Department: Mining Engineering   **Division:** Mining Exploitation

 Level and Major: MSc, Mining Exploitation

Course Title: Advanced Engineering Mathematics

Number of Credits: 3   **Lecturer:** Dr. Hamed Molladavoodi

Course Goals and Objectives

Introduction to advanced engineering mathematics and its use in rock mechanics.

Course Topics

- Fourier series, oven, and odd Fourier series
- Oven and odd Fourier series
- Derivation from Fourier series
- Derivation from Fourier series
- Fourier integral and convention
- Partial differential equations
- Wave equation
- Thermal equation
- Laplacian equations
- Complex variables
- Analytical functions
- Continuity of a complex function
- Complex integrals
- Engineering applications
- Tensor and Vector Calculus
- Index Notation
- Tensors algebra operation
- Vector Calculus
- Vector Calculus

Reading Resources

- Engineering mathematics for rock engineering