

Metals Track

Core Courses

EMA 6313 Material Structures & Mechanical Prop.
EMA 6316 Materials Thermodynamics
EMA 6136 Kinetics
EMA 6114 Properties of Functional Materials

Required Electives (Choose at least 2)

EMA 6106 Advanced Phase Diagrams
EMA 6107 High Temp Materials
EMA 6625 Advanced Metals Processing

Optional Electives (choose 4)

EMA 6808 Error Analysis & Optimization Meth
EMA 6510 Survey of Materials Analysis Tech
EMA 6518 Transmission Electron Microscopy
EMA 6516 X-Ray Methods of Materials Analysis
EMA 6507 Scanning Electron Microscopy & Microan
EML 6507 Wear of Materials
EAS 6242 Advanced Structural Composites
EML 5526 Finite Element Analysis and Application
EML 6934B Failure of Materials in Mechanical Design
EGM 5533 Applied Elasticity & Adv Mech of Solids
EGM 6570 Principles of Fracture Mechanics

Polymers Track

Core Courses

EMA 6313 Material Structures & Mechanical Prop.
EMA 6316 Materials Thermodynamics
EMA 6136 Kinetics
EMA 6114 Properties of Functional Materials

Required Electives

EMA 6165 Polymer Physical Science
EMA 6461 Polymer Characterization

Optional Electives (choose 4)

EMA 6580 Science of Biomaterials I
EMA 6510 Survey of Materials Analysis Tech
EMA 6518 Transmission Electron Microscopy
EMA 6516 X-Ray Methods of Materials Analysis
EMA 6507 Scanning Electron Microscopy & Microan
EML 6507 Wear of Materials
EAS 6242 Advanced Structural Composites
EML 5526 Finite Element Analysis and Application
EML 6934B Failure of Materials in Mechanical Design
EGM 6321 Principles of Engineering Analysis 1
EMA 6808 Error Analysis & Optimization Meth

Electronic Materials Track

Core Courses

EMA 6313 Material Structures & Mechanical Prop.
EMA 6316 Materials Thermodynamics
EMA 6136 Diffusion, Kinetics, and Transport Phen
EMA 6114 Properties of Functional Materials

Required Electives

EMA 6110 Electronic Theory of Materials
EMA 6616 Adv. Electronic Materials Process.

Optional Electives (choose 4)

EMA 6938 Organic Electronics
EMA 6510 Survey of Materials Characterization
EMA 6518 Transmission Electron Microscopy
EMA 6507 Scanning Electron Microscopy & Microan
EMA 6516 X-Ray Methods of Materials Analysis
EEE 5426 Intro Quantum Mech for Nanodev
EEE 6397 Semicond Dev Theory
EEE 5400 Future of uElectronics Techn
EEE 6382 Semicond Phys Electronics
EMA 6808 Error Analysis & Optimization Meth
EGM 6341 Num. Meth. Of Engin. Analy.

Structural Materials Track

Core Courses

EMA 6313 Material Structures & Mechanical Prop.
EMA 6316 Materials Thermodynamics
EMA 6136 Diffusion, Kinetics, and Transport Phen
EMA 6114 Properties of Functional Materials

Required Electives

EMA 6715 Fracture of Brittle Materials
EMA 6107 High Temperature Materials
EMA 6516 X-Ray Methods of Materials Analysis

Optional Electives (choose 3)

EMA 6106 Advanced Phase Diagrams
EMA 6518 Transmission Electron Microscopy
EMA 6510 Survey of Materials Analysis Tech
EMA 6808 Error Analysis & Optimization Meth
EMA 6507 Scanning Electron Microscopy & Microan
EML 6507 Wear of Materials
EAS 6242 Advanced Structural Composites
EML 5526 Finite Element Analysis and Application
EML 6934B Failure of Materials in Mechanical Design
EGM 5533 Applied Elasticity & Adv Mech of Solids
EGM 6570 Principles of Fracture Mechanics

Certificates

Materials Characterization Certificate

EMA 6510 Survey of Materials Analysis Tech

EMA 6516 X-Ray Methods of Materials Analysis

EMA 6507 Scanning Electron Microscopy & Microan

Sustainable Engineering Certificate (EES Certificate, 1 MSE Course)

EMA 6938 Materials & Sustainability

ENV 6932 Green Engineering Design & Sustainability

EES 6318 Principles of Industrial Ecology