BIOLOGICAL SYSTEMS ENGINEERING: NATURAL RESOURCES AND ENVIRONMENTAL ENGINEERING

Natural resources and environmental engineers work with all kinds of natural resources, like water, soil, plants, and air. For example, they could be responsible for the design of livestock or wildlife watering stations in a natural forest or the design of a recycling waste management system on a dairy farm. Graduates find challenging and rewarding work with engineering and environmental consultants, with government agencies like the Forest Service, and with companies such as Valmont Irrigation and Creative Habitat.

Conserving soil and water resources is critical to our future. Expanding populations and increasing needs for food, goods, and services are placing an ever growing demand upon our precious soil and water resources. Natural resources and environmental engineers are finding ways to manage and conserve our resources today so that we can meet the demands of the future.

REQUIREMENTS

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Code	Title	Credits
Major Requirements		
Common Requirements		53
Specialization Technical Electives		43
Capstone		5
Total Credits		**101**

COMMON REQUIREMENTS

See Major Requirements (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/biological-systems-engineering/biological-systems-engineering-bs/#requirementstext).

NATURAL RESOURCES AND ENVIRONMENT SPECIALIZATION

This is a named option that will appear on the student's transcript upon completion.

Code	Title	Credits
BSE/CIV ENGR/ SOIL SCI 372	On-Site Waste Water Treatment and Dispersal	2
BSE 472	Sediment and Bio-Nutrient Engineering and Management	3
BSE 473	Water Management Systems	3
BSE 571	Small Watershed Engineering	3
M E 361	Thermodynamics	3
CIV ENGR 310	Fluid Mechanics	3
or M E 363	Fluid Dynamics	
BSE 301	Land Information Management	3
E M A 303	Mechanics of Materials	3
or M E 306	Mechanics of Materials	
ENVIR ST/GEOG/ SOIL SCI 230	Soil: Ecosystem and Resource	3
or SOIL SCI 301	General Soil Science	
Complete one of the following BSE breadth courses:		3
BSE 364	Engineering Properties of Food and Biological Materials	
BSE/ ENVIR ST 367	Renewable Energy Systems	
BSE 405	Artificial Intelligence in Agriculture	
BSE 460	Biorefining: Energy and Products from Renewable Resources	
BSE 461	Food and Bioprocessing Operations	
BSE 464	Heat and Mass Transfer in Biological Systems	
BSE/M E 475	Engineering Principles of Agricultural Machinery	
BSE/M E 476	Engineering Principles of Off-Road Vehicles	
Total Credits		**29**

TECHNICAL ELECTIVES

See Major Requirements (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/biological-systems-engineering/biological-systems-engineering-bs/#requirementstext).

CAPSTONE

See Major Requirements (http://guide.wisc.edu/undergraduate/agricultural-life-sciences/biological-systems-engineering/biological-systems-engineering-bs/#requirementstext).

FOUR-YEAR PLAN

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SAMPLE BIOLOGICAL SYSTEMS ENGINEERING FOUR-YEAR PLAN– NATURAL RESOURCES AND ENVIRONMENT SPECIALIZATION

First Year

Fall	Credits	Spring	Credits
MATH 221[1]	5	MATH 222	4
CHEM 109[2]	5	SOIL SCI/ENVIR ST/ GEOG 230[3]	3
LSC 100 (or other COMM A)	3	BSE 170 or INTEREGR 170	2-3
Humanities	3	Biological Sciences Course	3
		Ethnic Studies	3
	16		**15-16**

Second Year

Fall	Credits	Spring	Credits
MATH 234	4	STAT 324	3
E M A 201	3	PHYSICS 202	5
BSE 249	3	BSE 308	1
BSE 270	3	BSE 349	3
BSE 301	3	BSE 472	3
	16		**15**

Third Year

Fall	Credits	Spring	Credits
BSE/CIV ENGR/ SOIL SCI 372	2	BSE 310	3
BSE 380	3	BSE 365	3
BSE 473	3	BSE 508	2
MATH 320	3	BSE 571	3
CIV ENGR 310	3	E M A 303	3
Technical Elective	3	INTEREGR 397 (or other COMM B)	3
	17		**17**

Fourth Year

Fall	Credits	Spring	Credits
BSE 509	3	Technical Electives	6
M E 361	3	CALS International Studies	3
BSE Breadth Requirement	3	Elective Courses	6
Technical Elective	3		
Humanities	3		
	15		**15**

Total Credits 126-127

Students must complete at least 125 total credits to be eligible for graduation.

1 MATH course dependent on placement score and transfer credit evaluation.

2 If CHEM 103 & CHEM 104 are taken in place of CHEM 109, it is suggested to take CHEM 103 in the fall semester and CHEM 104 in the spring semester of the first year and move Biological Science to the fall semester of the second year.

3 SOIL SCI 301 is offered Fall semesters and is a 4-credit alternative to SOIL SCI/ENVIR ST/GEOG 230.