

# BACHELOR OF SCIENCE IN MATERIALS SCIENCE AND ENGINEERING - BIOMATERIALS

Code	Title	Credit Hours
<b>Wellness Requirement</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 IMPACTS</b>		
<b>Institutional Priority</b>		
CS 1371	Computing for Engineers	3
<b>Mathematics and Quantitative Skills</b>		
MATH 1552	Integral Calculus	4
<b>Political Science and U.S. History</b>		
HIST 2111	The United States to 1877	3
	or HIST 2112 The United States since 1877	
	or INTA 1200 American Government in Comparative Perspective	
	or POL 1101 Government of the United States	
	or PUBP 3000 American Constitutional Issues	
<b>Arts, Humanities, and Ethics</b>		
Any HUM		6
<b>Communicating in Writing</b>		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
<b>Technology, Mathematics, and Sciences</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>Social Sciences</b>		
Any SS		9
<b>Field of Study</b>		
CHEM 1211K	Chemical Principles I	4
CHEM 1212K	Chemical Principles II	4
COE 2001	Statics	2
MATH 2551	Multivariable Calculus	4
MATH 2552	Differential Equations	4
<b>Major Requirements</b>		
Ethics <sup>3</sup>		
Economics <sup>4</sup>		
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 4105	Deformation and Fracture 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

## Other Requirements

CHEM 1315	Survey of Organic Chemistry for Engineers	3
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

## Biomaterials Concentration

BIOS 1107	Biological Principles	4
& 1107L	and Biological Principles Laboratory	
MSE 4751	Introduction to Biomaterials	3
Select one of the following:		3

MSE 4330 Fundamentals of Nanomaterials and Nanostructures

MSE 4335 Soft Nano and Bio Materials

CHEM 3511 Survey of Biochemistry

Biomaterials Elective Course <sup>5,6</sup> 3

## Free Electives

Free Electives <sup>7</sup> 4

**Total Credit Hours** 129

Pass-fail only allowed for Free Electives.

<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> Any Georgia Tech course that has the Ethics Attribute. Check here for a list of Ethics courses.

<sup>4</sup> Students must complete one of the following to meet the Economics requirement: ECON 2100, ECON 2101, ECON 2105, ECON 2106. This course may also be applied to the Core IMPACTS Social Science area.

<sup>5</sup> For students wishing to gain more knowledge in Biomaterials, one of the following courses are recommended: MSE 4330, MSE 4335, MSE 4740, CHEM 3511.

<sup>6</sup> Students may meet this requirement by taking ME 1670; Any MSE course 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, LMC 4702 and MSE 2699/MSE 4699.

<sup>7</sup> MATH 1113 and PHYS 2XXX(AP credit) are not allowed.