

# Biological Engineering (BS): Ecological Engineering (11BEBS-11BEBEC)

## Freshman Year

Fall Semester	Credit	Spring Semester	Credit
CH 101 Chemistry, A Molecular Science <sup>1B</sup>	3	CH221 Organic Chemistry I	3
CH 102 General Chemistry Lab <sup>1B</sup>	1	CH 222 Organic Chemistry Lab	1
E 101 Introduction to Engr & Prob Solv <sup>1</sup>	1	MA 241 Calculus II <sup>1A</sup>	4
E 115 Intro to Computing Environ	1	PY 205 Physics for Engineers & Scientists I <sup>1B</sup>	3
ENG 101 Academic Writing & Research <sup>1H</sup>	4	PY 206 Physics for Engineers & Scientists I Lab	1
MA 141 Calculus I <sup>1A</sup>	4	EC 205 Economics (GEP Soc Sci Req <sup>D</sup> ) <sup>3</sup>	3
HES_*** Health & Exercise Studies Course <sup>E</sup>	1		
	15		15

## Sophomore Year

Fall Semester	Credit	Spring Semester	Credit
BAE 200 Comp Meth in Biol Engr	2	BAE 203 Intro to Autocad Civil 3D & Arc Map	2
MAE 206 Engineering Statis <b>or</b> CE 214 Engineering Mechanics-Statics <sup>2</sup>	3	BAE 204 Introduction to Eco & Env Engineering	2
MA 242 Calculus III	4	MAE 208 Dynamics <sup>2</sup>	3
PY 208 Physics for Engineers & Scientists II <sup>B</sup>	3	MA 341 Applied Diff Equations	3
PY 209 Physics for Engineers & Scientists II Lab 1		MAE 201 Engr Thermodynamics I	3
BIO 181 Intro Biol: Ecol, Evol & Biodiv <sup>B</sup>	4	SSC 200 Soil Science <sup>8</sup>	3
	17		16

## Junior Year

Fall Semester	Credit	Spring Semester	Credit
BAE 302 Transport Phenomena	3	BAE 376 Watershed Monitoring & Assessment	3
BAE 305 BE Circuits	4	ST 370 Prob & Statistics for Engr	3
BAE 371 Fundamentals of Hydro for Engr.	3	MAE 214 Solid Mechanics <b>or</b> CE 313 Mechanics of Solids <sup>2</sup>	3
CE 382 Hydraulics <sup>2</sup>	3	BAE 401 Instrumentation for Biological Systems	3
PB 360 Ecology	3	GEP Humanities Requirement <sup>C</sup>	3
	16		15

## Senior Year

Fall Semester	Credit	Spring Semester	Credit
BAE 451 Engr Design I	2	BAE 452 Engr Design II	2
BAE 325 Intro to Geomatics	3	Engineering Elective <sup>5</sup>	3
BAE 473 Intro to Surface/Water Quality Modeling	3	GEP Social Science Elective <sup>D</sup>	3
BAE 474 Applications of Ecological Engineering	3	GEP Additional Breadth Requirement <sup>F</sup>	3
ENG 331 Comm. Engr. & Tech. <b>or</b> ENG 333 Comm. Sci. & Res.	3	GEP Humanities Requirement <sup>C</sup>	3
Ethics (GEP Interdisciplinary Persp. Elec. <sup>G</sup> ) <sup>4</sup>	3	GEP Interdisciplinary Persp. Elec. <sup>G</sup>	2
		HES_*** Phys Ed/ Healthy Living Elective <sup>E</sup>	1
	17		17

Minimum Credit Hours Required for Graduation<sup>I,J,K\*</sup>:

**128**

## Major/Program requirements and footnotes

**1** Must be completed with a grade of C or higher.

**2** Must be completed with a grade of C- or higher.

**3** Choose from EC 201 or 205, or ARE 201.

**4** Choose from IDS 201, STS 302, 304, 322, 323, or 325 which satisfy the Interdisciplinary Perspectives Requirement.

**5** Choose from BAE 322, 361, 478, 481, 574, 579, or 581.

## \*General Education Program (GEP) requirements

\*To complete the requirements for graduation and the General Education Program, the following credit hours and co-requisites must be satisfied. University approved GEP course lists for each category can be found

at <https://oucc.dasa.ncsu.edu/general-education-program/>

### A. Mathematical Sciences (6 credit hours – one course with MA or ST prefix)

*Choose from the University approved GEP Mathematical Sciences course list or the following course(s) if completed as part of the*

*Major requirements may fulfill part or all of this requirement: MA 141, MA 241*

### B. Natural Sciences (7 credit hours – include one laboratory course or course with a lab)

*Choose from the University approved GEP Natural Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: CH 101, CH 102, BIO 181, PY 205, PY 206, PY 208, PY 209*

### C. Humanities (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Humanities course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: None*

### D. Social Sciences (6 credit hours selected from two different disciplines/course prefixes)

*Choose from the University approved GEP Social Sciences course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: EC 201, 205, or ARE 201*

### E. Health & Exercise Studies (2 credit hours – at least one 100-level Health & Exercise Studies Course)

*Choose from the University approved GEP Health & Exercise Studies course list.*

### F. Additional Breadth (3 credit hours to be selected from the following checked University approved GEP course lists)

Humanities/Social Sciences/Visual and Performing Arts or  Mathematical Sciences/Natural Sciences/Engineering

### G. Interdisciplinary Perspectives (5-6 credit hours)

*Choose from the University approved GEP Interdisciplinary Perspectives course list or the following course(s) if completed as part of the Major requirements may fulfill part or all of this requirement: None*

### H. Introduction to Writing (4 credit hours satisfied by completing ENG 101 with a C- or better)

The following **Co-Requisites** must be satisfied to complete the General Education Program requirements

### U.S. Diversity (USD)

*Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement: None*

*Choose from the University approved GEP U.S. Diversity course list or choose a course identified on the approved GEP course lists as meeting the U.S. Diversity (USD) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement: None*

### J. Global Knowledge (GK)

*Choose from the University approved GEP Global Knowledge course list or choose a course identified on the approved GEP course lists as meeting the Global Knowledge (GK) co-requisite. The following course(s) completed as part of the Major requirements may fulfill this requirement: None*

### K. Foreign Language proficiency

Proficiency at the FL\_102 level is required for graduation.