Smt. S . R. Patel Engineering College Unjha
Computer Engineering Department
GATE - 2020 Subjects Planning for 3rd Semester

Semster	Subject	Weightage in GATE-2017	Hours/ Week	Total Week	Total Hours	Faculty	Faculty Profile
3rd	Aptitude I	10	2	5	10	PT	M.Tech in Information Technology(NIT Dgp)
	Programming and Data Structure I	5	2	5	10	SS	M.Tech in Compter Networking(NIT Bhopal)
3-4th	Programming and Data Structure II	5	6	1	6	SS	M.Tech in Compter Networking(NIT Bhopal)
4th	Programming and Data Structure III	3	2	8	16	SS	M.Tech in Compter Networking(NIT Bhopal)
	Aptitude II	5	2	2	4	PT	M.Tech in Information Technology(NIT Dgp)
	Digital Electronics I	3	2	6	12	MS	M. Tech in Advanced Computing(NIT-Bhopal)
5th	Engineering Maths	11	6	5	30	RB	MSc. In Maths (NIT Allahabad)
	Algorithm - I	2	3	8	24	SS	M.Tech in Compter Networking(NIT Bhopal)
	Operating System - I	4	3	8	24	PT	M.Tech in Information Technology(NIT Dgp)
	Digital Electronics II	3	6	3	18	MS	M. Tech in Advanced Computing(NIT-Bhopal)
6th	Compiler Design	6	6	5	30	MS	M. Tech in Advanced Computing(NIT-Bhopal)
	Database	8	3	8	24	MMP	M. Tech in Information Technology(IIT-Kgp)
	Algorithm - II	4	3	2	6	SS	M.Tech in Compter Networking(NIT Bhopal)
	Computer Network I	5	3	6	18	SS	M.Tech in Compter Networking(NIT Bhopal)
7th	Computer Network II	6	2	4	8	SS	M.Tech in Compter Networking(NIT Bhopal)
	TOC I	4	2	8	16	MS	M. Tech in Advanced Computing(NIT-Bhopal)
	TOC II	3	2	4	8	SS	M.Tech in Compter Networking(NIT Bhopal)
	Computer Organisation I	7	2	8	16	PT(10)/SS(6)	M.Tech in Compter Networking(NIT Bhopal)
7th - 8th Extra	Computer Organisation II	6	6	3	18	SS(4)/MS(10)	M.Tech in Compter Networking(NIT Bhopal)
8th	**Test Series and Revision**						
Total Hours					292		

CS	Computer Science and Information Technology

Section1: Engineering Mathematics

Discrete Mathematics: Propositional and first order logic. Sets, relations, functions, partial orders and lattices. Groups. Graphs: connectivity, matching, coloring. Combinatorics: counting, recurrence relations, generating functions.

Linear Algebra: Matrices, determinants, system of linear equations, eigenvalues and eigenvectors, LU decomposition.

Calculus: Limits, continuity and differentiability. Maxima and minima. Mean value theorem. Integration.

Probability: Random variables. Uniform, normal, exponential, poisson and binomial distributions. Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.

Computer Science and Information Technology

Section 2: Digital Logic

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

Section 3: Computer Organization and Architecture

Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode).

Section 4: Programming and Data Structures

Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

Section 5: Algorithms

Searching, sorting, hashing. Asymptotic worst case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, shortest paths.

Section 6: Theory of Computation

Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and contex-free languages, pumping lemma. Turing machines and undecidability.

Section 7: Compiler Design

Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation.

Section 8: Operating System

Processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU scheduling. Memory management and virtual memory. File systems.

Section 9: Databases

ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

Section 10: Computer Networks

Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.