



GATE

What is GATE?

Graduate Aptitude Test in Engineering is an All-India test authorised and managed in eight regions across the country.

The exam is conducted by the GATE Committee, comprising faculty members from IISc and seven other IITs on behalf of the Ministry of Human Resources Development, National Coordinating Board and Department of Education. The purpose of the GATE exam is to test students' knowledge in subjects like Engineering and Science.

The GATE scorecard is also used by multiple PSUs (Public Sector Undertakings) to recruit applicants for distinguished jobs at Indian Oil, GAIL and Hindustan Petroleum, etc.

You can check the GATE highlights in the table below:

GATE Exam Highlights

Particulars	Details
Full Exam Name	Graduate Aptitude Test in Engineering
Short Exam Name	GATE



Managing By	Indian Institute of Technology Kharagpur
Exam Level	National
Languages	English
Mode of Application	Online
Application Fee (General)	1500
Mode of Exam	Online
Mode of Question Papers	MSQ/MCQ/NAT
Participating Colleges	1072
Exam Duration	3 Hours

Explore GATE Exam Highlights by Year:

[GATE 2023](#)[GATE 2021](#)

**GATE 2020****GATE 2019**

GATE Exam Latest News:

- GATE 2024 online application will be opened soon for registration. Check the [GATE 2024 Application Form](#) for more details
- [GATE 2024 Brochure](#), along with the latest GATE 2024 Syllabus, Notifications, and GATE 2024 Important Dates, will be live on the official website.

GATE 2024 Exam Dates

Particulars	Dates
GATE Online Application Processing	August, 2023
Closing of submission of application form	October 2023
Last Date of Extended period for Online Registration Application (With Late Fees)	October, 2023
Last date for requesting a change of examination city	November 2023
Admit Card	January 2024
GATE 2024 Examination	4th, 5th, 11th and 12th February, 2024



Announcement of Result

16th March, 2024

GATE Organising Institutes: The Important Assets Taking the GATE Examination Forward!

GATE (Graduate Aptitude Test in Engineering) – Certainly, this examination needs no introduction if you belong to the engineering and science industry. It is one of the most prestigious examinations in the country that comprises numerous benefits. However, if you are a newbie in this whole concept of GATE and the examination procedure, then you might be wondering who is handling all the massive setups of this prominent examination. Well, it is none other than the most promising institute in India: IIT (Indian Institute of Technology).

Yes, this prestigious exam is administered by the GATE Committee, comprising faculty members from IISc Bangalore and seven other IITs on behalf of the Ministry of Human Resources Development, the National Coordinating Board, and the Department of Education. You can check the name of the organising institutes for the GATE examination in the table below.

Year	Organizing Institute
2024	IISc, Bangalore
2023	IIT, Kanpur
2022	IIT, Kharagpur



2021	IIT, Bombay
2020	IIT, Delhi
2019	IIT, Madras
2018	IIT, Guwahati
2017	IIT, Roorkee
2016	IISc, Bangalore

GATE Syllabus 2024 – Revised PDFs Download

There are 29 disciplines or Subjects under GATE Exam 2024. A candidate can appear for any of the below-given list of disciplines.

General Aptitude (GA) Syllabus (Common for All Papers)
1. GATE Syllabus For Aerospace Engineering (AE)
2. GATE Syllabus For Agricultural Engineering (AG)
3. GATE Syllabus For Architecture and Planning (AR)



4. [GATE Syllabus For Biotechnology \(BT\)](#)

5. [GATE Syllabus For Civil Engineering \(CE\)](#)

6. [GATE Syllabus For Chemical Engineering \(CH\)](#)

7. [GATE Syllabus For Computer Science Engineering \(CSE\)](#)

8. [GATE Syllabus For Chemistry \(CY\)](#)

9. [GATE Syllabus For Electronics and Communication Engineering \(ECE\)](#)

10. [GATE Syllabus For Electrical Engineering \(EE\)](#)

11. [GATE Syllabus For Ecology and Evolution \(EY\)](#)

12. [GATE Syllabus For Geology and Geophysics \(GG\)](#)

13. [GATE Syllabus For Instrumentation Engineering \(IN\)](#)

14. [GATE Syllabus For Mathematics \(MA\)](#)

15. [GATE Syllabus For Mechanical Engineering \(ME\)](#)



16. [GATE Syllabus For Mining Engineering \(MN\)](#)

17. [GATE Syllabus For Metallurgical Engineering \(MT\)](#)

18. [GATE Syllabus For Petroleum Engineering \(PE\)](#)

19. [GATE Syllabus For Physics \(PH\)](#)

20. [GATE Syllabus For Production and Industrial Engineering \(PI\)](#)

21. [GATE Syllabus For Textile Engineering and Fibre Science \(TF\)](#)

22. [GATE Syllabus For Statistics \(ST\)](#)

23. [GATE Syllabus For Bio Medical Engineering \(BM\)](#)

24. [GATE Syllabus For Engineering Sciences\(XE\)](#) – Any 2 optional sections

- Engineering Mathematics (XE A) – Compulsory section Syllabus
- Fluid Mechanics (XE B) Syllabus
- Material Science (XE C) Syllabus
- Solid Mechanics (XE D) Syllabus
- Thermodynamics (XE E) Syllabus
- Polymer Science & Engineering (XE F) Syllabus
- Food Technology (XE G) Syllabus
- Atmospheric and Oceanic Sciences (XE H) Syllabus



25. [GATE Syllabus For Life Sciences \(XL\) Syllabus](#) – Any 2 optional sections

- Chemistry (XL P) – Compulsory section Syllabus
- Biochemistry (XL Q) Syllabus
- Botany (XL R) Syllabus
- Microbiology (XL S) Syllabus
- Zoology (XL T) Syllabus
- Food Technology (XL U) Syllabus

26. Humanities and Social Sciences (XH) Syllabus

- [Reasoning and Comprehension \(XH-B1\) section syllabus](#)
- [Economics \(XH-C1\) Syllabus](#)
- [English \(XH-C2\) Syllabus](#)
- [Linguistics \(XH-C3\) Syllabus](#)
- [Philosophy \(XH-C4\) Syllabus](#)
- [Psychology \(XH- C5\) Syllabus](#)
- [Sociology \(XH-C6\) Syllabus](#)

27. [Environmental Science and Engineering \(ES\) Syllabus](#)

28. [Geomatics Engineering \(GE\) Syllabus](#)

29. [Naval Architecture and Marine Engineering \(NM\) Syllabus](#)

Meanwhile, two new subjects introduced to the 2022 Syllabus were:

1. ES (Environmental Science and Engineering)
2. XH (Humanities and Social Sciences) in Economics / English / Linguistics / Philosophy / Psychology / Sociology

In addition, two subjects were introduced to the 2024 Syllabus. They are:

1. NM (Naval Architecture and Marine Engineering)
2. GE (Geomatics Engineering)



GATE Syllabus 2024 – Subject Wise Topics

General Aptitude Syllabus (Common for all papers)	
Verbal Ability	Numerical Ability
Biomedical Engineering Syllabus	
Engineering Mathematics	Electrical Circuits
Analog and Digital Electronics	Signals and Systems
Measurement and Digital Electronics	Sensors and Bioinstrumentations
Medical Imaging System	Biomaterials
Human Anatomy and Physiology	Biomechanics
Aerospace Engineering Syllabus	
Fourier Series	Laplace Transforms
Numerical methods for linear and nonlinear algebraic equations	Numerical integration and differentiation.



Dynamic stability	Euler angle
Equations of motion	Aerodynamic forces and moments, stability & control derivatives
Decoupling of longitudinal and lateral-directional dynamics	Longitudinal modes; lateral-directional modes.
Orbit transfer	In-plane and out-of-plane
Elementary ideas of viscous flows including boundary layers	Wind Tunnel Testing
Measurement and visualization techniques	Vibration of beams
Theory of elasticity	Equilibrium and compatibility equations
Airy's stress function	
Agriculture Engineering Syllabus	
Engineering Mathematics	Farm Machinery



Farm Power	Soil and Water Conservation Engineering
Irrigation and Drainage Engineering	Agricultural Processing Engineering
Dairy and Food Engineering	
Architecture & Planning Syllabus	
Architecture and Design	Building Materials, Construction, and Management
Building and Structures	Environmental Planning and Design
Urban Design	Urban Planning and Housing
Planning Techniques and Management	Services, Infrastructure, and Transportation
Biotechnology Syllabus	
Engineering Mathematics	General Biotechnology
Recombinant DNA Technology	Plant and Animal Biotechnology



Bioprocess Engineering and Process Biotechnology	
Civil Engineering Syllabus	
Engineering Mathematics	Structural Engineering
Geotechnical Engineering	Water Resources Engineering
Environmental Engineering	Transportation Engineering
Geomatics Engineering	
Chemical Engineering Syllabus	
Engineering Mathematics	Process Calculations and Thermodynamics
Fluid Mechanics and Mechanical Operations	Heat Transfer
Mass Transfer	Chemical Reaction Engineering
Instrumentation and Process Control	Plant Design and Economics
Chemical Technology	

**Computer Science and Information Technology Syllabus**

Engineering Mathematics

Digital Logic

Computer Organization and Architecture

Programming and Data Structures

Algorithms

Theory of Computation

Compiler Design

Operating System

Databases

Computer Networks

Chemistry Syllabus

Physical Chemistry

Organic Chemistry

Inorganic Chemistry

Electronics and Communication Engineering Syllabus

Engineering Mathematics

Networks, Signals, and Systems

Electronic Devices

Analog Circuits



Digital Circuits	Control System
Communication	Electromagnetics
Electrical Engineering Syllabus	
Engineering Mathematics	Electrical Circuits
Electromagnetic Fields	Signals and Systems
Electrical Machines	Power Systems
Control Systems	Electrical and Electronic Measurements
Analog and Digital Electronics	Power Electronics
Environmental Science & Engineering (New)	
Environmental Management and Sustainable Development	Environmental Chemistry
Environmental Microbiology	Water Resources and Environmental Hydraulics



Water & Wastewater Treatment and Management	Air and Noise Pollution
Solid and Hazardous Waste Management	Global and Regional Environmental Issues
Ecology and Evolution Syllabus	
Ecology	Evolution
Mathematics and Quantitative Ecology	Behavioral Ecology
Geology And Geophysics Syllabus	
Geology	Geophysics
Instrumentation Engineering Syllabus	
Engineering Mathematics	Control Systems
Electrical Circuits	Analog and Digital Electronics
Signals and Systems	Measurements



Sensors and Industrial Instrumentation	Communication and Optical Instrumentation
Mathematics Syllabus	
Calculus	Linear Algebra
Rear Analysis	Complex Analysis
Ordinary Differential Equations	Algebra
Functional Analysis	Numerical Analysis
Partial Differential Equations	Topology
Linear Programming	
Mechanical Engineering Syllabus	
Engineering Mathematics	Applied Mechanics and Design
Fluid Mechanics and Thermal Science	Material, Manufacturing and Industrial Engineering
Mining Engineering Syllabus	



Engineering Mathematics	Mine Development Surveying
Geomechanics and Ground Control	Mining Methods and Machinery
Surface Environment, Mine Ventilation, and Underground Hazards	Mine Economics, Mine Planning, System Engineering
Metallurgical Engineering Syllabus	
Engineering Mathematics	Thermodynamics and Rate Process
Extractive Metallurgy	Physical Metallurgy
Mechanical Metallurgy	Manufacturing Process
Physics Syllabus	
Mathematical Physics	Classical Mechanics
Electromagnetic Theory	Quantum Mechanics
Thermodynamics and Statistical Physics	Atomic and Molecular Physics
Solid State Physics and Electronics	Nuclear and Particle Physics



Production and Industrial Engineering Syllabus

Engineering Mathematics

General Engineering

Manufacturing Processes

Quality and Reliability

Industrial Engineering

Operation Research and
Operational Management

Textile Engineering Syllabus

Engineering Mathematics

Textile Engineering and Fibre
Science

XE-A (Engineering Mathematics Syllabus)

Linear Algebra

Calculus

Vector Calculus

Ordinary Differential Equations

Partial Differential Equations

Complex variables

Probability and Statistics

Numerical Methods

XE-B (Fluid Mechanism Syllabus)



Flow and Fluid Properties	Kinematics
Integral analysis	Differential Analysis
Inviscid flows	Dimensional analysis
Internal flows	Prandtl boundary layer equations
XE-C (Material Sciences Syllabus)	
Processing of Materials	Characterization Techniques:
Structure and Imperfections	Thermodynamics and Kinetics
Properties of Materials	Material types
Environmental Degradation	Elements of Quantum Mechanics and Mathematics
XE-E (Thermodynamics Syllabus)	
Basic Concepts	Law of Thermodynamics
Thermodynamics Cycle	Thermodynamics Relations



Ideal Gas Mixtures	
XE-F (Polymer Science and Engineering Syllabus)	
Chemistry of high polymers	Polymer Characterization
Synthesis and properties	Polymer blends and composites
Polymer Technology	Polymer rheology
Polymer processing	Polymer testing
XE-G (Food Technology Syllabus)	
Food Chemistry and Nutrition	Food Microbiology
Food Products Technology	Food Engineering
XL-P (Chemistry Syllabus)	
Atomic Structure and Periodicity	Structure and Bonding
s, p and d Block Elements	Chemical Equilibria



Electrochemistry	Reaction Kinetics
Thermodynamics	Structure-Reactivity Correlations and Organic Reaction Mechanisms
XL-R (Botany Syllabus)	
Plant Systematics	Plant Anatomy
Morphogenesis & Development	Physiology and Biochemistry
Genetics	Plant Breeding and Genetic Modification
Economic Botany	Plant Pathology
Ecology and Environment	–
XL-S (Microbiology Syllabus)	
Historical Perspective	Methods in Microbiology
Microbial Taxonomy and Diversity	Prokaryotic and Eukaryotic Cells: Structure and Function



Microbial Growth	Control of Micro-organisms
Microbial Metabolism	Microbial Diseases and Host-Pathogen Interaction
Chemotherapy/Antibiotics	Microbial Genetics
Microbial Ecology	
XL-T (Zoology Syllabus)	
Animal world	Genetics
Evolution	Biochemistry and Molecular Biology
Cell Biology	Gene expression in Eukaryotes
Animal Anatomy and Physiology	Parasitology and Immunology
Development Biology	Ecology
Animal Behavior	
XH-B1 (Reasoning and Comprehension) (New)	



Reading Comprehension	Expression
Analytical reasoning	Logical reasoning
XH-C1 (Economics) (New)	
Statistics, Econometrics and Mathematical Economics	Microeconomics
Macroeconomics	International Economics
Public Economics	Development Economics
Indian Economy	–
XH-C3 (Linguistics) (New)	
Areal Typology, Universals, Cross-linguistic Features	Language and Linguistics
Levels of Grammar and Grammatical Analysis	Historical Linguistics
Sociolinguistics	Methods of analysis



Applied Linguistics	–
XH-C4 (Philosophy) (New)	
Classical Indian Philosophy	Contemporary Indian Philosophy
Classical and Modern Western Philosophy	Contemporary Western Philosophy
XH-C5 (Psychology) (New)	
Perception, Learning, Memory, and Forgetting	Cognition: Thinking, Intelligence, and Language
Research Methods and Statistics	Psychometrics
The biological and evolutionary basis of behavior	Personality
Applications of Psychology	Motivation, Emotion, and Stress and Coping
Social psychology	Development across the life span
XH-C6 (Sociology) (New)	



Family, Marriage, and Kinship	Sociological Theory
Research Methodology and Methods	Sociological Concepts
Agrarian Sociology and Rural Transformation	Indian Society / Sociology of India
Social Movements	Sociology of Development

After analysing the branch wise or subject wise GATE Syllabus PDF, students can start preparing diligently for the exams by referring to the correct GATE Preparation books, notes, question papers and other reference material, as applicable. Practising the GATE Previous Year Papers will also help the students to boost their performance in the GATE exams.

GATE Exam Pattern 2024

Meanwhile, students preparing for the GATE exams will also find the [GATE Exam Pattern](#) pretty helpful. Preparing for the exams by referring to the syllabus and based on the marks' distribution mentioned in this examination pattern is the best way to perform well and score in the exams. All the test papers of GATE 2024 are completely objective. The Pattern of Questions may include some MCQs (Multiple Choice Questions) and Numerical Answer Type (NAT) Questions.

Students are advised to check the marks and topic weightage from this detailed marking scheme given in the syllabus for GATE 2024.



Architecture and Planning (AR) New Pattern 2024

The Paper contains General Aptitude (GA) section (15 Marks) as applicable for all papers of GATE 2024.

The Paper consists of two parts covering the syllabus: Part A (60 marks) and Part B (25 marks).

Part A is compulsory for all the candidates.

Part B contains two optional sections: Part B1 (Architecture) and Part B2 (Planning).

Find the details of the Section Wise marks' distribution.

Paper Code		Marks Distribution		
Distribution of Questions in all Papers except AR, CY, EY, GG, MA, PH, XH and XL.		General Aptitude (GA) – 15, Engineering Mathematics –13, and The subject of the Paper – 72		
Distribution of Questions in AR, CY, EY, GG, MA, PH, XH, and XL		General Aptitude (GA)– 15 and The subject of the Paper– 85		
Paper Codes	General Aptitude (GA) Marks	Subject Marks	Total Marks	Total Time (Minutes)



AE, AG, BT, CE, CH, CS, CY, EC, EE, ES, EY, IN, MA, ME, MN, MT, PE, PH, PI, TF, ST, and BM	15	85	100	180
GG [Part A + Part B (Section 1 Geology Or Section 2 Geophysics)]	15	25 + 60	100	180
AR [Part A + Part B (Section 1 Architecture Or Section 2 Planning)]	15	25 + 60	100	180
XE (Section A + Any Two Sections)	15	15 + (2 x 35)	100	180
XH (Section B1 + Any One Section)	15	25 + (1 x 60)	100	180
XL (Section P + Any Two Sections)	15	25 + (2 x 30)	100	180

GATE Cutoff :

GATE Paper Name	General	OBC	SC/ST/PwD
Aerospace Engineering (AE)	29.8	26.8	19.8
Agriculture Engineering (AG)	26.3	23.6	17.5
Architecture and Planning (AR)	37.3	33.5	24.8



Biomedical Engineering (BM)	25	22.5	16.6
Biotechnology (BT)	35.5	31.9	23.6
Civil Engineering (CE)	30.4	27.3	20.2
Chemical Engineering (CH)	25.3	22.7	16.8
Computer Science & Information Technology (CS)	25	22.5	16.6
Chemistry (CY)	27.5	24.7	18.3
Electronics & Communication Engineering (EC)	25	22.5	16.6
Electrical Engineering (EE)	30.7	27.6	20.4
Environmental Science & Engineering (ES)	25.9	23.3	17.2
Ecology & Evolution (EY)	33.4	30	22.2
Geology and Geophysics (GG-G1)	48.7	43.8	32.4
Geology and Geophysics (GG-G2)	54.8	49.3	36.5



Instrumentation Engineering (IN)	42.4	38.1	28.2
Mathematics (MA)	27.3	24.5	18.2
Mechanical Engineering (ME)	28.1	25.2	18.7
Mining Engineering (MN)	25.5	22.9	17
Metallurgical Engineering (MT)	46.2	41.5	30.8
Naval Architecture and Marine Engineering (NM)	27.8	25	18.5
Petroleum Engineering (PE)	37.8	34	25.1
Physics (PH)	26.5	23.8	17.6
Production & Industrial Engineering (PI)	43.7	39.3	29.1
Statistics (ST)	25	22.5	16.6
Textile Engineering & Fiber Science (TF)	38.8	34.9	25.8
Engineering Sciences (XE)	40.3	36.2	26.8



XH-C1	55.5	49.9	37
XH-C2	51.9	46.7	34.5
XH-C3	53.1	47.7	34.5
XH-C4	50.7	45.6	33.8
XH-C5	62.1	55.8	41.4
XH-C6	59.7	53.7	39.8
Life Sciences (XL)	33.9	30.5	22.5

GATE Exam Resources

Here, we have provided the GATE Exam resources, which you can directly access by clicking on the links below:

[CLICK HERE](#)

Why GATE Exam?

- The GATE Exam scores are also used by some renowned foreign universities, including Nanyang Technological University (Singapore), National University of Singapore (Singapore), Technical University of Munich (Germany), and Aachen



University (Germany), etc. So, if you ever dream about studying abroad, here is your chance.

- The job opportunities for ME/M.Tech graduates are popular in the industry. But, this is when you pursue your ME/M.Tech Course from a renowned university or college, and for that, you need to clear GATE Exam.
- The GATE scorecard is also considered by the PSUs. So, get ready for these popular engineering-related jobs.
- This examination will allow you to sharpen your skills and polish your knowledge in your desired discipline. Explore the [Benefits of GATE Exam](#) to know more.

About GATE Exam

GATE exam is a national-level test organised for aspirants who want admission to Master's programmes or postgraduate engineering (ME/M.Tech) or analysis courses at top institutes in India such as IITs, NITs, IIITs, etc. This time, the exam is organised by IISc Bangalore. And it is expected to be conducted in the first and second week of February 2024.

Qualifying Disciplines for GATE Exam

As per the revised mechanism, GATE includes 29 disciplines or papers from 2024. Environmental Science and Engineering (ES) and Humanities and Social Science (XS) were two subjects introduced last year. And this year, two new subjects, Naval Architecture and Marine Engineering, and Geomatics Engineering, were added. So, the total number of papers increased to 29.

About GATE Registration

The date for GATE online registration 2024 is not fixed. However, it is expected to commence tentatively by the 2nd week of September 2023. Eligible candidates can complete GATE registrations by enrolling at the GATE Online Application Processing System (GOAPS) gateway. The candidates in the 3rd year of their Bachelor's degree are also eligible for GATE registration, along with candidates who have completed their graduation.

GATE Exam Registration Fees



To access GATE Application Form, candidates are required to pay a registration fee as mentioned below:

Category	Normal Application Fee	Late Application Fee
Women	INR 850	INR 1350
SC/ ST/ PwD	INR 850	INR 1350
All Other Candidates	INR 1700	INR 2200
International Students – Dubai and Singapore	US\$ 200	US\$ 250
Students From – Dhaka and Kathmandu	US\$ 100	US\$ 150

GATE Exam – Two Combination Paper

GATE exam has come up with two paper combinations. So, those applicants who want to appear in two disciplines can choose their primary paper by default, and for the second choice of paper, they have to refer to the allowed combination decided by the authorities. Remember, for the GATE exam, students have to go with these combinations only. Combinations other than these are not preferable.

Candidates can refer to the GATE exam official website, and also can go through the table below to check the two combination papers:



Code of the First (Primary) Paper	Codes of Papers Allowed as The Second Paper	Code of the First (Primary) Paper	Codes of Papers Allowed as The Second Paper
AE	CE, ME, XE	IN	BM, EC, EE, ME
AG	CE	MA	CS, PH, ST
AR	CE, GE	ME	AE, IN, NM, PI, XE
BM	BT, IN	MN	GE, GG, XE
BT	BM, XL	MT	XE
CE	AE, AG, AR, ES, GE, NM, XE	NM	CE, ME
CH	ES, PE, XE	PE	CH
CS	EC, GE, MA, PH, ST	PH	CS, EC, EE, MA, XE
CY	XE, XL	PI	ME, XE
EC	CS, EE, IN, PH	ST	CS, MA, XH
EE	EC, IN, PH	TF	XE
ES	CE, CH, GE	XE	AE, CE, CH, CY, ME, MT, PH, PI
EY	XL	XH	ST
GE	AR, CE, CS, ES, GG	XL	BT, CY, EY



GG	GE	*	*
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PLEASE NOTE: In any sudden circumstances, if some of the combinations are removed, then the fee paid towards the second paper will be refunded to the applicants. Also, keep in mind that the exam centre of a student for the second paper may be different in the same city.

Study Material –

BYJU'S Exam Prep

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GATE WALLAH

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