

Gauss, Gauss-Siedel and Iterative methods for system of linear equations. Ill conditioned system, Pivotal Condensation, Matrix Inversion, Eigen-values, Eigen-vector, Diagonalization of Real Symmetric Matrix by Jacobi's Method.

Introduction to Finite Differences.

Polynomial Interpolation using Newton's and Lagrange's formulae.

Numerical Differentiation: Numerical Integration: Trapezoidal Rule, Simpson's Rule, Weddle's Rule, Gauss Quadrature Formula. Error in numerical Integration.

Numerical Solution of differential Equations: Picards Method, Taylor's Series Method, Euler's Method, Modified Euler's Method, Runge-Kutta Method, Predictor-Corrector Method.

Note: The Emphasis of the course is on computational implementation of the methods.

Suggested Readings:

1. V. Rajaraman, Computer Oriented Numerical Methods, PHI.
2. F. Acton, Numerical Methods that Work, Harper and Row.
3. S.D. Conte and C.D. Boor, Elementary Numerical Analysis, McGraw Hill.
4. S.S. Shastri, "Introductory Methods of Numerical Analysis", PHI.
5. C. F. Gerald and P.O. Wheatley Applied Numerical Analysis, Addison Wesley.

CS105	<i>Computer Organization and Architecture</i>	L	T	P	C
		4	0	0	4

Basic Organization: Stored Program Concept, Components of a Computer System, Machine Instruction, Opcodes and Operands, Instruction Cycle, Organization of Central Processing Unit: ALU, Hardwired & Micro programmed Control Unit, General Purpose and Special Purpose Registers.

Memory Organization: Memory Hierarchy, Cache Memory, Main Memory (DRAM and ROM), Secondary Memory, Virtual Memory, Characteristics of different types of Memory.

I/O Organization: Peripheral devices, I/O interface, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input-Output Processor, and Serial Communication. I/O Controllers, Asynchronous data transfer, Strobe Control, Handshaking.

Functioning of CPU: Instruction Formats, Op Codes, Instruction Types, Addressing Modes, Common Microprocessor Instructions, Multi-core Architecture, Multiprocessor and Multicomputer.

Suggested Readings:

1. M. M. Mano, Computer System Architecture, PHI.