

BACHELOR OF SCIENCE IN MATERIALS SCIENCE AND ENGINEERING 2025-2026 DEGREE REQUIREMENTS – 129 Credit Hours				
FIRST YEAR - FALL	PREREQUISITES	COURSE HRS	TOTAL SEM HRS	
MATH 1551 – Differential Calculus		2		
MATH 1553 – Linear Algebra		2		
CHEM 1211K - Chemical Principles I		4		
CS 1371 - Computing for Engineers		3		
ENGL 1101 - English Composition I		3		
MSE 1111 - Intro to MSE (1) OR APPH 1040 – Sci. Found. of Health/APPH 1050 – Sci. of Phys. Activ & Health – Wellness/APPH 1060		1/2		15/16
FIRST YEAR - SPRING	PREREQUISITES	COURSE HRS		
MATH 1552 – Integral Calculus	MATH 1550 or MATH 1551 or MATH 15X1	4		
PHYS 2211 - General Physics I	MATH 1552	4		
CHEM 1212K - Chemical Principles II	CHEM 1310 or CHEM 1211K	4		
ENGL 1102 - English Composition II	ENGL 1101	3		
MSE 1111 - Intro to MSE (1) OR APPH 1040 – Sci. Found. of Health/APPH 1050 – Sci. of Phys. Activ & Health - Wellness (2)		1/2		16/17
SECOND YEAR - FALL	PREREQUISITES	COURSE HRS		
CHEM 1315 - Survey of Organic Chemistry	CHEM 1310 or CHEM 1211K	3		
COE 2001 – Statics	(MATH 15X2 or 1552) and (PHYS 2211 or PHYS 2231)	2		
MATH 2551 – Multivariable Calculus	MATH 1555 or (MATH 1552 and MATH 1553) or (MATH 1552 and MATH 1554) or (MATH 1552 and MATH 1564)	4		
PHYS 2212 - General Physics II	PHYS 2211 or PHYS 2231	4		
MSE 2001 - Introduction to Engineering Materials	CHEM 1310 or CHEM 1211K	3		16
SECOND YEAR - SPRING	PREREQUISITES	COURSE HRS		
COE 3001 - Mechanics of Deformable Bodies	COE 2001 and (MATH 2552 or MATH 2562)	3		
MATH 2552 – Differential Equations	MATH 1555 or (MATH 1552 and MATH 1553) or (MATH 1552 and MATH 1554) or (MATH 1552 and MATH 1564)	4		
ECON 2100/05/06 - Econ. Analysis and Policy Problems - Prin.		3		
MSE 2021 - Materials Characterization	MSE 2001	4		
MSE 3001 – Thermodynamics	MSE 2001 and MATH 2552 (with concurrency)	3		17
THIRD YEAR - FALL	PREREQUISITES	COURSE HRS		
ISyE 3025 -Essentials of Engineering Economy	ECON 2100/5/6	1		
SS – Hist/Pol Sci Requirement (US Perspectives, Constitution & History) ⁺		3		
HUM - Humanities Elective ^{# =}		3		
MSE 4775 - Polymer Science & Engineering I	(CHEM 2312 or CHEM 1315) and MSE 2001 and (CHEM 3411 or ME 3322 or MSE 3001)	3		
MSE 3025 - Statistics and Numerical Methods	MSE 2001, CS 1371 and MATH 2552	3		
MSE 3210 - Transport Phenomena (X)	MATH 2551 and MATH 2552 and MSE 3001 (with concurrency)	3		16
THIRD YEAR - SPRING	PREREQUISITES	COURSE HRS		
ECE 3710 - Circuits and Electronics	PHYS 2212	2		
HUM - Humanities Elective ^{# =}		3		
MSE 3002 - Structural Transformations	MSE 3001 and MSE 3210	3		
MSE 3015 – Electrical, Optical, and Magnetic Properties	MSE 2001 and PHYS 2212	3		
MSE 3021 - Materials Laboratory I	MSE 2021	2		
MSE Concentration Specific		3		16
FOURTH YEAR - FALL	PREREQUISITES	COURSE HRS		
MSE 4022 - Materials Laboratory II	MSE 2021	2		
MSE 4410 - Capstone Engineering Design I	Senior Standing	3		
MSE Concentration Specific		3		
MSE 4105 – Deformation and Fracture of Materials***	MSE 2001 and PHYS 2212	3		
SS – Social Science Elective ^{# =}		3		
ECE 3741 - Electrical Engineering Lab	ECE 3710	1		15
FOURTH YEAR - SPRING	PREREQUISITES	COURSE HRS		
MSE 4420 - Capstone Engineering Design II	MSE 4410	3		
MSE Concentration Specific		3		
MSE Concentration Specific		3		
SS - Social Science Elective ^{# =}		3		
Free Elective		2		
Free Elective		3		17

MSE Curriculum Concentration Courses

Biomaterials Concentration

Required Courses

- BIOS 1107 Biological Principles (*4 hrs.)
- MSE 4751 Introduction to Biomaterials

Prerequisites

- BIOS 1107L (corequisite)
- MSE 2001

Flexible Required Course (choose one)

- MSE 4330 Fund. of Nanomaterials and Nanostructures MSE 2001
- MSE 4335 Soft Nano/Bio Materials MSE 2001
- MSE 4740 Biologically Inspired Design PHYS 2211
- CHEM 3511 Survey of Biochemistry CHEM 1315

Concentration Elective (choose one)

- Another course from the Flexible Require Courses above, or
- Any course from the Other Concentration Electives list

Functional Materials Concentration

Required Courses

- MSE 4002 Ceramic Materials
- MSE 4004 Materials in Electronic Applications
- MSE 4330 Fund. of Nanomaterials and Nanostructures

Prerequisites

- MSE 3002
- MSE 3015
- MSE 2001

Concentration Elective (choose one)

- MSE 4754 Electronics Packaging Assembly, Reliability, Thermal Management ECE 3710
- MSE 4755 Electronic Packaging Substrate Fabrication MATH 2551 and MATH 2552 and CHEM 1211K and PHYS 2212
- MSE 4759 Electrochemical Energy Storage and Conversion MSE 2001
- MSE 4766 Fabrication and Properties of Nanoscale Devices MSE 3001
- PHYS 3143 Quantum Mechanics 1 PHYS 2212 and MATH 2552
- PHYS 4262 Solid State Physics PHYS 3143
- Any course from the Other Concentration Electives list

Polymer & Fiber Materials Concentration

Required Courses

- MSE 3225 Rheology
- MSE 3230 Polymer & Fiber Processing
- MSE 4140 Polymer Physics

Prerequisites

- MSE 3210
- MSE 3225 and MSE 4775
- MSE 3001 and MSE 4775

Concentration Elective (choose one)

- MSE 3220 Operations and Mgmt. Methods MSE 3210 or MSE 4775
- MSE 4025 Fiber Product Manufacturing MSE 4775
- MSE 4230 Industrial Controls in Manufacturing ECE 3710
- MSE 4776 Polymer Science and Engineering II MSE 4775
- Any course from the Other Concentration Electives list

Structural Materials Concentration

Required Courses

- MSE 4002 Ceramic Materials
- MSE 4006 Processing & Applications of Engineering andAlloys MSE 3002
- MSE 4790 Materials Selection and Design

Prerequisites

- MSE 3002-
- MSE 2021
- COE 3001 or MSE 3005

Concentration Elective (choose one)

- MSE 4010 Environmental Degradation MSE 2001
- MSE 4791 Mechanical Behavior of Composites MSE 3005
- MSE 4793 Composite Materials & Process. (CHEM 1310 or CHEM 1211K) and PHYS 2212
- Any course from the Other Concentration Electives list

Other Concentration Electives

Concentration electives can be replaced by one of the following options:

Courses

- Any MSE courses *except* MSE 3300, MSE 3720, MSE 2698/2699/4698/4699

Prerequisites

Varies by course

- ME 1670 Introduction to Engr. Graphics and Design** None

-If a student *completes* the Research Option, they can use the combination of LMC 4701 (1 hr), LMC 4702 (1 hr) and MSE 2699/4699 (1 hr) to meet this requirement.

*Because of this 4 hour required course, the Biomaterials Concentration requires only 4 hours of Free Elective credit total

**ME 1670 *cannot* be dropped after phase 2 registration closes without documented medical reasons

***students cannot receive credit for both MSE 3005 and MSE 4105

+Hist/Pol Sci Requirement (Constitution & History). Choose from: HIST 2111 or HIST 2112 or INTA 1200 or POL 1101 or PUBP 3000

=Ethics: any Georgia Tech course that carries the "ethics attribute".

NOTE: The courses listed for Ethics may also meet Core Area C (Humanities) or Core Area E (Social Sciences) Requirements. Students may use these courses to meet areas (C and Ethics), or (E and Ethics) at the same time. Check Institute Catalog for attributes.