizations - Solution of state equation.

Total = 45

TEXT BOOKS

1. Smarajit Ghosh, 'Fundamentals of Electrical and Electronics Engineering', 2nd Edition, Prentice-Hall, New Delhi, 2007.
2. Richard C Dorf and Robert H.Bishop, " Modern Control Systems", 8th Edition, Prentice-Hall, (Pearson Education, Inc.), New Delhi, 2005.

REFERENCES

1. Vincent Del Toro, 'Electrical Engineering Fundamentals', 2nd Edition, Prentice-Hall, (Pearson Education Inc.), 2007
2. John Bird, 'Electrical and Electronics Principles and Technology', 3rd Edition, Elsevier, New Delhi.
3. Joseph J. Distefano, Allen R. Stubberud, Iran J.Williams, "Feedback and Control Systems", 2nd Edition, Tata McGraw Hill, New Delhi, 2007.

CS 9251 MICROPROCESSORS AND MICROCONTROLLERS 3 0 0 3

AIM

- To have an in depth knowledge of the architecture and programming of 8-bit and 16-bit Microprocessors, Microcontrollers and to study how to interface various peripheral devices with them.

OBJECTIVES

- To study the basic architectures and operational features of the processors and controllers
- To learn the assembly language programming
- To design and understand the multiprocessor configurations
- To understand the interfacing concepts of the peripheral devices with that of the processors

1. THE 8085 AND 8086 MICROPROCESSORS 9

8085 Microprocessor architecture – Instruction set – Programming the 8085. 8086 Microprocessor architecture – signals.

2. 8086 SOFTWARE ASPECTS 9

Intel 8086 microprocessor – Instruction set – Addressing modes – Assembler directives – Assembly language programming – Procedures – Macros – Interrupts and interrupt service routines – BIOS function calls.

3. SYSTEM DESIGN 9

Basic configurations **–** Minimum and maximum modes – System design using 8086 **–** Multiprocessor configurations – Introduction to 80286, 80386 and Pentium.

4. I/O INTERFACING 9

Memory Interfacing and I/O interfacing with 8085 and 8086 – Parallel communication interface – Serial communication interface – Timer – Keyboard / Display controller – Interrupt controller – DMA controller – Programming and applications.

5. MICROCONTROLLERS 9

Architecture of 8051 microcontroller – Signals – Operational features – Memory and I/O addressing – Interrupts – Instruction set – System design using microcontrollers.

TOTAL = 45

TEXT BOOKS:

1. Ramesh S. Gaonkar, "Microprocessor **–** Architecture, Programming and Applications with the 8085", Fifth Edition**,** Prentice Hall.,2002 (Unit I.)
2. Yu-cheng Liu, Glenn A. Gibson, "Microcomputer systems: The 8086 / 8088 Family architecture, Programming and Design", Second edition, Prentice Hall of India, 2006.
3. Mohamed Ali Mazidi, Janice Gillispie Mazidi, "The 8051 microcontroller and embedded systems using Assembly and C", Second Edition, Pearson Education / Prentice Hall of India, 2007 (Unit V).

REFERENCES:

1. Barry B. Brey, "The Intel Microprocessors, 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, PentiumPro Processor, PentiumII, PentiumIII, PentiumIV, Architecture, Programming & Interfacing", Seventh Edition, Pearson Education / Prentice Hall of India, 2007.
2. Douglas V. Hall, "Microprocessors and Interfacing: Programming and Hardware", Second edition, Tata Mc Graw Hill, 2006.
3. A.K. Ray & K. M. Bhurchandi, "Advanced Microprocessors and peripherals **–** Architectures, Programming and Interfacing", Tata Mc Graw Hill, 2006.
4. Peter Abel, "IBM PC Assembly language and programming", Fifth edition, Pearson Education / Prentice Hall of India Pvt. Ltd,2007 .

CS 9252 OPERATING SYSTEMS 3 0 0 3

Aim: The course introduces the students to the basic principles of operating systems.

Objectives:

- To be aware of the evolution of operating systems
- To learn what processes are, how processes communicate, how process synchronization is done and how to manage processes
- To have an understanding of the main memory and secondary memory management techniques.
- To understand the I/O Subsystem
- To have an exposure to Linux and Windows 2000 operating systems

1. OPERATING SYSTEMS OVERVIEW 9

Operating system – Types of Computer Systems – Computer-system operation – I/O structure – Hardware Protection – System components – System calls – System programs – System structure – Process concept – Process scheduling – Operations on processes – Cooperating processes – Interprocess communication – Communication in client-server systems – Multithreading models – Threading issues – Pthreads.

2. PROCESS MANAGEMENT 10

Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling – Algorithm Evaluation – Process Scheduling Models - The critical-section problem – Synchronization hardware – Semaphores – Classic problems of synchronization – Critical regions – Monitors – System model – Deadlock characterization – Methods for handling deadlocks – Recovery from deadlock

3. STORAGE MANAGEMENT 9

Memory Management – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging. Virtual Memory: Background – Demand paging – Process creation – Page replacement – Allocation of frames – Thrashing.

4. I/O SYSTEMS 9

File concept – Access methods – Directory structure – File-system mounting – Protection – Directory implementation – Allocation methods – Free-space management – Disk scheduling – Disk management – Swap-space management.

5. CASE STUDY 8

The Linux System – History – Design Principles – Kernel Modules – Process Management – Scheduling – Memory management – File systems – Input and Output – Inter-process Communication – Network Structure – Security – Windows 2000 – History – Design Principles – System Components – Environmental subsystems – File system – Networking.

TOTAL = 45

TEXT BOOKS:

1. Silberschatz, Galvin and Gagne, “Operating System Concepts”, Sixth Edition, John Wiley & Sons Inc 2003.

REFERENCES:

1. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Addison Wesley, 2001.
2. Gary Nutt, “Operating Systems”, Second Edition, Addison Wesley, 2003.
3. H M Deital, P J Deital and D R Choffnes, “Operating Systems”, Pearson Education, 2004.

CS 9253 WEB TECHNOLOGY 3 0 0 3

AIM:

To provide an introduction to Java and basic Web concepts and enable the student to create simple Web based applications.

OBJECTIVES:

- To introduce the features of object oriented programming languages using Java
- To design and create user interfaces using Java frames and applets
- To have a basic idea about network programming using Java
- To create simple Web pages and provide client side validation
- To create dynamic web pages using server side scripting

UNIT I **9**

Java fundamentals – Class, Object – Inheritance – Polymorphism – Packages – Interfaces – Exception handling

UNIT II **9**

I/O – AWT – Event handling – Introduction to Threads - Basics of Networking –TCP and UDP sockets – Connecting to the Web

UNIT III **9**

Applets – JDBC – Swings – Remote Method Invocation

UNIT IV **9**

World Wide Web – HTML – List –Tables – Frames – Forms – HTTP commands – XML – DTD, Schema – XSLT – XML Parser – Client side scripting

UNIT V **9**

Server side scripting – JSP – Servlets – Session management – Cookies

Total : 45

TEXTBOOK:

1. Deitel and Deitel, “Java – How to program”, 3rd ed., Pearson Education, 2001.
2. Robert W. Sebesta, “Programming the World Wide Web”, 3rd ed., Pearson Education, 2006. (Units 4,5)

REFERENCE BOOKS:

1. Herbert Schildt, “Java – The Complete Reference”, 7th ed., Tata McGraw Hill, 2007.
2. Chris Bates, “Web Programming”, 3rd ed., Wiley, 2006.
3. Black Book, “Java 6 Programming”, Dreamtech Press, 2007.
4. Deitel, “Java How to Program”, Pearson Education, 2003.
5. W Clay Richardson, et al, “Professional Java JDK 6 Edition”, Wrox, 2007.

MA9265 DISCRETE MATHEMATICS 3 0 0 3

AIM:

To extend student's Logical and Mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.

OBJECTIVES:

At the end of the course, students would

- Have knowledge of the concepts needed to test the logic of a program.
- Have an understanding in identifying structures on many levels.
- Be aware of a class of functions which transform a finite set into another finite set which relates to input output functions in computer science.
- Be aware of the counting principles
- Be exposed to concepts and properties of algebraic structures such as semi groups, monoids and groups.

1. LOGIC AND PROOFS 9

Propositional Logic – Propositional equivalences-Predicates and quantifiers – Nested Quantifiers – Rules of inference-introduction to proofs – proof methods and strategy.

2. COMBINATORICS 9

Mathematical induction – Strong induction and well ordering – The basics of counting - The pigeonhole principle – Permutations and combinations – Recurrence relations-Solving linear recurrence relations-generating functions – Inclusion and exclusion and applications.

3. GRAPHS 9

Graphs and graph models – Graph terminology and special types of graphs - presenting graphs and graph isomorphism – connectivity – Euler and Hamilton paths.

4. ALGEBRAIC STRUCTURES 9

Algebraic systems – Semi groups and monoids – Groups-Subgroups and homomorphisms – Cosets and Lagrange's theorem – Ring & Fields.

5. LATTICES AND BOOLEAN ALGEBRA 9

Partial ordering – Posets – Lattices as Posets – Properties of lattices-Lattices as algebraic systems – Sub lattices – direct product and Homomorphism – Some special lattices – Boolean algebra

L: 45, T: 15, Total : 60

TEXT BOOKS

1. Kenneth H.Rosen, "Discrete Mathematics and its Applications", 6th Edition, Special Indian edition , Tata McGraw – Hill Pub. Co. Ltd., New Delhi, (2007).
2. Trembly J.P. and Manohar R, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw–Hill Pub. Co. Ltd, New Delhi, 30th Re-print (2007).

REFERENCES

1. Ralph. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Fourth Edition, Pearson Education Asia, Delhi, (2002).
2. Thomas Koshy, "Discrete Mathematics with Applications", Elsevier Publications, (2006).
3. Seymour Lipschutz and Mark Lipson," Discrete Mathematics", Schaum's Outlines, Tata McGraw – Hill Pub. Co. Ltd., New Delhi, 2007,Second edition, Fifth reprint, (2007).

CS 9254 SOFTWARE ENGINEERING 3 0 0 3

AIM:

The course is intended to give Software Engineering principles in classical sense.

OBJECTIVES:

- To be aware of a member of generic models to structure the software development process.
- To understand fundamental concepts of requirements engineering and requirements specification.
- To understand different notion of complexity at both the module and system level
- To be aware of some widely known design methods.
- To understand the role and contents of testing activities in different life cycle phases.

UNIT I 9

The Evolving role of Software – Software – The changing Nature of Software – Legacy software —A generic view of process– A layered Technology – A Process Framework – The Capability Maturity Model Integration (CMMI) – Process Assessment – Personal and Team Process Models. Product and Process. Process Models – The Waterfall Model – Incremental Process Models – Incremental Model – The RAD Model – Evolutionary Process Models – Prototyping – The Spiral Model – The Concurrent Development Model – Specialized Process Models – the Unified Process.

UNIT II 9

Software Engineering Practice – communication Practice – Planning practice Modeling practice– Construction Practice –Deployment. Requirements Engineering - Requirements Engineering tasks – Initiating the requirements Engineering Process- Eliciting Requirements – Developing Use cases – Building the Analysis Models – Elements of the Analysis Model – Analysis pattern – Negotiating Requirements – Validating Requirements.

UNIT III 9

Requirements Analysis – Analysis Modeling approaches – data modeling concepts – Object oriented Analysis – Scenario based modeling – Flow oriented Modeling – Class based modeling – creating a behaviour model.

UNIT IV 9

Design Engineering – Design process -Design Quality-Design model-User interface Design – Testing strategies- strategies Issues for conventional and object oriented software-validation testing –system testing –Art of debugging – Project management

UNIT V 9

Software evolution - Verification and Validation -Critical Systems Validation – Metrics for Process, Project and Product-Quality Management -Process Improvement –Risk Management- Configuration Management **TOTAL: 45**

TEXT BOOKS:

1. Roger S.Pressman, Software Engineering: A Practitioner's Approach, McGraw Hill International edition, Sixth edition, 2005.
2. Ian Sommerville, Software Engineering, 8th Edition, Pearson Education, 2008(UNIT V)

REFERENCES:

1. Stephan Schach, Software Engineering, Tata McGraw Hill, 2007
2. Pfleeger and Lawrence Software Engineering: Theory and Practice, Pearson Education, second edition, 2001

CS 9255 MICROPROCESSORS LABORATORY 0 0 3 2

AIM:

- To learn the assembly language programming of 8085, 8086 and 8051 and also to give a practical training of interfacing the peripheral devices with the processor.

OBJECTIVES:

- To implement the assembly language programming in 8085,8086 and 8051
- To study the system function calls like BIOS/DOS.
- To experiment the interface concepts of various peripheral device with the processor

Experiments in the following:

1. Programming with 8085 – 2 Experiments.
2. Programming with 8086 – 3 Experiments including BIOS/DOS Calls: Keyboard Control, Display, File Manipulation.
3. Interfacing with 8085/8086-8255,8253.
4. Interfacing with 8085/8086-8279,8251.
5. 8051 Micro controller based experiments – assembly language programs.
6. 8051 Micro controller based experiments – control applications.
7. Mini – Project.

TOTAL = 45

CS 9256 WEB TECHNOLOGY LOBORATORY 0 0 3 2

Aim:

To enable the students to program in Java and to create simple Web based applications.

Objectives:

- To write simple programs using Java
- To design and create user interfaces using Java frames and applets
- To write I/O and network related programs using Java
- To create simple Web pages and provide client side validation
- To create dynamic web pages using server side scripting

Experiments in the following:

1. Java Fundamentals, Classes, Objects
2. Inheritance, Polymorphism
3. Interfaces, Exception handling
4. I/O, AWT
5. Socket Programming
6. Applets, Swings
7. Database connectivity
8. RMI
9. XML, Style sheet, Parser
10. Client side scripting
11. JSP, Servlets
12. Session Management

Total : 45

CS 9257 OPERATING SYSTEMS LABORATORY 0 0 3 2

Aim:
To have hands-on experience in operating system concepts and programming in the UNIX environment.

Objectives:

- To learn shell programming and the use of filters in the UNIX environment.
- To learn to program in C using system calls.
- To learn to use the file system related system calls
- To have a knowledge in how processes are created and processes communicate.
- To learn how process synchronization is done using semaphores.

Experiments in the following:

1. Basic UNIX commands.
2. Shell Programming.
3. Grep, sed, awk.
4. File system related system calls.
5. Process management – Fork, Exec.
6. Message queues.
7. Pipes, FIFOs.
8. Signals.
9. Shared memory.
10. Semaphores.

TOTAL = 45