

Syllabus for Metallurgical Engineering Master's

Section 1: Subject Knowledge

Please Note: A Total of 40 Questions will be asked, combining the following topics, with the difficulty level commensurate to a Master's Candidate.

Unit 1: Engineering Mathematics

Linear Algebra, Calculus, Differential Equations, Complex Variables, Probability and Statistics, Numerical Methods.

Unit 2: Metallurgical Thermodynamics

Laws of Thermodynamics, Applications to Metallurgical Systems, Electrochemistry.

Unit 3: Transport Phenomena and Rate Processes

Momentum Transfer, Heat Transfer, Mass Transfer, Chemical and Electrochemical Kinetics, Dimensional Analysis.

Unit 4: Mineral Processing and Extractive Metallurgy

Mineral Processing, Extractive Metallurgy, Iron and Steel Making, Continuous Casting.

Unit 5: Physical Metallurgy

Bonding and Structures, Defects and Diffusion, Phase Transformations, Heat Treatment, Material Properties.

Unit 6: Mechanical Metallurgy

Stress-Strain Relationships, Dislocation Theory, Fracture and Fatigue, Creep.

Unit 7: Manufacturing Processes

Casting, Metal Working, Joining Techniques, Powder Metallurgy, Non-Destructive Testing.

Section 2: Fundamental Skills

Please Note: A Total of 24 Questions will be asked, combining the following topics, with the difficulty level commensurate to a Master's Candidate.

Unit I: Data Analysis

Unit II: Math and Statistics

Unit III: Reasoning and Aptitude

Unit IV: Reading and Writing

Section 3: Specific Skill Proficiency

This section has multiple skills. You can select the ones you are proficient in from the enrollment form. You can select a maximum of 4 skills.