

CS301

SYSTEMS PROGRAMMING

Fundamentals of language processors - Language specification - Data structure for language processing - Scanning - Parsing.

Assemblers - Elements of assembly language programming - Single pass and two pass assembler - Assembler for IBM PC.

Macro Processors - Macro definition and call - macro expansion - conditional and nested macro calls - design of a macro processor.

Loaders - Relocation and linking concepts - Relocating programs - Design of a linker - Linking for overlays - A linker for MSDOS.

Linkers - Software tools - Text editor - Debug monitors - Interpreters - Program generators - User interfaces - Recent trends and developments

LELAND L.BECK, An introduction to systems programming, 4th edition, Addison Wesley 2001.

D.M. DHAMDHERE, Systems programming and operating systems, 3rd edition, Tata Mcgraw Hill, 2002.

J.J. DONOVAN, Systems programming, Mcgraw Hill, 1984.

CS305

MICROPROCESSOR SYSTEMS

8085 Microprocessor - Architecture - Bus organization - Registers - ALU - Instruction set of 8085 - Instruction format - Addressing modes - Timing diagrams.

Serial I/O - Interrupts - Data transfer techniques - Parallel data transfer using 8155 - DMA transfer using 8257 DMA controller.

Microprocessor System Design - System design using interrupt controller - Floppy Disk Controller - CRT controller.

Microprocessor Interfacing Techniques - Interfacing memory and I/O devices - Interfacing A/D converters and D/A converters - Recent trends and developments.

8086/8088 - Internal architecture - Instruction set - Segmented memory concepts - Memory interfacing [ROM/DRAM] - Bus concepts.

TEXT:

R.S. GAONKAR, "Microprocessor Architecture, Programming and Applications with the 8085/8080A", Wiley Eastern Ltd, Second Edition, 1986 D.V.HALL, "Microprocessors and Digital Systems", McGraw Hill International students, Second Edition, 1986

CS303

COMPUTER NETWORKS

Introductory Concepts - Network hardware - Network software - Physical layer - Guided transmission media - Cable television.

Data Link Layer - Design issues - Channel allocation problem - Multiple access protocols - Ethernet - Wireless LAN - 802.11 architecture.

Network Layer - Design issues - Routing algorithms - Congestion control algorithms - Quality of Service - Internetworking.

Transport Layer - Transport service - Elements of transport protocols - User Datagram Protocol - Transmission Control Protocol.

Application Layer - DNS - Electronic mail - World Wide Web - Multimedia - Network security.

TEXT:

A.S.TANENBAUM, "Computer Networks", Pearson Education, IV Edition, 2003 W.STALLINGS, "Data and Computer Communication", Pearson Education, V Edition, 2001

CS307

SOFTWARE ENGINEERING

Introductory Concepts - Systems engineering - Software project planning - Cost estimation - Project scheduling.

Analysis - Data flow oriented design - Object oriented life cycle models - CASE tools.

Software Design - Software design fundamentals - Data structure oriented Design - JS, LCP - Various design methods.

Implementation and Testing - Testing objectives - Black box & white box testing - Various testing strategies - Art of debugging.

Maintenance - Re-engineering - Reverse engineering - Reliability - Repair and availability - Reliability and availability models - Recent trends and developments.

TEXT:

R.S.PRESSMAN, "Software Engineering - A practitioners approach", III Edition, McGraw Hill International editions, 1992
STEPHEN R. SCHACH, "Object oriented and classical software Engineering", IV Ed., McGraw Hill, 2002

CS309

COMBINATORICS AND GRAPH THEORY

Permutations and Combinations - Distribution of distinct / non-distinct objects - Generating functions for combinations - Portion of integers - Ferrers graph.

Recurrence Relations - Linear recurrence relations with constant coefficients - Solution by the technique of generating functions - Permutations with restrictions on relative positions.

Basic Definitions - Trees and fundamental circuits - Cut-sets and Cut-vertices - Connectivity and Separability - Network flows - 1 and 2 isomorphism.

Planar and Dual Graphs - Kuratowski's graphs - Representations of a planar graph - Vector space associated with a graph - Subspaces - Orthogonal vectors and spaces.

Matrix Representation of Graphs - Circuit matrix - Cutset matrix - Path matrix - Adjacency matrix - Coloring problems - Algorithms for fundamental circuits, cut-vertices and separability.

E.S.PAGE and L.B.WILSON, "An introduction to computational combinatorics", Cambridge University Press, 1979 D.E.KNUTH, O.PATASHUK, R.L.GRAHAM, "Concrete Mathematics", 1994 DOUGLAS. B. WEST, "Introduction to Graph Theory", Second edition. Prentice Hall,2001

MA304

PRINCIPLES OF OPERATIONAL RESEARCH

Introduction to operational research - Linear Programming problems - Formulation of a LPP - Graphical method - Simplex method - Big M method - Two phase method - Dual simplex method - Primal dual problems.

Dual theory and sensitivity analysis - Transportation and assignment problems - applications.

CPM and PERT - Network diagram - Events and activities - Project planning - reducing critical events and activities - critical path calculations - example - sequencing problems - 2machines and n jobs, n machines and 2 jobs, m machines and n jobs problem.

Replacement problems - Capital equipment - Discounting costs - Group replacement - Inventory models - various costs - deterministic inventory models - economic lot size - stochastic inventory models - single period inventory models with shortage cost.

Dynamic ProgrammingFormulation - Invest problem - General allocation problem - Stage coach problem - Production scheduling.

H.A. TAHA, operational research - An introduction, Macmillian, 1976. F.S. HILLER and G.J. LIEBERMANN, Introduction to operational research(7th edition)

CS313

MICROPROCESSOR SYSTEMS LABORATORY

Solving problems using 8085

Interfacing various devices with the microprocessor: A/D converter, D/A converter, seven segment display, stepper motor, external keyboard, interrupt controller and 8251 for serial data transfer

Interfacing using microcontroller trainer kits

PC hardware assembly

Installation and trouble shooting

CS315

SYSTEMS PROGRAMMING LABORATORY

Symbol table(Tree storage) construction

Implementation of single pass and two pass assembler, macro preprocessor, module binder (with limited instruction set)

Implementation of software tools like text editor, interpreter, program generator, etc