

SYLLABUS for entrance test in Machine Intelligence and Data Science (MINDS), IIT Delhi - Abu Dhabi campus

There will be 4 sections in the question paper as below, with equal weightage. All sections will need to be attempted.

Section 1. General Aptitude and Reasoning

Aptitude: As per GATE 2026 Syllabus [see https://gate2026.iitg.ac.in/doc/GATE2026_Syllabus/GA_2026_Syllabus.pdf]

Section 2. Mathematics and Statistics

Maths and Stats: Linear algebra: Vectors, System of Linear equations, Vector Spaces and Subspaces, Orthogonality, Determinants, Projections, Eigenvalues and Eigenvectors, Singular Value Decomposition

Reading material:

- Introduction to Linear Algebra, Gilbert Strang, 3rd edition (2003): Chapters 1-6. Related web resource
- Linear Algebra Done Right, Sheldon Axler, 3rd edition (2015).

Probability and Statistics: Basic probability, Random variables, Sampling, Parameter estimation, Regression, Moments, distance measures, Probability Distributions, etc.

Reading material:

- A First Course in Probability, Sheldon M Ross, 9 th edition (2013).

Optimization: Convex Sets, Convex Functions, Convex Optimization Problems, Optimality Conditions, first order methods Reading material:

- Convex optimization, Stephen Boyd and Lieven and Vandenberghe, Cambridge University press, 2004, Chapters 1 to 4.

Section 3. Data Structures and Algorithms (DSA) and Programming

Data Structure and Algorithms: Algorithms, Asymptotic notation, Divide and conquer, Sorting, Searching.

Reading materials:

- Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, 3rd edition (2009).

Programming: Basic knowledge of at least one of C or Python (questions will provide both options)

Section 4. AI/ML

Machine Learning: Machine learning tasks, Types of learning, Bias Variance Trade-off, Overfitting, Underfitting, etc.

Reading materials:

- Deep Learning, Ian Goodfellow, Yoshua Bengio, Aaron Courville, 2016, Chapter 5
- Probabilistic Machine Learning, Kevin Murphy, 2022.
- Pattern Recognition and Machine Learning, Christopher Bishop.