

# MATERIALS SCIENCE AND ENGINEERING

UNLOCKING ELEMENTS OF THE FUTURE

Academic plan for 2018-19

## What can you do as a Materials Engineer?

As a materials engineer, you will create and improve products to make lives better across any application area you might imagine. Your research as a student and your future career could include discovering a new way to fight cancer, creating a faster computer chip, designing a less abrasive airbag for your car, improving snow skiing, car or airplane performance, making a better golf club or biomedically-implantable device and much more by utilizing the natural ingredients of the world or synthesizing new ones for fabrication and implementing advances in technologies around the globe.

Materials Science and Engineering (MSE) is the technology behind the materials that make communication, transportation, recreation, daily conveniences and a healthful environment possible. The worldwide effort to develop new materials with improved properties for structural, electronic, and magnetic applications has been met by new courses and research emphases by the faculty in the materials and processing areas.



## Undergraduate Program

The department's educational mission is to produce graduates who are equipped to begin competitive and productive careers in their engineering professions; who can define and solve engineering problems to meet desired needs and produce societal benefits. Idaho's MSE program teaches you to understand the importance of working responsibly, acting ethically and pursuing continued professional growth.

The MSE Program at the University of Idaho offers a full gamut of degrees in this discipline: BS, MS, and Ph.D.



**University of Idaho**  
A LEGACY OF LEADING

### College of Engineering

Department of Chemical & Materials Engineering  
Buchanan Engineering Lab (BEL) 308  
208.885.7572 or 88-88-UIDAHO ext. 7572  
mse@uidaho.edu

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FRESHMAN - FALL			FRESHMAN - SPRING		
CHEM 111+L	*Principles of Chemistry I & Lab	3+1	CHEM 112+L	*Principles of Chemistry II & Lab	4+1
MSE 101	**Intro to Metallurgy & Materials Science	2	HUM/SS	Humanities/Social Science Elective w/ International Component	3
MATH 170	**Analytic Geometry & Calculus I	4	MATH 175	**Analytic Geometry & Calculus II	4
ENGL 102	**College Writing and Rhetoric	3	PHIL 103	Ethics (Humanities)	3
ISEM 101	Integrated Seminar	3	PHYS 211*	Engineering Physics I (no lab)	3
<b>Total Credits</b>		<b>16</b>	<b>Total Credits</b>		<b>18</b>
SOPHOMORE - FALL			SOPHOMORE- SPRING		
ECON	Econ elective 201 or 202	3	<i>Elective</i>	†Chemical/Analysis elective	3
ENGR 210	*Engineering Statics	3	ENGR 335	*Engineering Fluid Mechanics	3
MSE 201	*Elements of Materials Science	3	MSE 308	Thermodynamics of Materials	3
MATH 275	*Analytical Geometry & Calc III	3	MATH 310	*Ordinary Differential Equations	3
PHYS 212	*Engineering Physics II	3	STAT 301	Probability and Statistics	3
PHYS 212L	*Engineering Physics II (lab)	1			
<b>Total Credits</b>		<b>16</b>	<b>Total Credits</b>		<b>15</b>
JUNIOR - FALL			JUNIOR - SPRING		
CHEM 305	Physical Chemistry	3	ENGL 317	Technical Writing (Gen. Ed. Comm.)	3
CHEM 307	Physical Chemistry Lab	1	ENGR 240	Introduction to Electrical Circuits	3
ENGR 350	Engrg Mechanics of Materials	3	HUM/SS	Humanities/SS - American Diversity	3
MSE 313	Physical Metallurgy	3	MSE 313L	Physical Metallurgy Lab	1
MSE 340	Transport and Rate Processes I	4	MSE 412	Mechanical Behavior of Materials	3
MSE 423	Corrosion	3	MSE 413	Phase Equilibria in Materials	3
<b>Total Credits</b>		<b>17</b>	<b>Total Credits</b>		<b>16</b>
SENIOR - FALL			SENIOR- SPRING		
MSE 417	Instrumental Analysis	3	<i>Elective</i>	Technical Elective 300 or higher	3
MSE 434	Fundamentals of Polymeric Materials	3	MSE 432	Fundamentals of Thin Film Fabrication	3
MSE 453	Process Analysis and Design I	3	MSE 454	Design II (Capstone Core)	3
MSE 427	Ceramic Materials	3	MSE 456	Metallic Materials	3
MSE/CHE	MSE/CHE elective 300 or higher	3	MSE 464	Materials Physics and Engineering	3
ISEM 301	Integrated Seminar	1			
<b>Total Credits</b>		<b>16</b>	<b>Total Credits</b>		<b>15</b>

\*A grade of C or better is required in these courses before registration is permitted in upper division MSE courses

\*\*Other courses also required for upper division enrollment. See course catalog for complete degree requirements.

†Chemical Analysis Elective options: CHE 223, CHEM 275, CHEM 277, CHEM 306, or ENGR 428.