GATE CSE Syllabus 2025 (Released) - Topic Wise Syllabus PDF and Weightage

GATE 2025 CSE Syllabus- IIT Roorkee has uploaded the GATE syllabus for CSE 2025 on the official website, gate2025.iitr.ac.in. Also, candidates can download the GATE 2025 syllabus for CSE pdf from the link given below. The GATE 2025 exam will be held for admission to several postgraduate engineering programmes. IIT Roorkee will be the exam conducting authority for GATE next year. The GATE 2025 syllabus consists of all the topics based on which the GATE question paper will be formed. While preparing for the GATE 2025 CS & IT exam, candidates must know the exam pattern, the GATE syllabus for CSE 2025 and the marking scheme of various important topics. This article provides a complete GATE 2025 syllabus for Computer Science Engineering.

Direct link for GATE CSE 2025 syllabus

GATE Syllabus for CSE 2025

Indian Institute of Technology, Roorkee has published the GATE 2025 CSE syllabus on the official website. GATE CSE 2025 syllabus pdf is created based on topics It consists of ten sections. GATE computer science syllabus includes Computer Organization and Architecture, Digital Logic, Algorithms, Theory of Computation, Programming and Data Structures, Compiler Design, Operating Systems, Databases, and Computer Networks. Moreover, there are General Aptitude and Engineering Mathematics sections in the Computer Science Engineering exam. Go through this article for more information on the GATE CSE Syllabus with weightage.

GATE Computer Science Engineering Syllabus 2025 - Core Subjects

Chapters	GATE CS & IT 2025 Topics
Digital Logic	Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

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).
Programming and Data Structures	Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.
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.
Theory of Computation	Regular expressions and finite automata. Context-free grammar and push-down automata. Regular and context-free languages, pumping lemma. Turing machines and undecidability.
Compiler Design	Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation. Local optimisation, Data flow analyses: constant propagation, liveness analysis, common sub-expression elimination.
Operating System	System calls, Processes, threads, inter-process communication, concurrency, and synchronization. Deadlock. CPU scheduling. Memory management and virtual memory. File systems.

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.
Computer Networks	Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of packet, circuit and virtual circuit-switching; Data link layer: framing, error detection, Medium Access Control, Ethernet bridging; Routing protocols: shortest path, flooding, distance vector and link state routing; Fragmentation and IP addressing, IPv4, CIDR notation, Basics of IP support protocols (ARP, DHCP, ICMP), Network Address Translation (NAT); Transport layer: flow control and congestion control, UDP, TCP, sockets; Application layer protocols: DNS, SMTP, HTTP, FTP, Email.

GATE CSE Syllabus 2025- 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, poison, and binomial distributions. Mean, median, mode, and standard deviation.

- Conditional probability and Bayes theorem.

GATE CSE Syllabus 2025- General Aptitude

Topics	Sub-topics
Verbal Aptitude	• English grammar • Reading and comprehension • Vocabulary • Narrative sequencing
Quantitative Aptitude	• Data interpretation • Numerical computation & estimation that includes ratios, percentages, powers, exponents & logarithms • 2 & 3-dimensional plots • Maps & tables • Permutations & combinations • Mensuration & geometry • Elementary statistics & probability
Analytical Aptitude	• Logic: Deduction & induction Analogy • Numerical relations & reasoning
Spatial Aptitude	• Transformation of shapes like translation, mirroring, rotation & scaling • Paper folding, cutting, and patterns (2 & 3 dimensions) • Assembling & grouping

Related links:

GATE Mock Tests	GATE Question Papers
GATE Exam Dates	GATE Admit Card

GATE Exam Pattern for CSE 2025

Along with the GATE CS 2025 syllabus PDF, aspirants should be aware of the GATE exam pattern. It is crucial to know the mode of the exam, the number of questions asked, and the marking scheme for strategic preparation. Here is the GATE 2025 CSE exam pattern.

GATE CSE 2025 Exam Pattern

Particulars	Specifications
Exam duration	3 hours
Exam mode	Online (Computer-based test)
Type and total number of Questions	Total 65 Questions MCQs, MSQs andNumerical Answer Type (NAT) questions
Total marks of the exam	100
Total number of sections	• Aptitude • Engineering Mathematics • Subject-specific questions
Marking Scheme	• 1 mark MCQs – 1/3 mark will be deducted for every wrong answer. • 2 mark MCQs – 2/3 mark will be deducted for every wrong response. • Zero marks will be awarded for unattempted questions • No negative marking will be done for Numerical Answer Type (NAT) questions • No partial marks for MSQs

Related links:

GATE Syllabus for Electrical Engineering	GATE Syllabus for Aerospace Engineering
GATE Syllabus for DA & AI	GATE Syllabus for Architecture and Planning (AR)

Must Read: GATE preparation tips

Important Topics of GATE CSE Syllabus 2025

Candidates can check the GATE CSE syllabus for important topics 2025 to score better marks in the exam. To help you out here we have given the list of GATE CSE important topics 2025.

• Digital Logic

- Operating Systems

- Compiler Design

- Programming and DATE Structures

- Theory of Computation

- Mathematics

- Algorithm Design Techniques

- Deadlock

Frequently Asked Question (FAQs) - GATE CSE Syllabus 2025 (Released) - Topic Wise Syllabus PDF and Weightage

Question: When is GATE CS exam 2025?

Answer:

The authority has yet to release the GATE 2025 CS exam dates.

Question: What is the GATE CSE syllabus 2025?

Answer:

Apart from General Aptitude and Engineering Mathematics, there will be 9 major sections in the GATE CSE syllabus 2025. The CSE syllabus consists of topics such as programming, algorithms, computer architecture, operating systems, database management systems, computer networks, and more.

Question: What are the Best Books for the GATE Syllabus for CSE 2025?

Answer:

The best-recommended books for the GATE 2025 syllabus for CSE are:

- Digital Design- Morris Mano
- The C Programming Language- Dennis Richie
- Software Engineering- Pressman

Question: How many sections are there in the GATE CSE Syllabus 2025?

Answer:

The syllabus consists of a total of ten sections, including 8 Computer Science Engineering topics, Engineering Mathematics, and General Aptitude.

Question: Is the GATE Syllabus for CSE 2025 released?

Answer:

The GATE CSE 2025 Syllabus has been released by IIT Roorkee.