

# BACHELOR OF SCIENCE IN MATERIALS AND SCIENCE ENGINEERING - FUNCTIONAL MATERIALS

Code	Title	Credit Hours
<b>Wellness</b>		
APPH 1040	Scientific Foundations of Health	2
	or APPH 10 The Science of Physical Activity and Health	
	or APPH 10 Flourishing: Strategies for Well-being and Resilience	
<b>Core A - Essential Skills</b>		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
MATH 1552	Integral Calculus	4
<b>Core B - Institutional Options</b>		
CS 1371	Computing for Engineers	3
<b>Core C - Humanities</b>		
Any HUM		6
<b>Core D - Science, Math, &amp; Technology</b>		
PHYS 2211	Introductory Physics I <sup>1</sup>	4
PHYS 2212	Introductory Physics II <sup>2</sup>	4
MATH 1551	Differential Calculus	2
MATH 1553	Introduction to Linear Algebra	2
<b>Core E - Social Sciences</b>		
Select one of the following:		3
HIST 2111	The United States to 1877	
HIST 2112	The United States since 1877	
INTA 1200	American Government in Comparative Perspective	
POL 1101	Government of the United States	
PUBP 3000	American Constitutional Issues	
Select one of the following:		3
ECON 2100	Economic Analysis and Policy Problems	
ECON 2101	The Global Economy	
ECON 2105	Principles of Macroeconomics	
ECON 2106	Principles of Microeconomics	
Any SS		6
<b>Core F - Courses Related to Major</b>		
CHEM 1211K	Chemical Principles I	4
CHEM 1212K	Chemical Principles II	4
CHEM 1315	Survey of Organic Chemistry for Engineers	3
MATH 2551	Multivariable Calculus	4
MATH 2552	Differential Equations	4
Ethics <sup>6</sup>		
<b>Major Requirements</b>		
MSE 1111	Introduction to Materials Science and Engineering	1
MSE 2001	Principles and Applications of Engineering Materials	3

MSE 2021	Materials Characterization	4
MSE 3001	Chemical Thermodynamics of Materials	3
MSE 3002	Structural Transformations in Metallic, Ceramic, and Polymeric Systems	3
MSE 3005	Mechanical Behavior of Materials	3
MSE 3015	Electrical, Optical, and Magnetic Properties	3
MSE 3021	Materials Laboratory I	2
MSE 3025	Statistics and Numerical Methods in Materials Science and Engineering	3
MSE 3210	Transport Phenomena	3
MSE 4022	Materials Laboratory II	2
MSE 4410	Capstone Engineering Design I	3
MSE 4420	Capstone Engineering Design II	3
	or ME 4723 Interdisciplinary Capstone Design	
MSE 4775	Polymer Science and Engineering I: Formation and Properties	3
<b>Other Requirements</b>		
COE 2001	Statics	2
COE 3001	Mechanics of Deformable Bodies	3
ECE 3710	Circuits and Electronics	2
ECE 3741	Instrumentation and Electronics Lab	1
ISYE 3025	Essentials of Engineering Economy	1
<b>Functional Materials Concentration Requirements</b>		
MSE 4002	Ceramic Materials: Properties, Processing, Applications	3
MSE 4004	Materials in Electronic Applications	3
MSE 4330	Fundamentals of Nanomaterials and Nanostructures	3
Functional Materials Elective course <sup>3,4</sup>		3
<b>Free Electives</b>		
Free Electives <sup>5</sup>		5
<b>Total Credit Hours</b>		<b>129</b>

Pass-fail only allowed for Free Electives, Humanities, and Social Sciences.

<sup>1</sup> If PHYS 2231 is taken, extra hour goes to Free Electives.

<sup>2</sup> If PHYS 2232 is taken, extra hour goes to Free Electives.

<sup>3</sup> For students wishing to gain more knowledge in Functional Materials one of the following courses are recommended: MSE 4754, MSE 4755, MSE 4759, MSE 4766, PHYS 3143, PHYS 4262.

<sup>4</sup> Students may meet this requirement by taking ME 1670; Any MSE courses EXCEPT MSE 3720, MSE 3300, MSE 2698/MSE 2699/MSE 4698/MSE 4699. If a student completes the Research Option, they can use the combination of LMC 4701 and LMC 4702 and MSE 2699/MSE 4699 to meet this requirement.

<sup>5</sup> MATH 1113 and PHYS 2XXX(AP credit) are not allowed.

<sup>6</sup> Any Georgia Tech course that has the Ethics attribute.