Department of Materials Science and Engineering

BACHELOR OF SCIENCE IN ENGINEERING — Major in Materials Science & Engineering

Co-Op Curriculum

FALL SEMESTER		CLASS/LAB/CREDIT HOURS	SPRING SEMESTER		CLASS/LAB/CREDIT HOURS
		FIRST YEAR			
CHEM 111	Principles of Chemistry for Engineers	4-0-4	ENGR 145	Chemistry of Materials	4-0-4
ENGR 131	Elementary Computer Programming	3-0-3	MATH 122	Calculus for Science and Engineering II	4-0-4
MATH 121	Calculus for Science and Engineering I	4-0-4	PHYS 121	General Physics I - Mechanics[1]	3-1-4
FSCC 100	Life of the Mind	4-0-4	USxx 2xx	SAGES University Seminar[2]	3-0-3
PHED 1xx	Physical Education Activities	0-3-0	PHED 1xx	Physical Education Activities	0-3-0
	Open Elective or Humanities/Social Science Elective[3]	3-0-3			
	TOTAL	18-3-18		TOTAL	14-4-15
		SECOND YEAR			
CHEM 301	Introduction to Physical Chemistry[4]	3-0-3	EMAE 250	Computers in Mechanical Engineering[5]	3-0-3
EMSE 102	Materials Science Seminar	1-0-1	EMSE 202	Phase Diagrams & Phase Transformations	3-0-3
EMSE 201	Introduction to Materials Science & Engr.	3-0-3	EMSE 270	Materials Laboratory I	0-3-2
MATH 223	Calculus for Science and Engineering III	3-0-3	MATH 224	Elementary Differential Equations[6]	3-0-3
PHYS 122	General Physics II - Electricity & Magnetism	3-1-4	ENGR 200	Statics and Strength of Materials	3-0-3
USxx 2xx	SAGES University Seminar[2]	3-0-3		Humanities/Social Science Elective	3-0-3
	TOTAL	16-1-17		TOTAL	15-3-17
		YEAR 3			
			EMSE 290	Materials Laboratory III	0-3-2
			EMSE 303	Mechanical Behavior of Materials	3-0-3
			ENGL 398	Professional Communication for Engrs.[7]	2-0-2
			ENGR 398	Professional Communication for Engrs.[8]	1-0-1
	Spring - Summer Co-Op Period #1		ENGR 225	Thermodynamics, Fluid Dynamics & Heat & Mass Transport	4-0-4
				Technical Elective	3-0-3
				Humanities/Social Science Elective or Open Elective[3]	3-0-3
				TOTAL	16-3-18
		YEAR 4			
EMSE 280	Materials Laboratory II	0-3-2			
ENGR 210	Intro to Circuits and Instrumentation	3-2-4			
EMSE 203	Applied Thermodynamics	3-0-3			
EMSE 314	Electronic, Magnetic, and Optical Properties of Materials	3-0-3		**Spring - Summer Co-Op Period #2**	
	Humanities/Social Science Elective	3-0-3			
	TOTAL	12-5-15			
		YEAR 5			
EMSE 301	Fundamentals of Materials Processing	3-0-3	EMSE 313	Engineering Applications of Materials	3-0-3
EMSE 302	Fundamentals of Materials Processing Laboratory	0-3-1	EMSE 399	Senior Project in Materials II	0-4-2
EMSE 310	Applications of Diffraction Principles	0-2-1		Technical Elective	3-0-3
EMSE 312	Diffraction Principles	3-0-3		Open Elective	3-0-3
EMSE 398	Senior Project in Materials I	0-2-1		Open Elective	3-0-3
	Humanities/Social Science Elective	3-0-3			
	Technical Elective	3-0-3			
	TOTAL	12-7-15		TOTAL	12-4-14

1 Selected students may be invited to take PHYS 123-124; General Physics I-II Honors, in place of PHYS 121-122.

2 The two SAGES University Seminars must be chosen from two different thematic groups of USNA (Natural World), USSO (Social World) or USSY (Symbolic World).

3 One of these courses must be in the humanities or social sciences.

4 or CHEM 335. Satisfies the Math, Natural Sciences, or Statistics requirement of the Engineering Core.

5 or PHYS 250

6 or MATH 234

7 Satisfies the Professional Communications requirement of the Engineering Core and the SAGES Departmental Seminar requirement.