

**Engineering Science Program**  
**Area of Concentration: Engineering Mechanics**

Note: Completing this curriculum qualifies the student for an Undergraduate Certificate in Engineering Mechanics.

FIRST TERM			SECOND TERM		
Subject		Units	Subject		Units
CHEM 0960	Gen. Chem. For Engr. 1	3	CHEM 0970	Gen. Chem. For Engr. 2	3
MATH 0220	Anal. Geo. & Calc. 1	4	MATH 0230	Anal. Geo. & Calc. 2	4
PHYS 0174	Phys. For Sci. & Engr. 1	4	PHYS 0175	Phys. For Sci. & Engr. 2	4
ENGR 0011	Intro. To Engr. Analysis	3	ENGR 0012	Engr. Computing	3
	Hum./Soc. Sci. Elec. 1	3		Hum./Soc. Sci. Elec. 2	3
ENGR 0081	Freshman Seminar	0	ENGR 0082	Freshman Seminar	0
	Total	17		Total	17
THIRD TERM			FOURTH TERM		
Subject		Units	Subject		Units
MATH 0240	Anal. Geo. & Calc. 3	4	MATH 0290	Differential Equations	3
MATH 0280	Matrices & Linear Alg.	3	ENGR 0145	Statics & Mech. Mater. 2	3
MEMS 0024	Intro to Design	3	MEMS 0031	Linear Circ. & Systems 1	3
ENGR 0135	Statics & Mech. Mater. 1	3	MEMS 0051	Intro. to	3
MEMS 1085	Departmental Seminar	3	ENRG 0022	Thermodynamics	3
	Hum./Soc. Sci. Elec. 3	16		Mater. Struct. & Prop.	0
	Total		MEMS 1085	Departmental Seminar	0
				Total	15
FIFTH TERM			SIXTH TERM		
Subject		Units	Subject		Units
MATH 1055	Vector Analysis	3	STAT 1000	Statistics	4
MEMS 1010	Exp. Methods in MSE	3	MEMS 1020	Vibrations	3
PHYS 0477	Thermal Phys, Rel., &	4	MEMS 1028	Mech. Design 1	3
MEMS 0071	Intro Fluid Mech.	3	MEMS 1041	Mech. Measure. 1	3
MEMS 1014	Dynamic Sys	3		Hum./Soc. Sci. Elec. 4	3
MEMS 1085	Departmental Seminar	0	MEMS 1085	Departmental Seminar	0
	Total	16		Total	16
SEVENTH TERM			EIGHT TERM		
Subject		Units	Subject		Units
	Senior Design 1*	3		Senior Design 2*	3
MEMS 1015	Rigid Body Dyn.	3	MEMS 1053	Struct. of Crystals	3
	Program Elective 1	3	PHYS	Upper Level Physics	3
MEMS 1047	Finite El. Method	3		Program Elective 2	3
	Hum./Soc. Sci. Elec. 5	3		Hum./Soc. Sci. Elec. 6	3
MEMS 1085	Departmental Seminar	0		Departmental Seminar	3
	Total	15	MEMS 1085	Total	15
<p>* at least one senior design course offered by one of the other SSOE engineering programs is required; the second course may be a senior project arranged with a faculty mentor and taken as ENGSCI 1801. Students wishing to complete a two-term project with a faculty mentor may request approval for the second term to count as a program elective (ENGSCI 1802).</p>					
Upper Level Math: Math courses with course numbers > 1000					
127 total credits					

## **Engineering Mechanics Program Electives**

### Bioengineering

BIOE 1061 Human Factors EngineeringMEMS  
BIOE 1063 Intro to Orthopaedic Biomech  
BIOE 1064 Biomech of Organs, Tissues and Cells  
BIOE 1630 Biomech 1: Mechanical Principles Biological  
BIOE 1631 Biomech 2: Intro to Biodyn and Biosolid Mech  
BIOE 1632 Biomech 3: Biodynamics of Movement  
BIOE 1633 Biomech 4: Biomech of Organs, Tissues and Cells

### Civil Engineering

CEE 1801 Principles of Soil Mechanics  
CEE 1821 Foundation Engineering  
CEE 1412 Introduction to Hydrology  
CEE 1401 Open Channel Hydraulics  
CEE 1330 Intro. to Structural Analysis  
CEE 1341 Steel Structures

### Physics

PHYS 1331 Mechanics  
PHYS 1341 Thermo and Statistical Mechanics

### Material Science

MEMS 0040 Materials and Manufacturing  
MEMS 1048 Analysis and Characterization at the Nano-Scale  
MEMS 1053 Structures of Crystals  
MEMS 1057 Micro/Nano Manufacturing  
MEMS 1058 Electronic Properties of Materials  
MEMS 1059 Phase Equilibria in Multi-Component Materials  
MEMS 1063 Phase Transformations  
MEMS 1070 Mechanical Behavior of Materials  
MEMS 1111 Materials for Energy Generation and Storage

### Mechanical Engineering

MEMS 0040 Materials and Manufacturing  
MEMS 1011 Structure and Properties Lab (2cr)  
MEMS 1053 Structures of Crystals  
MEMS 1045 Automatic Controls  
MEMS 1049 Mechatronics  
MEMS 1051 Applied Thermodynamics  
MEMS 1052 Heat and Mass Transfer  
MEMS 1071 Applied Fluid Mechanics  
MEMS 1072 Applied Fluid Dynamics  
MEMS 1082 Electromechanical Sensors and Actuators