

GEORGIA TECH LORRAINE
GEORGIA INSTITUTE OF TECHNOLOGY
School of Materials Science and Engineering
ME 6795

Mathematical, Statistical, and Computational Techniques in Materials Science

Course Objectives

To learn the applications of mathematical, statistical, and computational techniques in Materials and Engineering Sciences.

Books, handouts & other resources

Advanced Engineering Mathematics, E. Kreyszig, Wiley.

Course Outline

1. Mathematical Techniques
 - a) Ordinary Differential Equations and Applications
 - b) Fourier Series and Applications
 - c) Partial Differential Equations and Applications
 - d) Rotations & Tensors and Applications
 - e) Optimization and Applications
2. Numerical and Computational Techniques
 - a) Numerical Methods and Applications
 - b) Computational Methods and Applications
 - c) Statistical Methods and Applications

Learning Objectives

Course Outcomes:

Outcome 1: The student will possess the fundamental knowledge and skills to solve problems related to computational physics and engineering. Furthermore, the student will function effectively in materials science and engineering- related positions in industry and government, or to successfully pursue advanced studies.

Outcome 2: The student will demonstrate technical competence using current engineering techniques, skills and tools.

Grading

The grade will be determined using the following weighting

Homeworks	10%
Midterm & Quizzes	60%
Final Exam or Project	30%

The final grade will be curved based on your attendance, performance and participation in class. Over two unexcused absences, no curving will be applied.