

# MATERIALS SCIENCE AND ENGINEERING, MEN

**Requirements for Students Matriculating in or before Academic Year 2024-2025.** Learn more about Graduate College Academic Regulation 7.0 (<http://catalog.okstate.edu/graduate-college/#70>).

**Total Hours: 32**

Code	Title	Hours
<b>Core Courses</b>		
MSE 5013	Advanced Thermodynamics of Materials	3
MSE 5023	Diffusion and Kinetics	3
MSE 5043	Advanced Materials Characterization	3
MSE 5093	Fundamentals of Materials Science	3
MSE 5193	Advanced Materials Processing	3
<b>Hours Subtotal</b>		<b>15</b>
<b>Electives</b>		
Select 15 hours from the following:		15
MSE 5053	Smart Materials	
MSE 5123	Advanced Composites Manufacturing: Materials, Methods and Applications	
MSE 5153	Crystal Physics and Materials Properties	
MSE 5063	Biomedical Materials	
MSE 5073	Tissue Engineering	
MSE 5103	Electrical and Optical Properties of Ceramics	
MSE 5133	Solid Oxide Fuel Cells	
MSE 5143	Batteries and Supercapacitors for Energy Storage	
MSE 5583	Corrosion Engineering	
or MAE 5583	Corrosion Engineering	
MSE 5553	Fatigue and Fracture	
or MAE 5553	Fatigue and Fracture Mechanics	
MSE 5683	Thermodynamics and Thermostatistics of Materials (Introductory UG Material Science course or equivalent)	
or MAE 5683	Thermodynamics and Thermostatistics of Materials	
MSE 5200	Applied Innovation I	
or EEE 5200	Special Topics in Entrepreneurship	
MSE 5223	Additive Manufacturing: Materials, Methods and Applications	
MAE 5503	Mechanics of Advanced Composites for Structural Design	
MAE 5543	Modern Materials	
ECEN 5843	Microelectronic Fabrication	
ECEN 6843	Advanced Microelectronic Fabrication	
MAE 5003	Advanced Biomaterials Science and Engineering	
<b>Chemistry</b>		
CHEM 5223	Polymer Chemistry	
CHEM 5263	Foundations of Inorganic Chemistry	
CHEM 5283	Solid State Chemistry	

CHEM 6113	Analytical Spectroscopy	
CHEM 5613	Chemistry I	
CHEM 5960	Inorganic Chemistry II	
Physics		
PHYS 5613	Quantum Mechanics I	
PHYS 5663	Solid State Physics I	
PHYS 5713	Solid State Physics II	
PHYS 5960	Problems in Chemical Physics	
PHYS 6243	Semiconductors I	
PHYS 6313	Quantum Mechanics II	
Biological/Health Science		
BIOM 6175	Molcular And Cellular Biology	
Chemical Engineering		
CHE 5283	Advanced Bioprocess Engineering	
CHE 5293	Advanced Biomedical Engineering	
Electrical & Computer Engineering		
ECEN 6840	Photonics III: Microscopy I	
ECEN 6843	Advanced Microelectronic Fabrication	
ECEN 6850	Photonics III: Microscopy II	
ECEN 6860	Photonics III: Microscopy III and Image Processing	
ECEN 6890	Photonics IV: Semiconductor Synthesis and Devices III	
Mechanical & Aerospace Engineering		
MAE 5143	Tribology	
MAE 5243	Micro Flows	
MAE 5573	Continuum Mechanics	
MAE 5633	Advanced Thermal Energy Systems Analysis	
MAE 5993	Microstructural Mechanics	
MAE 6133	Surface Mechanics	
Graduate courses from other disciplines may be allowed but will require approval of the student's Graduate Advisory Committee and the MSE Graduate Program Coordinator prior to enrollment.		
Hours Subtotal		15
MSE 5022	Masters of Engineering Capstone Project	2
Hours Subtotal		2
Total Hours		32

## Graduate College Master's Program Requirements

Learn more about Graduate College 2024-2025 Master's Degree Program Requirements (<http://catalog.okstate.edu/graduate-college/>). Check the General Graduate College academic regulations for minimal GPA, language proficiency and other general requirements.