GATE 2022 SYLLABUS

GATE Syllabus 2022 has been released by IIT Kharagpur along with the official notification. **No new changes have been made in GATE Syllabus 2022, however, two new syllabus have been added for the newly introduced subjects- Naval Architecture & Marine Engineering (NM) and Geomatics Engineering (GE)**. General Aptitude (GA) is a mandatory section in the syllabus for all 29 papers comprising a 15% weightage in **GATE question paper**. Meanwhile, the rest of the syllabus varies according to the paper chosen by a candidate.

GATE Syllabus had been revised last year because of the introduction of new eligibility criteria that allowed students in the 3rd year of graduation course to sit for the exam. With the help of a detailed syllabus and **GATE 2022 exam pattern**, candidates can prepare well for the exam and focus on topics that require more preparation. As last-minute preparation, students can use the official **GATE Mock Tests** to test themselves and know their level of preparation.

Quick Links:

GATE Virtual Calculator	GATE Preparation Tips	GATE Cutoff

GATE Syllabus 2022: Download Paper-wise Syllabus PDFs

The General Aptitude (GA) syllabus in **GATE 2022** is the same for all 29 papers. Candidates can check the paper-wise GATE Syllabus 2022 for each paper in the section below:

GATE Paper	Sectional-weightage			Syllabus PDF
	General Aptitude	Engineering Mathematics	Core Discipline	
AE: Aerospace Engineering	15 marks	13 marks	72 marks	Download
AG: Agricultural Engineering	15 marks	13 marks	72 marks	Download
AR: Architecture and Planning	15 marks	--	Part A: 60 marks Part B (B1 or B2): 25 marks	Download
BM: Biomedical Engineering	15 marks	13 marks	72 marks	Download

BT: Biotechnology	15 marks	13 marks	72 marks	Download
CE: Civil Engineering	15 marks	13 marks	72 marks	Download
CH: Chemical Engineering	15 marks	13 marks	72 marks	Download
CS: Computer Science and Information Technology	15 marks	13 marks	72 marks	Download
CY: Chemistry	15 marks	--	85 marks	Download
EC: Electronics and Communication Engineering	15 marks	13 marks	72 marks	Download
EE: Electrical Engineering	15 marks	13 marks	72 marks	Download
ES: Environmental Science and Engineering	15 marks	13 marks	72 marks	Download
EY: Ecology and Evolution	15 marks	--	85 marks	Download
GE: Geomatics Engineering *(New Paper)*	15 marks	--	Part A: 55 marks Part B (Section I or Section II): 30 marks	Download
GG: Geology and Geophysics	15 marks	--	Part A: 25 marks Part B (Geology or Geophysics): 60 marks	Download
IN: Instrumentation Engineering	15 marks	13 marks	72 marks	Download
MA: Mathematics	15 marks	--	85 marks	Download
ME: Mechanical Engineering	15 marks	13 marks	72 marks	Download
MN: Mining Engineering	15 marks	13 marks	72 marks	Download
MT: Metallurgical Engineering	15 marks	13 marks	72 marks	Download
NM: Naval Architecture & Marine Engineering *(New Paper)*	15 marks	13 marks	72 marks	Download

PE: Petroleum Engineering	15 marks	13 marks	72 marks	Download
PH: Physics	15 marks	--	85 marks	Download
PI: Production and Industrial Engineering	15 marks	13 marks	72 marks	Download
ST: Statistics	15 marks	13 marks	72 marks	Download
TF: Textile Engineering and Fibre Science	15 marks	13 marks	72 marks	Download
XE: Engineering Sciences	15 marks	15 marks	70 marks	Download
XH: Humanities and Social Sciences	15 marks	--	Reasoning & Comprehension: 25 marks Core Discipline: 60 marks	Download
XL: Life Sciences	15 marks	--	Chemistry: 25 marks Core Discipline: 60 marks	Download

GATE General Aptitude Syllabus 2022: Important Topics and Sub-Topics

General Aptitude (GA) is a common section in all GATE Syllabus and holds 15% weightage of the total marks. The questions in GA are based on verbal, numerical, quantitative ability and spatial aptitude. Important Topics under GATE General Aptitude Syllabus 2022 is as follows:

GATE GENERAL APTITUDE SYLLAUS

TOPICS	SUB-TOPICS
Verbal Ability	Basic English grammar: tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech Basic vocabulary: words, idioms, and phrases in context Reading and comprehension Narrative sequencing
Quantitative Aptitude	Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, and series Mensuration and geometry Elementary statistics and probability
Analytical Aptitude	Logic: deduction and induction Analogy Numerical relations and reasoning
Spatial Aptitude	Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions

[Download GATE General Aptitude Syllabus 2022 PDF](#)

GATE Engineering Mathematics Syllabus 2022: Paper-wise Important Topics

Engineering Mathematics holds 13% weightage in GATE Syllabus for most papers with codes: AE, AG, BM, BT, CE, CH, CS, EC, EE, ES, IN, ME, MN, MT, NM, PE, PI and TF. However, for XE (Engineering Sciences paper), Engineering Mathematics holds 15% in the question paper. GATE Engineering Mathematics Syllabus 2022 has different topics based on the paper code with Linear Algebra and Calculus as the common topics for all the papers.

GATE Engineering Mathematics Syllabus tests a candidate's skills in mathematical methods and techniques which are majorly used in engineering. **Paper-wise important topics for GATE Engineering Mathematics Syllabus 2022 have been tabulated below**:

GATE Paper	Engineering Mathematics Important Topics
Aerospace Engineering (AE)	Linear Algebra, Calculus, Differential Equations
Agricultural Engineering (AG)	Linear Algebra, Calculus, Differential Equations, Vector Calculus, Probability, and Statistics, Numerical Methods

Biomedical Engineering (BM)	Linear Algebra, Calculus, Differential Equations, Analysis of complex variables, Probability, and Statistics, Numerical Methods
Biotechnology (BT)	Linear Algebra, Calculus, Differential Equations, Probability, and Statistics, Numerical Methods
Civil Engineering (CE)	Linear Algebra, Calculus, Ordinary Differential Equations (ODE), Partial Differential Equations (PDE), Probability and Statistics, Numerical Methods
Chemical Engineering (CH)	Linear Algebra, Calculus, Differential Equations, Probability and Statistics, Numerical Methods, Complex Variables
Computer Science and Information Technology (CS)	Linear Algebra, Calculus, Probability, and Statistics, Discrete Mathematics
Electronics and Communication (EC)	Linear Algebra, Calculus, Differential Equations, Probability and Statistics, Vector Analysis, Complex Analysis
Electrical Engineering (EE)	Linear Algebra, Calculus, Differential Equations, Probability and Statistics, Complex Variables
Environmental Science and Engineering (ES)	Linear Algebra, Calculus, Differential Equations, Probability and Statistics
Instrumentation Engineering (IN)	Linear Algebra, Calculus, Differential Equations, Analysis of Complex Variables, Probability and Statistics, Numerical Methods
Mechanical Engineering (ME)	Linear Algebra, Calculus, Differential Equations, Complex Variables, Probability and Statistics, Numerical Methods
Mining Engineering (MN)	Linear Algebra, Calculus, Differential Equations, Vector Calculus, Probability and Statistics, Numerical Methods
Metallurgical Engineering (MT)	Linear Algebra, Calculus, Differential Equations, Vector Calculus, Probability and Statistics, Numerical Methods
Petroleum Engineering (PE)	Linear Algebra, Calculus, Differential Equations, Probability and Statistics, Numerical Methods, Complex Variables
Production and Industrial Engineering (PI)	Linear Algebra, Calculus, Differential Equations, Complex Variables, Probability and Statistics, Numerical Methods
Textile Engineering and Fiber Science (TF)	Linear Algebra, Calculus, Differential Equations, Probability and Statistics, Numerical Methods

Engineering Sciences (XE)	Linear Algebra, Calculus, Ordinary Differential Equations (ODE), Partial Differential Equations (PDE), Probability and Statistics, Numerical Methods, Vector Calculus, Complex Variables

GATE Syllabus 2022 for CSE: Weightage of Important Topics

GATE Syllabus 2022 for CSE is divided into three sections: General Aptitude, Engineering Mathematics and Core Discipline.

Important Topics	GATE 2021 Weightage (Number of Questions)	
	Session 1	Session 2
Algorithms	8	3
Data Structures	5	3
Computer Organization	4	5
Digital Logic	3	4
Computer Network	5	6
Theory of Computation	5	7
Databases	5	6
Compiler Design	5	4
Operating Systems	4	5
Discrete Mathematics	7	6
Engineering Mathematics	4	6
General Aptitude	10	10

GATE Syllabus 2022 for Mechanical Engineering

GATE Syllabus 2022 for Mechanical Engineering is majorly divided into five sections with several sub-topics under each section:

- General Aptitude
- Engineering Mathematics

- Applied Mechanics and Design
- Fluid Mechanics and Thermal Sciences
- Materials, Manufacturing and Industrial Engineering.

Important Topics	GATE 2021 Weightage (Number of Questions)	
	Session 1	Session 2
Manufacturing	9	11
Thermodynamics	9	7
Industrial Engineering	5	4
Theory of Machines & Vibrations	6	6
Heat Transfer	4	3
Engineering Mathematics	8	9
Engineering Mechanics	2	2
Strength of Material	7	6
Fluid Mechanics	3	6
Machine Design	2	1
General Aptitude	10	10

GATE Syllabus 2022 for Civil Engineering

GATE Syllabus 2022 for Civil Engineering is divided into eight sections with several topics and sub-topics under each section:

- General Aptitude
- Engineering Mathematics
- Structural Engineering
- Geotechnical Engineering
- Water Resources Engineering
- Environmental Engineering
- Transportation Engineering
- Geomatics Engineering

Important Topics	GATE 2021 Weightage (Number of Questions)	
	Session 1	Session 2
General Aptitude	10	10
Engineering Mathematics	9	8
Irrigation & Hydrology	2	3
Geotechnical Engineering	7	9
Environmental Engineering	8	8
Transportation	7	5
Structural Analysis	5	4
Fluid Mechanics OCF	5	4
Surveying	2	5
Reinforced Concrete Cement	2	1
Steel Structure	2	2
Building Material & Construction Management	2	3
Engineering Mechanics	1	0
Mechanics of Material	3	3

GATE Syllabus 2022 for Electrical Engineering

GATE Syllabus 2022 for Electrical Engineering is divided into 11 sections with various topics under each section:

- General Aptitude
- Engineering Mathematics
- Electric Circuits
- Electromagnetic Fields
- Signals and Systems
- Electrical Machines
- Power Systems
- Control Systems

- Electrical and Electronic Measurements
- Analog and Digital Electronics
- Power Electronics

Important Topics	GATE 2021 Weightage (Number of Questions)
General Aptitude	10
Engineering Mathematics	8
Electrical Machines	5
Power System	8
Power Electronics	5
Control System	5
EMFT	4
Signals & Systems	5
Digital Electronics	2
Analog Electronics	4
Electric Circuit	7
Electrical Measurement	2

GATE Syllabus 2022 for Geomatics Engineering (GE)

Geomatics Engineering is a newly introduced paper this year. [GATE Syllabus 2022 for Geomatics Engineering](#) is divided into Part A and Part B (Section 1 and Section 2). General Aptitude and Part A are common sections while candidates need to choose one of the sections in Part B of the syllabus.

GATE Syllabus 2022 for Geomatics Engineering (GE): Part A

Sections	Topics
Engineering Mathematics	Surveying measurements, Accuracy, Precision, Most probable value, Errors and their adjustments, Regression analysis, Correlation coefficient, Lease square adjustment, Statistical significant value, Chi-square test. Anything on probability?

Remote Sensing	Basic concept, Electromagnetic spectrum, Spectral signature, ResolutionsSpectral. Spatial, Temporal and Radiometric, Platforms and Sensors, Remote Sensing Data Products - PAN, Multispectral, Microwave, Thermal, Hyperspectral, Visual and digital interpretation methods
GNSS	Principle used, Components of GNSS, Data collection methods, DGPS, Errors in observations and corrections.
GIS	Introduction, Data Sources, Data Models and Data Structures, Algorithms, DBMS, Creation of Databases (spatial and non-spatial), Spatial analysis - Interpolation, Buffer, Overlay, Terrain Modeling and Network analysis.

GATE Syllabus 2022 for Geomatics Engineering (GE): Part B (Section I)

Sections	Topics
Maps	Importance of maps to engineering projects, Types of maps, Scales and uses, Plotting accuracy, Map sheet numbering, Coordinate systems-Cartesian and geographical, map projections, map datum – MSL, Geoid, spheroid, WGS-84.
Land Surveying	Various Levels, Levelling methods, Compass, Theodolite and Total Station and their uses, Tachometer, Trigonometric levelling, Traversing, Triangulation and Trilateration.
Aerial Photogrammetry	Types of photographs, Flying height and scale, Relief (height) displacement, Stereoscopy, 3-D Model, Height determination using Parallax Bar, Digital Elevation Model (DEM), Slope.

GATE Syllabus 2022 for Geomatics Engineering (GE): Part B (Section II)

Sections	Topics
Data Quantization and Processing	Sampling and quantization theory, Principle of Linear System, Convolution, Continuous and Discrete Fourier Transform.
Digital Image Processing	Digital image characteristics: image histogram and scattergram and significance; Variance-Covariance matrix, Correlation matrix and their significance.
Radiometric and Geometric Corrections	Registration and Resampling techniques.
Image Enhancement	Contrast Enhancement: Linear and Non-linear methods; Spatial Enhancement: Noise and Spatial filters

Image Transformation	Principal Component Analysis (PCA), Discriminant Analysis, Color transformations (RGB - IHS, CMYK), Indices (Ratios, NDVI, NDWI).
Image Segmentation and Classification	Simple techniques.

GATE Syllabus 2022 for Naval Architecture and Marine Engineering (NM)

Naval Architecture & Marine Engineering (NM) is another newly introduced subject this year. **GATE Syllabus 2022 for Naval Architecture and Marine Engineering (NM)** is divided into six sections with further topics and sub-topics under each section of the syllabus:

- General Aptitude
- Engineering Mathematics
- Applied Mechanics and Structures
- Fluid Mechanics and Marine Hydrodynamics
- Naval Architecture and Ocean Engineering
- Thermodynamics and Marine Engineering

Topic	Sub-Topics
Applied Machines and Structures	Engineering Mechanics
	Mechanics of Materials
	Vibrations
	Machine Design
Fluid Mechanics and Marine Hydrodynamics	Fluid Mechanics
	Boundary layer theory
	Hydrodynamics
Naval Architecture and Ocean Engineering	Ship geometry and physical fundamentals
	Stability and trim of Ships
	Resistance & Propulsion
	Ship Manoeuvring and Motions
	Ocean waves

	Ship Structures & Strength
	Physical Oceanography
Thermodynamics and Marine Engineering	Thermodynamics
	Marine Diesel Engines
	Marine Steam Turbines
	Marine Boilers
	Engine Dynamics
	Marine Auxiliary Machinery & Systems

GATE Syllabus 2022 for CSE, EE, ECE, MA, IN, CE

GATE 2022 Syllabus for Aerospace Engineering (AE)	GATE 2022 Syllabus for Agriculture Engineering (AG)
GATE 2022 Syllabus for Architecture and Planning (AR)	GATE 2022 Syllabus for Biomedical Engineering (BM)
GATE 2022 Syllabus for Biotechnology (BT)	GATE 2022 Syllabus for Civil Engineering (CE)
GATE 2022 Syllabus for Chemical Engineering (CH)	GATE 2022 Syllabus for CSE
GATE 2022 Syllabus for Chemistry (CY)	GATE 2022 Syllabus for ECE
GATE 2022 Syllabus for EE	GATE 2022 Syllabus for Environmental Science and Engineering (ES)
GATE 2022 Syllabus for Ecology and Evolution (EY)	GATE 2022 Syllabus for Geomatics Engineering (GE) *(New Paper)*
GATE 2022 Syllabus for Geology and Geophysics (GG)	GATE 2022 Syllabus for Instrumentation Engineering (IN)
GATE 2022 Syllabus for Mathematics (MA)	GATE 2022 Syllabus for Mechanical Engineering (ME)
GATE 2022 Syllabus for Mining Engineering (MN)	GATE 2022 Syllabus for Metallurgical Engineering (MT)

GATE 2022 Syllabus for Naval Architecture & Marine Engineering (NM) *(New Paper)*	GATE 2022 Syllabus for Petroleum Engineering (PE)
GATE 2022 Syllabus for Physics (PH)	GATE 2022 Syllabus for Production and Industrial Engineering (PI)
GATE 2022 Syllabus for Statistics (ST)	GATE 2022 Syllabus for Textile Engineering and Fibre Science (TF)
GATE 2022 Syllabus for Engineering Science (XE)	GATE 2022 Syllabus for Humanities and Social Sciences (XH)
GATE 2022 Syllabus for Life Sciences (XL)	--

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