

**Engineering Science/Materials Science and Engineering OPTION**
**Total credits: 128**
*First Semester*

APMA 1110	Calculus II	4
CHEM 1610	Intro Chemistry for Engineers I	3
CHEM 1611	Intro Chemistry Lab	1
ENGR 1620	Intro to Engineering	4
STS 1010	Engineering, Technology, Soc.	3
		15

*Second Semester*

APMA 2120	Multivariate Calculus	4
PHYS 1427	General Physics I	3
PHYS 1429	Physics Workshop	1
CS 1101	Intro to Programming	3
	Science elective I <sup>(1)</sup>	3
	HSS elective <sup>(2)</sup>	3
		17

*Third Semester*

APMA 2130	Ordinary Differential Equations	4
PHYS 2415	General Physics II	3
PHYS 2419	Physics Workshop	1
MSE 2090	Introduction to Materials Science	3
	Secondary Minor Elective <sup>(3)</sup>	3
	HSS elective <sup>(2)</sup>	3
		17

*Fourth Semester*

	Advanced Math/CS elective <sup>(4)</sup>	3
MSE 3060	Structure and Defects of Materials	3
MSE 3101	Materials Science Investigations <sup>(5)</sup>	3
	Science elective II <sup>(6)</sup>	4
	HSS elective <sup>(2)</sup>	3
		16

*Fifth Semester*

MSE 3050	Thermo and Kinetics of Matls	3
MSE 3670	Appl. Elec, Magnetic, Optical Matls	3
	Secondary Minor Elective <sup>(3)</sup>	3
	Secondary Minor Elective <sup>(3)</sup>	3
	Unrestricted elective <sup>(7)</sup>	3
		15

*Sixth Semester*

MSE 3080	Corrosion, Fuel Cells, Batteries	3
MSE 4210	Processing of Advanced Mater.	3
MSE 4320	Origins of Mechanical Behavior	3
	Secondary Minor Elective <sup>(3)</sup>	3
	Unrestricted elective	3
	STS 2xxx/3xxx elective	3
		18

*Seventh Semester*

STS 4010	Western Technology and Culture	3
MSE 4960	Advanced MSE project <sup>(8)</sup>	3
MSE xxxx	MSE elective <sup>(9)</sup>	3
	Secondary Minor Elective <sup>(3)</sup>	3
	Unrestricted elective <sup>(7)</sup>	3
		15

*Eighth Semester*

STS 4020	The Engineer, Ethics and Society	3
MSE 4960	Advanced MSE project <sup>(8)</sup>	3
	Secondary minor elective	3
MSE xxxx	MSE elective <sup>(9)</sup>	3
	Unrestricted elective <sup>(7)</sup>	3
		15

(1) Science elective I: Chosen from ECE 2066; BIOL 2010, 202; MSE 2090; CHEM 1610; or PHYS 2620.

(2) HSS electives are chosen from the approved list available in A122 Thornton Hall.

(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 II: Either CHEM 1620 with lab or PHYS 2620 with workshop 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) Advanced projects is a graded research, independent study, or design course. Individual or group Projects are possible. Engineering in Context (EIC) courses may substitute.

(9) MSE electives are chosen from any MSE lecture-based course, CHE 4449 (Polymers), or BME 4414 (Biomaterials).