

Engineering Science - Materials Science and Engineering Concentration

by semester

revised June 2019

				Total credits:	128
<i>First Semester</i>		<i>Second Semester</i>			
APMA 1110	Single Variable Calculus	4	APMA 2120	Multivariable Calculus	4
CHEM 1610	Intro Chemistry I for Engineers	3	PHYS 1425	General Physics I	3
CHEM 1611	Intro Chemistry I Lab	1	PHYS 1429	Physics I Workshop	1
ENGR 1624	Intro to Engineering	4	CS 111x	Intro to Programming	3
STS 1500	Sci, Tech & Contemp Issues	3		Math and Science Elective ⁽¹⁾	3
		15		HSS Elective ⁽²⁾	3
					17
<i>Third Semester</i>		<i>Fourth Semester</i>			
APMA 2130	Ordinary Differential Equations	4		Advanced Math/CS elective ⁽⁴⁾	3
PHYS 2415	General Physics II	3	MSE 3050	Thermo and Kinetics of Matls	3
PHYS 2419	Physics II Workshop	1	MSE 3101	Materials Science Investigations ⁽⁵⁾	3
MSE 2090	Introduction to Materials Science	3		Science Elective ⁽⁶⁾ or HSS Elective ⁽²⁾	4 (or 3)
	Secondary Minor Elective ⁽³⁾	3		HSS Elective ⁽²⁾	3
	HSS Elective ⁽²⁾ or Science Elective ⁽⁶⁾	3 (or 4)			
		17			16
<i>Fifth Semester</i>		<i>Sixth Semester</i>			
MSE 3060	Structure and Defects of Materials	3	MSE 3080	Corrosion, Fuel Cells, Batteries	3
MSE 3670	Matls for Elec, Magnetic, Optical Ap	3	MSE 4210	Materials Processing	3
	Secondary Minor Elective ⁽³⁾	3	MSE 4320	Origins of Mechanical Behavior	3
	Secondary Minor Elective ⁽³⁾	3		Secondary Minor Elective ⁽³⁾	3
	Unrestricted Elective ⁽⁷⁾	3		Technical Elective	3
		15		STS 2xxx/3xxx Elective	3
					18
<i>Seventh Semester</i>		<i>Eighth Semester</i>			
STS 4500	STS & Engineering Practice	3	STS 4600	Eng, Ethics & Prof. Responsibility	3
MSE 4960	Advanced MSE Indep. Project ⁽⁸⁾	3	MSE 4960	Advanced MSE Indep. Project ⁽⁸⁾	3
MSE xxxx	MSE Elective ⁽⁹⁾	3		Secondary Minor Elective	3
	Secondary Minor Elective ⁽³⁾	3	MSE xxxx	MSE Elective ⁽⁹⁾	3
	Unrestricted Elective ⁽⁷⁾	3		Unrestricted Elective ⁽⁷⁾	3
		15			15

(1) Math and Science Elective - Chosen from the SEAS Undergraduate Dean's Office Approved List of Math and Science Electives, available online and in Thornton A-122. Recommended: CHEM 1620/21 or PHYS 2620.

(2) HSS electives are chosen from the approved list available in A-122 Thornton.

(3) Secondary minor electives must be chosen so as to earn an approved technical minor in SEAS, mathematics, or a natural science.

Once requirements are satisfied, any 2xxx, 3xxx, or 4xxx technical SEAS, mathematics, or natural science course is acceptable.

(4) Advanced Math/CS Elective: 3xxx-level or higher mathematics courses in SEAS or CLAS; or one 2xxx-level or higher course in computer science.

(5) MSE 3101 Materials Science Investigations partially fulfills the laboratory requirements of the ES major.

(6) Science Elective: Either CHEM 1620 with lab or PHYS 2620 is required.

(7) Unrestricted electives may be chosen from any graded course in the University except mathematics courses below MATH 1310, including STAT 1100 and STAT 1120, and courses that substantially duplicate others used for the student's degree.

(8) The Advanced MSE Independent Project is a graded research, independent study, or design course.

(9) MSE Electives are chosen from any MSE lecture-based courses, CHE 4449 (Polymers), ECE 3103 (Solid State Devices, and BME 4414 (Biomaterials).