

T.E. (COMPUTER ENGINEERING)

SEM V

SUB : MICROPROCESSORS

Lectures: 4 Hrs per week Theory : 100 Marks

Practical: 2 Hrs per week Term work: 25 Marks

Objectives of the course : This course deals with the systematic study of the Architecture and programming issues of 8086/88-microprocessor family. The aim of this course is to give the students basic knowledge of the above microprocessor needed to develop the systems using it.

Pre-requisites : Digital Logic Design

DETAILED SYLLABUS

1. Introduction to Microcomputer Systems:

Introduction to Microprocessors & it's evolution, Overview of 8086

Family , Case study of PC System.

2. Architecture of 8086/88 Family :

Memory organization & Architecture of 8086 family, 8086 Hardware Design , System Clock (8284) & reset signal , buffering & latching circuits , Minimum mode and Maximum mode Operation , Study of Bus Controller 8288 & it's use in maximum mode Connection , System Timing Diagrams for 8086.

3. 8086 Instruction Set & Programming :

Addressing modes , Instruction sets in detail , ALP , Mixed language programming , Stacks , Strings , Procedures , Macros , Timers , Counters & delay . Programming examples using DOS and BIOS Interrupts , Device Drivers Programming.

4. 8086 Interrupt System:

8086 Interrupt structure, types and applications; study of Programmable Interrupt Controller 8259A & Interrupt Priority Management using 8259A.

5. Memory System Design & I/O Interfacing:

Interfacing SRAM, ROM and DRAM to 8086, Address decoding & Timing

Considerations. I/O interfacing in 8086 : Serial communication interface

includes Synchronous & Asynchronous Protocols, parallel communication Interfaces includes I/O Mapped I/O, Memory Mapped I/O, Handshaking

Signals

6. I/O Controllers for 8086 and Data Communication:

Study of 8255AH Programmable Peripheral Interface and it's modes;

Study of 8250 UART, DMA Concepts and transfer types: Study of DMA Controller 8237, Study of Programmable Timer 8254 and it's modes. Data

Communication includes EIA RS-232C Standard, IEEE 488 GPIB.

7. 8087 Numeric Co-processor:

8087 NDP Architecture, Data Types and Formats, Numeric Instruction Set, Stacks in 8087, Interface of Co-processor 8087 to Host 8086, ALP for 8086-8087 Systems; Study of IOP 8089, it's interaction with 8086.

8. Multiprocessor Systems:

8086/88 based Multiprocessor Systems, Study of Multiprocessor configurations, Study of Bus Arbiter 8289, Bus arbitration and Control using 8289.

TEXT BOOKS :

1. Douglas Hall, "Multiprocessors and Interfacing , Programming and Hardware", Tata Mcgraw-Hill.1999, second edition.

2. John Uffenback, "8086/88 Interfacing, Programming and Design", 1987, PHI.
3. Yu-Cheng Liu, Glenn A. Gibson, "The 8086/8088 Family architecture, Programming and Design", PHI. 1986, Second Edition.
4. Peter Able, "IBM PC , Assembler Language Programming", PHI.

References:

1. A.K. Ray, K.M. Bhurchandi, "Advanced Microprocessors and Peripherals ", Tata McGraw Hill, 2000.
2. B.B. Brey, "The Intel Microprocessors", PHI, 2003, Sixth Edition.
3. Peter Norton, "IBM PC, Assembly Language Programming", BPB publication.
4. Manuals from Intel.

TERM WORK

1. Term work should consist of at least 12 practical experiments covering all the topics.
2. A term work test must be conducted with a weightage of 10 marks.

T.E. (COMPUTER ENGINEERING)

SEM V

SUB : Presentation And Communication Techniques

Lectures: 2 Hrs per week Term work: 25 Marks

Tutorials: 2 Hrs per week Oral Exam: 25 Marks

DETAILED SYLLABUS

1. COMMUNICATION IN A BUSINESS ORGANISATION

Internal (Upward, downward, Horizontal, Grapevine, Problems, Solutions) External Communication, Strategies for conducting successful business meetings, documentation (notice, agenda, minutes) of meetings, Introduction to modern communication techniques, (for e.g. e-mail, internet, video conferencing), Legal & ethical issues in communication (intellectual property right, patents)

2. ADVANCED TECHNICAL WRITING

REPORT – WRITING AND PRESENTATION: Definition and importance of report. Qualities of Report, language and style in reports, type of reports, formats (letter, memo, project -reports), methods of compiling data. A computer-aided presentation of a project report based on technical, Survey-based, reference based or campus related topic. Topics to be assigned to a group of 8-10 students. The written report should not exceed 20 printed pages.

3. TECHNICAL PAPER-WRITING

4 .WRITING PROPOSALS

5 .INTERPERSONAL SKILLS

Introduction to emotional intelligence, Motivation, negotiation and conflict-resolution, Assertiveness, Leadership, Team-building, Decision-making, Time management

6. INTERVIEW TECHNIQUES

Preparing for job interviews, verbal and non-verbal communication during interviews. Observation session and role-play techniques may be used to demonstrate interview strategies.

7. GROUP DISCUSSION

Dynamics of Group Behavior, Techniques for effective participation.

TEXT BOOKS :

- 1.Fred Luthas, 'Organizational Behavior' McGraw Hill International Edition
- 2.Lesiker and Petit 'Report Writing For Business' McGraw Hill International Edition
- 3.Huckin and Olsen 'Technical Writing and Professional Communication'-McGraw Hill International Edition
- 4.Wallace and Masters 'Personal Development for Life and Work'(workbook Thomasan) Thomson Learning
- 5.Herta Murphy 'Effective Business Communication'

References:

- 1.Lewicki, Saunders, Minton 'Essential of Negotiation' McGraw Hill international Edition
- 2.Hartman Lemay 'Presentation Success' Thomson Learning
- 3.Kitty O Locker & Kaczmark 'Business Communication Building Critical Skills' McGraw Hill
- 4.Vikas Gupta: Comdex Computer Course Kit, IDG Book Pvt.Ltd.
- 5.Heller & Handle : The Essential Manager's Manual-Dorleen Kindercey
- 6.the Times 'Creating Success Series'
 - 1.Develop your assertiveness
 - 2.Make every minute count
 - 3.Succssful to motivate people
 - 4.Team building

T.E. (COMPUTER ENGINEERING)

SEM V

SUBJECT: COMPUTER NETWORK

Lectures : 3 Hrs. per week Theory:100 Marks

Practical: 3 Hrs. per week Term work: 25 Marks

Pre-requisites: Course in Data Structure and Computer organization, C/C++.

DETAILED SYLLABUS

1. Introduction: Network Application. Network Hardware, Network Software, References model.
2. The Physical Layer: Guided Transmission media, Wireless Transmission, Communication satellites, The Public Switched Telephone network, The mobile Telephone System , Cable Television.
3. The Data Link Layer : Data Link Layer Design issue, Elementary Data Link Protocol Sliding Window protocol, Examples of Data Link Protocol, HDLC, High level Data Link Control, Data Link Layer in the Internet.
4. The Medium Access Sub-layer: The channel allocation problem, Multiple Access Protocols, Ethernet, Wireless LAN's, Broadband Wireless, Blue tooth, DLL switching.

5. The Network Layer : Network Layer Design issue, Routine Algorithms, Congestion control, Quality of services, Internetworking, The network Layer in the Internet, The IP protocol, IP addresses, Internet control protocols, The interior gateway Routine Protocol, OSPF. The Exterior Gateway Routine Protocol, BGP, Internet Multicasting, Mobile IP, Ipv6.

6. The Transport Layer : The Transport services, Elements of Transport protocols, A simple Transport Protocol. The Internet transport protocol, UDP, TCP: Introduction to TCP, TCP service model, The TCP Protocol The TCP Segment header, TCP connection establishment, TCP connection release, modeling TCP connection management, TCP Transmission policy, TCP congestion control, TCP Timer management, Wireless TCP and UDP, Transactional TCP, Performance measure: Measuring network performance, system design for better PERFORMANCE, FAST TPDU Processing, protocols for gigabit networks.

7. The Application layer: DNS: The Domain name system; Electronic mail, SNMP.

8. ATM network: ATM Layer, ATM application layer, ATM signaling, PNNI Routine.

9. Case studies with Windows2000/Linux

Topic for Experiment

1. PC to PC file transfer using serial port
2. Network OS installation and configuration.
3. Network hardware and software components
4. Network Routing.
5. Network Socket programming.

6. Shortest path routing.
7. Modem commands study.
8. Use network simulators like NS2, DLL simulators.
9. Implementation Multithread client-server application.
10. Assignment: Prepare short note on any one advanced topic.

BOOKS

1. A.S. Tanenbaum “Computer Networks”, 4th Edition ,Prentice hall
2. B.F. Ferouzan, “Data and Computer communication”, Tata Mc-graw Hill.

REFERENCES

1. Peterson & Davie, “ Computer networks”,2nd edition, Morgan Kaufmann
2. Kurose, Ross, “Computer Networking”, Addison Wesley.
3. B.F. Ferouzan, ”TCP/IP protocol suit ”, Tata Mcgraw Hill.
4. W. Richard Stevens, “TCP/IP Volumes 1,2,3” , Addison Wesley Leon –Garcia and Widjaja

T.E. (COMPUTER ENGINEERING)

SEM V

SUBJECT: APPLIED MATHEMATICS

Lectures : 4 Hrs Per Week Theory : 100 Marks

DETAILED SYLLABUS

1: Random variables:

Discrete & Continuous Random Variables. Probability Mass Function & Density

Function. Probability Distribution for Random variables. Expected value, Variance, Moments & Moment Generating Function. Relation between Raw Moments & Central Moments

2: Bernoulli's Trials: Binomial, Poisson, & Normal Distribution for Detailed study.

Central Limit Theorem & Problem Based on this Theorem.

3: Sampling Theory : Sampling Distribution. Test of hypothesis. Level of Significance Critical Region. One tailed & Two Tailed Tests. Interval Estimation of Population Parameters. Large & Small Samples. Test of Significance for Large Samples: Test for Significance of the Difference between Sample Mean & Population Means; Test for Significance of the Difference between Mean of Two Samples.

Student's 't' Distribution & its properties.

Test of significance of Small Samples: Means; Test for Significance of the Difference between Sample Mean & Population Means Test for Significance of the Difference between Mean of Two Samples; Paired t- tests. Chi- square Distribution & its Properties. Test of Goodness of Fit & Independence of Attributes Contingency Table Yates's Correlation.

4: Fitting Of curves Least Square Method:

Fitting the Straight Line & Parabolic Trend. Bivariate Frequency Distribution Correlation, Covariance Karl Pearson Coefficient & Spearman's Rank Co- relation Coefficient (non repeated ranks & repeated ranks). Regression, coefficients & lines of regression.

5: Mathematical Programming: Linear Optimization Problem Formulation & Graphical Solution. Standard & Canonical Form. Basic Solution & Feasible Solution Primal Simplex Method.

6: Artificial Variables : Big Method (Method of Penalty). Dual Simplex Method. Duality. Degeneracy. Alternative Optima. Unbounded Solution & Sensitivity Analysis.

7: Nonlinear Programming :

Unconstrained External Problems. Necessary & sufficient Conditions for Extrema. Constrained External Problems. Lagrange Multiplier & Kuhn Tucker Method.

Text books:

1: S.C. Gupta & U.K. Kapur, "Fundamental of Mathematical Statistics", Sultan Chand & Sons, New Delhi

2: T.V. Veerranjan, "Probability Statistics & Random Processes", TMH.

3: Probability & Statistics, Schaum. Series.

Refernces:

1: M.D. Taha, "Operation Research".

2: N.D. Vora, "Quantitative Techniques in Management", TMH.

3: J.K.Sharma, "Operation Theory And Applications".

T.E. (COMPUTER ENGINEERING)

SEM V

SUBJECT: PRINCIPALS OF DIGITAL COMMUNICATION

Lectures : 3 Hrs Per Week Theory : 100 Marks

Practical : 2 Hrs Per Week Term Work: 25 Marks

DETAILED SYLLABUS

1: Random Variables & Processes :

probability , Mutually Exclusive Events, Joint Probability of Related and independent Events .Random Variables, Cumulative Distribution Function , Probability Density Function, Relation between probability and probability density , Joint cumulative distribution and probability density. A communication Example ,Average Value of Random Variable ,Variance of Random Variable, The Gaussian probability density, The error function .Random Processes ,Auto-correlation, Power Spectral Density of sequences of Random Pulses, Power Spectral Density of digital data.

2: Base band Modulation and Demodulation:

Pulse code Modulation ,PCM waveform types, PCM word size, M-ary Pulse Modulation waveform, correlative coding; Base band signal receiver, Detection of binary signals in Gaussian noise ,Inter-symbol interferences, Equalization.

3:Bandpass Modulation and Demodulation:

Binary phase shift keying, differential phase shift keying, differentially encoded PSK, QPSK, M-ARY PSK, Quadrature Amplitude Shift keying(QASK), binary frequency shift keying, M-ary FSK, Minimum shift keying(MSK),Error performance for binary system, Probability of error for coherently detected BPSK, Probability of error for coherently detected differentially encoded BFSK, Probability of error for coherently detected Binary Orthogonal FSK, Probability of error for non-coherently detected Binary Orthogonal FSK, Probability of error for Binary Orthogonal DPSK,

Symbol performance for M-ary system, Probability of Symbol error for MPSK, , Probability of Symbol error for MFSK, Bit error probability Vs Symbol error probability ,Effect of Inter symbol interferences.

4. Communication Link Analysis:

The Channel, Concept of Free Space, Error performance Degradation , Sources of human loss & noise. Frequency representation of noise, Spectral component of noise ,Super position of Noise ,Noise Band width ,Register Noise ,Multiple Register Noise Sources, Networks with Reactive elements, Noise Temperature, Effective Input Noise Temperature, Antennas, Sky Noise Temperature.

5. Information Theory:

Discrete Messages, the Concept of amount of information, Average Information, Entropy, Information Rate, Coding to increase Average information per bit ,Shannon's Theorem ,Capacity of Channel, Capacity of Gaussian Channel ,Bandwidth S/N ratio Tradeoff, Use of Orthogonal Signals to attend Shannon's Limit ,Efficiency of orthogonal signal transmission.

6. Channel Coding:

Waveform coding, Types of error control ,structured sequences, Linear block codes, error detection and correlating capacity, Cyclic codes, Hamming Codes, Extended Goal codes, BCH codes, Convolution encoding, Convolution encoder representation, Formulation of the Convolution decoding problem, Properties of convolution codes ,Reed-Solomon codes, Interleaving and concatenation codes, coding and interleaving applied to compact disk and digital audio systems, Turbo codes.

7. Source Coding :

Sources, Amplitude quantizing, differential pulse code modulation, adaptive prediction, block coding, transform coding, source coding for digital data, Huffman codes, Run length codes, examples of source coding, audio compression, image compression

8. Encryption and decryption

Models, goals and early chipper systems, the secretary of chipper text, practical security, stream encryption, public key cryptosystems

Text Books:

1. Taub and scilling, "Principles of communication Systems", TMH, 1991, 2nd Edition
2. Sklar, "Digital Communication", Pearson Education, 2001, 2nd Edition

References

1. Prokies, "Digital Communication", TMH
2. Haykins, "Digital Communications", John Wiley

TERM WORK

1. Term work should consist of at least 10 practical experiments covering all the topics of the syllabus.
2. A term work test must be conducted with a weightage of 10 marks

T.E. (COMPUTER ENGINEERING)

SEM V

SUBJECT: THEORETICAL COMPUTER SCIENCE

Lectures : 3 Hrs per week Theory : 100Marks

Tutorials : 2 Hrs per week Term work : 25 Marks

Objectives of course : This course aims to build concepts regarding the fundamental principles of grammars ,automata theory and Turing machine.

DETAILED SYLLABUS

1. Regular Sets and Automata Theory : Regular sets, regular grammars and languages; Regular expressions, grammars and languages, pumping lemma, Closure properties, Decision problem, Myhill-Nerode theorem, Finite automata and Finite state machines, NFA, DFA, FSM, Moore and Mealy machines, Converting NFA to DFA, Minimization of automata and FSM, Kleene's Theorem.

2. Context Free Grammars And Push Down Automata : Context Free Grammas and Languages, Parse Trees, CNF and GNF, pumping lemma, Closure properties, push Down Automata, Concept of Stacks, PDA for CFG.

3. Turing Machine : Construction of Turing machine for problem solving, TM as Acceptors and Generators, Variation and Equivalence of TM, TM languages, Post machines, Universal Turing Machines, Church's Hypothesis.

4. Undesirability : Undesirability and Halting problem, Rice's theorem, Post Correspondence problem, Unsolvability problems using TM, Unsolvability problem using CFG, Greibach Theorem, Enumerable and recursively Enumerable languages.

Text Books :

1. J.C.Martin, "Introduction to Languages and the theory of computation", THM, 2003, third edition.
2. Peter Linz, "Introduction Formal Languages and Automata," , Narosa.
3. Michel Siprer, "Introduction to the theory of Computation", Thompson Learning, 1997.

Reference :

1. J.E.Hopcroft, J.D.Ullman, "Introduction to Automata Theory, Languages And Computation", Addison-Wesley.

TERM WORK

1. Term work should consist of at least 10 experiments/ Assignments covering all topics.
2. A term work test must be conducted with a weightage of 10 marks.

T.E. (COMPUTER ENGINEERING)

SEM V

SUBJECT: PRESENTATION AND COMMUNICATION

Lectures : 2 Hrs per week Term work : 25 Marks Tutorials : 2 Hrs per week Oral Exam : 25 Marks

Objectives of course : This course aims to build concepts regarding the fundamental principles of grammars ,automata theory and Turing machine.

DETAILED SYLLABUS

1. Communication in a business organization : Internal (upward, downward, horizontal, grapevine, problems solution) external communication, strategies for conducting successful business meeting, documentation (notice, agenda, minute) of meetings, introduction to modern communication techniques (for eg. E-mail, internet, video conferencing etc) legal and ethical issues in communication (intellectual property rights, patents)

2. Advanced technical writing : Report – Writing and presentation : Definition and importance of reports, qualities of reports, language and style in reports, type of reports, formats (letter, memo, project report based on technical, survey-based, reference based or campus related topic. Topics to be assigned to a group of 8-10

Students. The written report should not exceed 20 printed pages.

3. Technical Paper – writing

4. Writing proposals

5. Interpersonal skills : Introduction to emotional intelligence, motivation, negotiation and conflict resolution, assertiveness, leadership, team building, decision making, time management.

6. Interview techniques – Preparing for job interviews, verbal and non-verbal communication during interviews. Observation sessions and role-play techniques may be used to demonstrate interview strategies.

7. Group discussion : Dynamics of group behavior, techniques for effective participation

Text Books :

1. Fred Luthans, 'Organisational Behavior' McGraw Hill International Edition
2. Lesiker and Petit 'Report writing for business' McGraw Hill International Edition
3. Huckin and Oslen 'Technical writing and Professional Communication' –Mcgraw Hill International Edition
4. Wallace and Masters 'Personal Development for life and work ' (workbook) Thomson Learning
5. Herta Murphy 'Effective Business Communication' Heartha Murphy Herbutwhildebraudt McGraw Hill

References :

1. Lewicki, Saunders, Minton, 'Essential of Negotiation' Mcgraw Hill International Edition
2. Hartman Lemay 'Presentation Success' Thomson learning
3. Kitty O Locker & Kaczmark – Business Communication building critical skills' McGraw Hill
4. Vikas Gupta : Complex Computer Course kit, IDG Books Pvt. Ltd.
5. Heller and Handle : The Essential Manager's Manual – Dorieen Kindercey
6. The Sunday times ' Creating Success Series'
 1. Develop your assertiveness
 2. Make every Minute count
 3. Successful presentation skills
 4. How to motivate people
 5. Team building

TERM WORK :

1. 2 assignment on Communication topics

2. 3 assignments on Report writing

3. 3 assignments on Interpersonal skills

4. 1 class test

Oral :

Practical sessions on group discussion / interview skills / project presentation /

power point presentation

5. Break up of term work marks (external Exam)

Assignment 15 marks

Test 10 marks

Total 25 marks

6. Break up of oral examination (Internal Exam)

Project report presentation 20 marks

Group Discussion 05 marks

Total 25 marks

T.E. (COMPUTER ENGINEERING)

SEM VI

SUB : ADVANCED DATABASES

Lectures:3 Hrs per week Theory:100 Marks

Practical:2 Hrs per week Term work: 25 Marks

Oral Exam: 25 Marks

DETAILED SYLLABUS

1. The Extended Entity Relationship Model And Object Model:

The ER model revisited, Motivation for complex data types, User Defined Abstract Data Types And Structured Types, Super classes, Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization. Relationship Types of Degree Higher Than Two.

2. Object Oriented Databases:

Overview of Object Oriented Concepts, Object Identity, Object Structure, and Type Constructor, Encapsulation of Operations, Methods, and Persistence, Type Hierarchies and Inheritance, Type extents and Queries, Complex Objects, Database Schema Design for OODBMS, OQL, Persistent Programming Language, OODBMS Architecture and Storage Issues, Transactions and Concurrency Control.

Example of ODBMSs-O2

3. Object Relational and Extended Relational Databases:

Database Design for an ORDBMS – Nested Relations and Collections, Storage and Access Methods, Query Processing and Optimization , An Overview of SQL3, Implementation Issues for Extended Type, Systems . Comparison of RDBMS, OODBMS, ORDBMS.

4. Parallel and Distributed Databases And Client – Server Architecture :

Architectures for parallel Databases, Parallel Query Evaluation, Parallelizing Individual Operation ,Sorting, Joins, Distributed Database Concepts, Data Fragmentation , Replication And Allocation Techniques for Distributed Database Design, Query Processing in Distributed Databases, Concurrency Control and Recovery in Distributed databases.

An Overview of Client – Server Architecture .

5: Databases on The Web and Semi Structured Data:

Web Interfaces to the Web, Overview of XML, Structure of XML Data , Document Schema, Querying XML Data, XML Applications , The Semi Structured Data Model, Implementation Issues, Indexes for Text Data.

6. Data warehousing And Data Mining:

Introduction to Data Warehousing, Star Schemas, Multidimensional Data Model and OLAP , Introduction to Data Mining, Mining for Rules, Tree Methods, Clustering Approaches to Data Mining, Applications of Data warehousing And Data Mining.

7. Enhanced Data Models for Advanced Applications:

Active Database Concepts, Temporal database concepts, Spatial Databases Concepts and Architecture, Deductive databases and Query Processing , Mobile Databases , Geographic Information Systems.

Text Books:

1. Elmasri and Navathe ,” Fundamentals of database Systems” , 4th edition, Pearson education .
2. Raghu Ramakrishnan , Johannes Genrke, “database management systems” ,2nd edition, McGraw-Hill

T.E. (COMPUTER ENGINEERING)

SEM VI

SUB : OPERATING SYSTEMS WITH UNIX

Lectures:3 Hrs per week Theory:100 Marks

Practical:3 Hrs per week Term work: 25 Marks

Oral Exam: 25 Marks

DETAILED SYLLABUS

1: Operating System Overview: Operating System Objectives and Functions. The history and evolution of Operating Systems; Characteristics of Modern Operating Systems; Windows 2000 Overview; Traditional UNIX Systems; Modern UNIX Systems.

Basic concepts. Processes; files; systems calls; shel ; layered structure vs monolithic structure of O.S.

2:Processes: Process Model; Process states ; Process Description; Process control; PCB; creation of processes; context switching; exit of processes; UNIX SVR4 Process Management. Threads ; SMP. Processes and Threads ; Symmetric Multiprocessing; Windows 2000 Thread and SMP Management ; Linux Process and Thread Management.

3:Process Scheduling: Objectives: preemptive vs non-preemptive scheduling; Multiprocessor Scheduling; Real-Time Scheduling; Linux Scheduling; UNIX SVR4 Scheduling; windows 2000 Scheduling; comparative assessment of different Scheduling; algorithms. Concurrency. Mutual Exclusion and Synchronization; Principles of Concurrency; Mutual Exclusion; Software Approaches; Mutual Exclusion; Hardware Support; Semaphores; Monitors; Message Passing; Readers/Writers Problem. Concurrency. Deadlock and Starvation; Principles of Deadlock; Deadlock Prevention;

Deadlock Avoidance; Deadlock Detection; An Integrated Deadlock Strategy; Dining Philosophers Problem; UNIX Concurrency Mechanisms; Windows 2000 Concurrency Mechanisms.

4: Memory: Memory: Management Requirements. Memory Partitioning; Virtual memory; Paging; Segmentation; Design and Implementation issues in paging and segmentation; page replacement algorithms; page fault handling; working set model; UNIX and Linux memory Management; windows 2000 Memory Management.

5: I/O management and Disk Scheduling: I/O Devices. Organization of the I/O Function; Operating System Design Issues; I/O Buffering Disk Scheduling; RAID; Disk Cache; UNIX SVR4 I/O; Windows 2000 I/O;

6: File Management: Overview; File Organisation; File Directories; File sharing; Record Blocking; Secondary Storage Management ; UNIX File Management; Windows 2000 File system.

7: Case Studies: Unix. Internal representation of files; system calls for the file system; implementation of processes; process scheduling; memory management policies.

Windows NT; Layered structure ; interpretability

Text Books:

1: William Stallings, "Operating Systems"

2: Silbershatz, A., Peterson, J.Galvin P., "operating System Concepts",

Addison Wesley.

3:Maurice Bach, "The design of UNIX Operating System",Prentice Hall.

References:

1:Tannenbaum, " Modern Operating Systems".

2: Milan Milenkovic, "Operating System" , Mc graw Hill.

3:Tannenbaum a. "Operating Systems : Design & Implementation"m, Prentice Hall

Term Work

1: Term work shall consist of at least 9 programs based on above topics.

2: It should include Small routines,involving implementation of small utilities in shell programming for unix system administration.

3: Programs that would give good exposure to UNIX calls for process control, memory management & file management.

4: Test must be conducted with a weightage of 10 marks.

T.E. (COMPUTER ENGINEERING)

SEM VI

SUB : WEB TECHNOLOGY

Lectures:3 Hrs per week Theory:100 Marks

Practical:2 Hrs per week Term work:25 Marks

Oral Exam: 25 Marks

DETAILED SYLLABUS

1: Introduction : Introduction to Web Technology, TCP/IP protocols , Electronic Mail (Email) File Transfer Protocol (FTP), World Wide Web , Domain Name System (DNS) , Uniform Resource Locator (URL).

2: HTML : Introduction to Hypertext Markup Language, Tags, Anchors , Backgrounds, Images, Web page structures , Hyper Linking Lists, Character Formatting , Color control, Images, Tables , Frames, Multimedia, Cascading style sheet, Application with Layers.

3: Dynamic Web Pages : HTML/DHTML : Introduction to DHTML, Forms, Client side Form, JavaScript , Incorporating JavaScript in HTML, JavaScript Expressions, Control flow & Functions String & Arrays , JavaScripts objects, JavaScripts Forms, cookies, history, Location, XML, CGI scripting with Perl.

4: Active Server Pages & Servlets: ASP objects: Application , Request, Responses , Server , Sessions, Forms, Query Strings , Cookies , Connectivity with database Using ActiveX Objects, JSP, Java Servlets.

5: Applications: Electronic Commerce: Introduction, Types , Solution, e-shop, Online Payment, Internet Banking

Text Books:

1:Kriss Jamsa, Konrad King, "HTML & WEB DESIGN" ,TMH

2:Achyut Godbole, "Web Technologies", TMH

References:

1:Box, "Essential XML"

2:David Whiteley, "E-Commerce", TMH.

3:Douglas E Comer , " Interworking with TCP/IP", Volume 1,pearson education

4:Steven Holzner , "HTNL Black book", Dreamtech.

5:Vivek Sharma, Rajiv Sharma," Developing e-commerce Site" , Addison Weseley.

6:Microsoft Commerce Solutions , Web Technology, PHI

7: Jason Hunter & William Crawford, " JavaServlet Programming", O'REILY.

8:Tom Negrono & Dori Smith, "JavaScript for The World Wide Web",3'rd Edition.

TERM WORK

1:At least 10 Programs based on above topics

2:Build an E-Commerce Site

3:Study of ISP, Installation of WEB Server

4:A test must be conducted with weightage of 10 marks.

T.E. (COMPUTER ENGINEERING)

SEM VI

SUB : SYSTEM PROGRAMMING

Lecture : 3 Hrs per week Theory : 100 marks

Practical : 2 Hrs per Week Term work : 25 Marks

OralExamination:25 marks

Objective of the course : This course is an introduction to design and implementation of various types of system software. It is intended that the student should be able to design a working assemblers, loader and macro-processors on completion of this course.

Pre-requisites : Course in computer organization, data structures and C/C++.

DETAILED SYLLABUS

1 Language Processors: Fundamentals of Language Processing and Language Specification. Classification of Programming Language Grammars. Static and Dynamic Binding. Language Processor Development Tools.

2 System Software and Machine Architecture : Introduction to System Programs. Introduction to Data Formats. Registration and Addressing modes for traditional CISC Machines and RISC Machines.

3 Assemblers : Basic Assembler Functions. Assemblers Algorithm and Data Structure. Design of Single Pass Assembler. Design of Multi-Pass Assemblers. Implementation Examples : MASM Assembler and SPARC Assemblers.

4 Macros and Microprocessors : Macro Definition of Expansion. Conditional Macro Expansion. Macro Parameters. Recursive Macro Expansion. NESTED Macro cells. Design of Micro Processors. Implementation Example : MAMS Macro processors; ANSI C Macro language.

5 Loaders And Linkers : Basic Loader Functions. Design of Absolute Loader. Relocation and Linking concepts. Linkage Editors. Dynamic Linking. Bootstrap Loaders. Design of Linker. Implementation Examples : A Linker for MS-DOS.

6 Scanning and Parsing : Introduction of Regular Expressions and Finite State Automata. Optimization of DFA Based Pattern Matchers. Top-Down and Bottom-Up Parsing Techniques. Recursive Descent Parsing. LL(1) Parsing LALR Parsing and Operator Precedence Parsing. LEX and YACC. Syntax Directed Translation.

7 Compilers and Interpreters : Aspects of Compilation. Memory Allocation : Run time Storage Organization, Static, Dynamic, Heap Storage and Garbage Compilation. Lexical analysis; Syntax analysis; Intermediate Code Generation; Machine independent and Machine independent Code Optimization. Compilation of Expressions and control Structures. Interpreters. Java Compiler and Environment. YACC Compiler-Compiler.

8 Software Tools : Software tools for Program Development. Editors. Debug Monitors. Programming Environments. User Interfaces.

Text Books :

1. D.M. Dhamdhere “System programming and Operating Systems”, Tata McGraw Hill, 2nd Revised Edition, 2002.
2. Leland L. Beck, “System software”, Addison Wesley.
3. A.V. Aho, Ravi Sethi & J.D. Ullman, “Computer Peripherals and Techniques”, Pearson Education.

References :

1. J.J. Donovan, "Systems Programming", THM.

TERM WORK

1. Term work should involve :

a. Course Projects on Assembler implementation; design of compiler for simple language constructs.

b. Implementation of Simple Parsers.

c. Implementations of a simple loader.

2. A term work test of 10 marks must be conducted.

T.E. (COMPUTER ENGINEERING)

SEM VI

SUB : SUBJECT: OBJECT ORIENTED ANALYSIS AND DESIGN

Lectures: 3 Hours per week Theory: 100 marks

Practicals: 3 Hors per week Term Work: 25 Marks

Practical Exam: 25 Marks

DETAILED SYLLABUS

1 Introduction:

Overview Of OOL; Object Classes; Meta Types, Object Oriented Methodologies; The Unified Approach Modeling; Why Modeling? Static And Dynamic Models; Functional Models.

2. Object Modeling:

Object Links. Association. Inheritance. Grouping Constructs: Problems On Object Modeling. Advantages Of Object Modeling.

3. Analysis:

Problem Analysis. Problem Domain Classes. Identify Classes And objects of Real World Problems. Using use case Analysis.

4. Basic Object Modeling:

Multiplicity. Constraints. Aggregation. Component.

5. Sequence Diagram:

Modeling Scenarios. Mapping Events to Object. Inheritance. Discovering Attributes.

Modeling Simple Collaboration Modeling. Logical Database Schema. Activity Diagram.

Modeling. Workflow.

6. Class Diagram:

Test Scenarios.Interfaces.Classes. Methods. Stress Testing. System Testing . Scalability Testing. Regress Testing. Behavioral Modeling. State chart diagram.

7. Design.:

Architectural Design, Refining The Model.Refactoring.Couplig And Cohesion.

Who Should Own The Attributes? Who Should Own The Operations? Process And Threads.

8. Design Classes:

Classes Visibility; User Interface. Subsystem Interface.

9. Component diagram:

Modeling Source Codes, Physical database.

10. Deployment Diagram:

Modeling In A C/S System. Distributed System And Embedded Systems.

TOPIC FOR EXPERIMENT

Use Any UML/OOAD tool and do the following:

1. Use case diagram.
2. Sequence Diagram.
3. Collaboration diagram.
4. Activity diagram.
5. Use case realization.
6. Class Diagram.
7. Testing, Debugging, Porting.
8. Component Diagram.
9. Change Management using MAKE/SCCS utility.

Text Books:

1. Ali Bahrami, "Object Oriented System Development", McGraw Hill.
2. Gray Booch, J. Rambaugh, Ivar Jacobson, "The UML Users Guide", Pearson Education.
3. J. Rambaugh, et al, "Object Oriented Modeling and Design".
4. Andrew Haigh, "Object Oriented Analysis and Design". Tata McGraw Hill

References:

1. Simon Benett, Steve McRobb, Ray Famer, "Object Oriented System Analysis And Design Using UML ". McGraw Hill
2. Timothy C. Lethbridge, Robert Laganier " Object Oriented Software Engineering". McGraw Hill
3. Stephen R. Schach, " Object Oriented and Classic Software Engineering".

TERM WORK

1. Term work should consist of at least 8 experiments covering all topics.
2. A term work must be conducted with a weightage of 10 Marks

T.E. (COMPUTER ENGINEERING)

SEM VI

SUB : COMPUTER GRAPHICS

Lectures: 3 Hrs per week Theory:100 Marks

Practical: 3 Hrs per week Term work:25 Marks

Practical Exam: 25 Marks

Pre-requisites: Knowledge of C language is needed.

DETAILED SYLLABUS

1. Introduction:

Application Areas, Input & output Devices, Video Display Devices: Refresh CRT; Raster scan display; color CRT monitor; flat panel Display; Coordinate representation.

2. Basic Raster Graphics Algorithms for drawing 2-D primitives

Output Characteristics: Aspect Ratio; Aliasing and Anti-Aliasing. Line Drawing Algorithm: DDA Algorithms: Bresenham's Algorithms. Circle Generation Algorithm: Midpoint circle Algorithm. Ellipse Generation Algorithm: Mid-point ellipse Algorithms. Area filling: Scan Line Polygon Filling Algorithm; Inside -Outside

test; Boundary fill Algorithm.

3. 2-D Geometric Transformation:

Window And Viewport: Window and Viewport relationship; World Co-ordinate; Normalised Device co-ordinates and Homogenous Co-ordinates. Basic Transformations: Translation; Rotation and Scaling. Other Transformation: Reflection and Shear. Composite Transformation

4. 2-D Viewing And Clipping:

Window to viewport Co-ordinate Transformation. Clipping: Point Clipping ;

Line :Cohen-Sutherland Algorithm, Line Barsky Clipping Mid Point

subdivision; Polygon: Sutherland Hodgeman Algorithm.

5. 3-D Concepts:

3-D Display methods: Parallel And Perspective projections; Depth Cueing. 3-D

Transformation: Basic Transformation: Translation , Rotation and Scaling ;Other

Transformation Reflection and shear; Composite Transformation. 3-D Viewing

And Clipping .

6. Hidden Surface Elimination Methods:

Back face detection ,Depth or Z-buffer method ,Scan Line Method, Area

Subdivision method .

7. Curves:

Spline Representation, Bezier Curves, B-spline.

8. Light Shading:

Illumination Model. Shading:Constant Intensity shading; Gouraud shading ; Phong shading.
Half-toning. Ray Tracing.

Text Books:

1. Donald Hearn and M. Pouline Baker, "Computer Graphics with C version ", Low Price Edition, 2nd Edition, 2002.
2. Newman and Sproll, "Principles of interactive Computer Graphics ", Tata McGraw Hill, 2nd Edition, 2002

References:

1. Rogers And Adams, "Mathematical Elements for Computer Graphics", TMH
2. Xiang and Plask , " Schaum's Outlines Computer Graphics", TMH, 2ND Edition 2002
3. 3. Harrington, "Computer Graphics ", McGraw Hill
4. Rogers , "Procedural Elements for Computer Graphics", TMH

TERM WORK

1. Term work should consists of at least 10 practical experiments covering all the topics of syllabus .