

# MASTER OF SCIENCE IN MATERIALS SCIENCE AND ENGINEERING

The School of Materials Science and Engineering provides an array of options to both the Undergraduate and Graduate students. The Graduate degrees offered include a MS in Materials Science and Engineering with three program options (thesis, non-thesis, and industrial internship).

MS MSE Information

## Non-Thesis Option

Code	Title	Credit Hours
<b>Materials Science and Engineering Approved Electives</b>		<b>18</b>
<b>Electives</b>		<b>12</b>
<b>Total Credit Hours</b>		<b>30</b>

1. Students must complete at least 24 hours of at least 6000-level or higher courses (a maximum of 6 hours of 4000-level courses may be applied).
2. Non-thesis students may take a Special Problems course (MSE 8903) for research experience.

## Thesis Option

Code	Title	Credit Hours
<b>Materials Science and Engineering Approved Electives</b>		<b>12</b>
<b>Electives</b>		<b>12</b>
<b>MSE 7000</b>	<b>Master's Thesis</b>	<b>6</b>
<b>Total Credit Hours</b>		<b>30</b>

1. Students must complete at least 12 hours of at least 6000-level or higher courses (a maximum of 6 hours of 4000-level courses may be applied).

## Other Master of Science in Materials Science and Engineering requirements

Code	Title	Credit Hours
MSE 8801	Special Topics (Seminar)	1
Responsible Conduct of Research (Online CITI, if Thesis option)		
Safety Seminar and MSE Safety Exam		

## Materials Science and Engineering Approved Electives list

Code	Title	Credit Hours
MSE 6010	Fundamentals of Functional Materials	3
MSE 6105	Diffraction Studies	3
MSE 6110	Transmission Electron Microscopy	3
MSE 6120	Quantitative Characterization of Microstructures	3
MSE 6130	Surface Analysis	3

MSE 6403	Kinetics of Phase Transformations	3
MSE 6404	Scattering Theory	3
MSE 6405	Advanced Nanomaterials	3
MSE 6406	Corrosion of Materials	4
MSE 6407	Biological Properties	3
MSE 6510	Polymers for Electronic and Photonic Applications I	3
MSE 6600	Advanced Polymer Processing	3
MSE 6602	Tensor Analysis and Mathematical Techniques for Materials	3
MSE 6603	Natural Polymers	3
MSE 6750	Preparation & Reactions of Polymers	3
MSE 6751	Physical Chemistry of Polymer Solutions	3
MSE 6752	Polymer Characterization	4
MSE 6755	Theoretical Chemistry of Polymers	3
MSE 6768	Polymer Structure, Physical Properties, and Characterization	3
MSE 6774	Biomaterials: Structure and Function	3
MSE 6776	Integrated Low-cost Microelectronics Systems Packaging	3
MSE 6777	Advanced Biomaterials	3
MSE 6795	Mathematical, Statistical, and Computational Techniques in Materials Science	3
MSE 6796	Structure-Property Relationships in Materials	3
MSE 7140	Impedance and Dielectric Spectroscopy	3
MSE 7210	Dislocation and Deformation Mechanics	3
MSE 7420	Solidification Processing	3
MSE 7771	Mechanics of Polymer Solids and Fluids	3
MSE 7772	Fundamentals of Fracture Mechanics	3
MSE 7774	Fatigue of Materials and Structures	3
MSE 8803	Special Topics (Nanomaterials and Nanotechnology)	3
MSE 8803	Special Topics (Advanced X-Ray Diffraction)	3
MSE 8803	Special Topics (Materials for Energy Storage and Conversion)	3
MSE 8803	Special Topics (Fundamentals of Nanomaterials & Energy)	3
MSE 8803	Special Topics (Biomaterials Properties)	3
MSE 8903	Special Problems	1-21
ME 6104	Computer-Aided Design	3
ME 6124	Finite-Element Method: Theory and Practice	3
ISYE 6739	Basic Statistical Methods	3
BMED 6710	Rational Design of Biomaterials	3
CHEM 6172	Physical Methods in Inorganic Chemistry	3
CHEM 6181	Chemical Crystallography	3
CHEM 6283	Electroanalytical Chemistry	3
CHEM 6382	Computational Methods in Organic Chemistry and Biochemistry	3
CHEM 6752	Polymer Characterization	4
CHEM 6572	Macromolecular Structure	3
MATH 4347	Partial Differential Equations I	3
MATH 4348	Partial Differential Equations II	3
MATH 4255	Monte Carlo Methods	3

## **BS/MS Option**

The School of Materials Science and Engineering (MSE) offers a BS/MS program for outstanding students who want to obtain a graduate degree in addition to their BS degree. The advanced degree provides the additional knowledge and specialization needed to further facilitate a technical career. As a participant in this program, students have an opportunity to work with individual faculty members on projects in one of the traditional or innovative research areas in MSE. See [www.mse.gatech.edu](http://www.mse.gatech.edu) for more details.