

# BIOSYSTEMS ENGINEERING

## 2015-2016 Curriculum

### FRESHMAN YEAR (Gen. Engr.)

ENGR 1050 Engineering Disciplines and Skills I	1 (0,2)	ENGR 1070 Programming and Problem Solving I	1(0,2)
ENGR 1060 Engineering Disciplines and Skills II	1 (0,2)	ENGR 1080 Programming and Problem Solving II	1(0,2)
CH 1010 General Chemistry	4(3,3)	ENGR 1090 Programming and Problem Solving Applicatic	1(0,2)
MATH 1060 Calculus of One Variable I	4(4,0)	CH 1020 General Chemistry	4(3,3)
ENGL 1030 Composition I or AP Test	3(3,0)	MATH 1080 Calculus of One Variable II	4(4,0)
Arts/Hum/SS Requirement <sup>1</sup>	3	PHYS 1220 Physics w/Calculus I	3(3,0)
		ENGR 2100 Engineering Graphics	2(1,3)
16		16	

<sup>1</sup> Students should choose courses to fulfill Arts/Humanities, Social Sciences, Cross-Cultural Awareness, Science/Technology in Society General Education requirements.

### SOPHOMORE YEAR

BE 2120/2121 Fundamentals of BE	2(1,3)	BE 2100/2101 Introduction to Biosystems Engr.	2(1,3)
CE 2010 Statics <sup>2</sup>	3(3,0)	CE 2080 Dynamics <sup>2</sup>	2(2,0)
MATH 2060 Calculus of Several Variables	4(4,0)	MATH 2080 Intro. Ord. Diff. Equations	4(4,0)
PHYS 2210 Physics w/Calculus II	3(3,0)	ME 3100 Thermodynamics	3(3,0)
Biology Requirement <sup>3</sup>	4(3,3)	MICR 3050/3501 General Microbiology	4(3,3)
16		15	

<sup>2</sup> Statics: CE 2010; Dynamics: CE 2080; alternatively ME 2010 for both

<sup>3</sup> BIOL 1030/1050 or BIOL 1100

### JUNIOR YEAR

BE 3200/3201 Principles Practices Geomatics	3(1,3)	BE 3220 Watershed Hydrology/Sedimentology	3(3,0)
BE 4100/4101 Biol. Kinetics/Reactor Modeling	3(2,3)	BE 4120 Heat and Mass Transport BE	3(3,0)
CE 3410/3411 Introduction to Fluid Mechanics	4(3,2)	BE 4380/4381 Bioprocess Engr Design	3(2,2)
ECE 2070 Basic Electrical Engineering	2(2,0)	BE 4150/4151 Instr. and Process Control for BE	3(2,3)
ECE 2080 Electrical Engineering Lab I	1(0,2)	CH 2230 Organic Chemistry	3(3,0)
BIOL 4410 General Ecology	3(3,0)	CH 2270 Organic Chemistry Laboratory	1(0,3)
16		16	

### SENIOR YEAR - Bioprocess Engineering Emphasis

BE 4740 BE Capstone Design/Project Mgmt	2(1,3)	Engineering Requirement <sup>4</sup>	3
BE 4750 Biosystems Engr Capstone Design	2(0,6)	Global Sustainability Requirement <sup>5</sup>	3
BE 4280 Biochem Engr	3(3,0)	Arts/Hum/SS Requirement <sup>1</sup>	9
BCHM 3050 Biochemistry	3(3,0)		
BIOL 4340/4341 Biol. Chem. Tech Lab	2(1,3)		
CE 2060/2061 Structural Mechanics	4(3,3)		
16		15	

### 126 Total Semester Hours

<sup>4</sup> Engineering course 3000-level or above or other approved course (Minimum 6000 level for BS/MS program).

<sup>5</sup> Global Sustainability Requirement: Choose from Sustainability Minor courses or other approved course.

### SENIOR YEAR - Ecological Engineering Emphasis

BE 4740 BE Capstone Design/Project Mgmt	2(1,3)	BE 4240 Ecological Engineering	3(3,0)
BE 4750 Biosystems Engr Capstone Design	2(0,6)	Engineering Requirement <sup>4</sup>	3
BE 4210/4211 Engr. Syst. Soil Water Managemen	2(1,3)	Global Sustainability Requirement <sup>5</sup>	3
Ecological Requirement <sup>6</sup>	3	Arts/Hum/SS Requirement <sup>1</sup>	6
CE 2060/2061 Structural Mechanics	4(3,3)		
Arts/Hum/SS Requirement <sup>1</sup>	3		
16		15	

### 126 Total Semester Hours

<sup>4</sup> Engineering course 3000-level or above or other approved course (Minimum 6000 level for BS/MS program).

<sup>5</sup> Global Sustainability Requirement: Choose from Sustainability Minor courses or other approved course.

<sup>6</sup> Ecological Requirement: Choose from BIOL, FOR, PES, WFB, 3000-level or above or other approved course.

#### Notes:

<sup>A</sup> A 2.0 engineering GPA required for graduation

<sup>B</sup> Biosystems Engineering students are allowed to enroll in upper-level BE courses only when the following prerequisites have been completed with C or better: MATH 2060, 2080, PHYS 2210, CE 2010, 2080, 3410, ME 2010, 3100.

<sup>C</sup> Biosystems Engineering students are encouraged to complete a Minor, Coop Ed program, Internship (BE 3700) and/or a Study Abroad Program.

<sup>D</sup> Departmental Honors Program (BE H3000/H3010/H4000) is available for qualifying students.

#### General Education Requirements