

Major: Biological Engineering (BE)

Environmental Engineering Option

Accredited by ABET (see inside front cover.)

Offered by: **Department of Biological and Environmental Engineering**
207 Riley-Robb Hall, 255-2173, www.bee.cornell.edu

Program objectives

The educational objectives of the Biological Engineering program are consistent with those of the College of Engineering and Cornell University. We are committed to providing a top-level undergraduate engineering program in a nurturing learning environment where our graduates acquire knowledge and develop skills for professional success.

The Educational Program Objectives of Biological Engineering are to:

1. Produce graduates who pursue careers related to Biological Engineering based on a solid educational background in appropriate mathematics, physical and life sciences, liberal studies and engineering.
2. Produce graduates who pursue advanced degrees in engineering and related professional fields.
3. Produce graduates who assume leadership positions and contribute to solutions of societal problems involving complex biological and environmental systems.

Engineering Distributions

ENGRD 202	Mechanics of Solids (required)
ENGRD 2XX	ENGRD 251 (recommended)

Required Major Courses

BIO G 101-104	Biological Principles ^{1,2}
BIOMI 290 or CEE 451	Microbiology
BIO XXX	Biological Science course † 200
CHEM 257 or 357	Organic Chemistry
BEE 151 or COM S 100M	Introduction to Computing
ENGRG 150 or BEE 200	Undergraduate Seminar
BEE 251/ENGRD 251	Engineering for a Sustainable Society
BEE 350	Biological and Environmental Transport Processes
CEE 351	Environmental Quality Engineering
BEE 222 or ENGRD 221	Thermodynamics
CEE 304 or ENGRD 270	Engineering Statistics
CEE 331 or M&AE 323 or CHEME 323	Fluid Mechanics
BEE 427, or CEE 453	Engineering Laboratory Experience
BEE 450-489	three courses

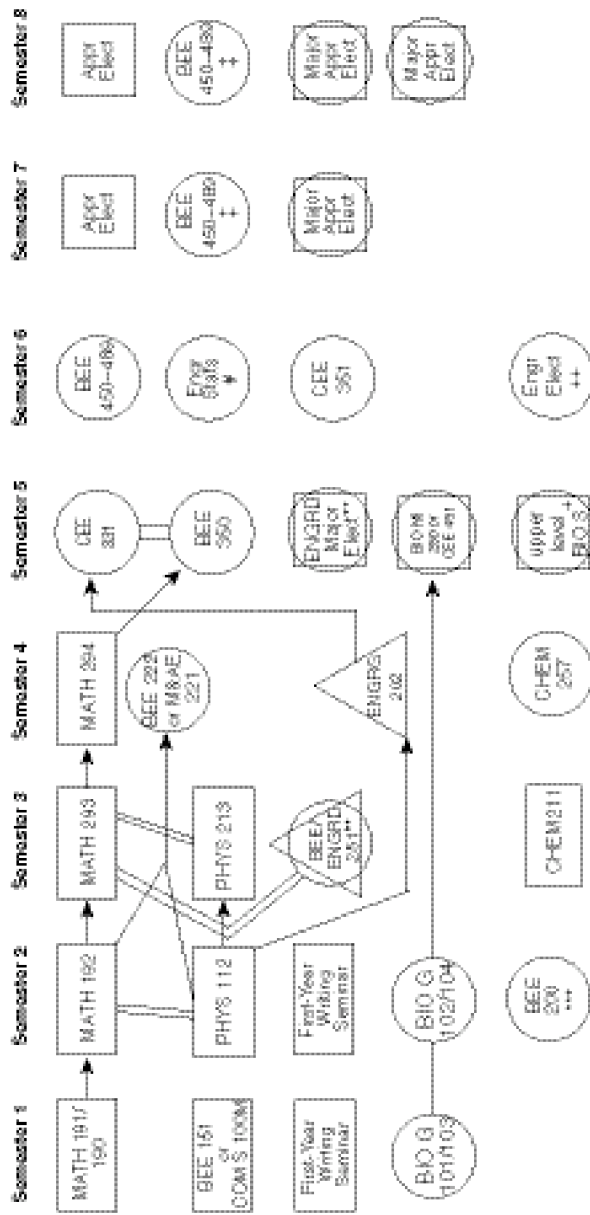
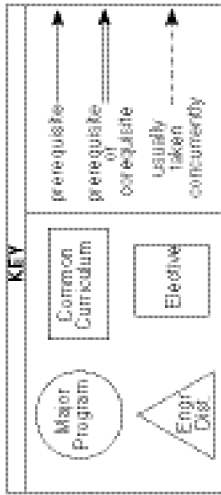
Electives

Fourteen credits of Major-approved engineering science courses are required, 3 of which must be a BEE technical elective course. The BE Major satisfies the Bioengineering Option if ENGRG 501 is taken. One of the three BEE 450-489 must be an approved Capstone Design Course. One of the engineering electives must be an approved Engineering Laboratory Experience.

²May substitute BIO G 105 and 106 or BIO G 109 and 110.

BIOLOGICAL ENGINEERING MAJOR (BE) ENVIRONMENTAL ENGINEERING OPTION

- * Students may substitute BIO G 105-106 or BIO 109-110. Introductory biology should be completed by the end of the sophomore year.
- † ORAE 270 (Fall, Spring) or CEE 304 (Fall).
- ** BEE/ENGRD 231 is used as an engineering distribution, at fourth major approved technical elective must be taken.
- *** Required of CALLS students only, engineering students complete ENGRD 150.



++ One of the Engineering electives must be Lab Experience

† One of the 450 - 480 must be Capstone; BEE 473 or BEE 475 must be taken

**Biological Engineering Major Checklist
Environmental Engineering Option**

	<i>Min.</i> <i>Credit Hours</i>	<i>✓ When Done</i>
MATH 191 (or 190)	4	n
MATH 192	4	n
MATH 293	4	n
MATH 294	4	n
CHEM 211 (or 207 or 215)	4	n
CHEM 257 (or 357)	3	n
PHYS 112	4	n
PHYS 213	4	n
BEE 151 (or COM S 100M)	4	n
Intro. to Engr. (not required of CALS-admitted BE students)†	0	n
Engr. Dist. 1: ENGRD 202	4	n
Engr. Dist. 2: (ENGRD 251 recommended**)	3	n
First-Year Writing Seminar 1‡	3	n
First-Year Writing Seminar 2	3	n
Liberal Studies Distribution—6 courses (18-credit minimum)§		
Lib. Studies 1		n
Lib. Studies 2		n
Lib. Studies 3		n
Lib. Studies 4		n
Lib. Studies 5		n
Lib. Studies 6		n
Approved Elective (2 courses; 6-credit minimum)		n
Approved Elective		n
Physical Education (2 semesters) and swim test		
Required Major Courses (54-credit minimum)‡		
BIO G 101/103 (or 109)	4	n
BIO G 102/104 (or 110)	4	n
BIOMI 290 (Microbiology)	4	n
BIO XXX (upper-level biology)	3	n
ENGRG 150 or BEE 200++	1	n
BEE/ENGRD 251**	3	n
CEE 351	3	n
BEE 350	3	n
BEE 222 or ENGRD 221	3	n
CEE 304 or ENGRD 270	3	n
CEE 331 or M&AE 323 or CHEME 323	4	n
BEE 427 or CEE 453 (Engr Lab Experience)	3	n
BEE 473 or 475 (BEE 450-489 elective)	3	n
BEE 450-489	3	n
BEE 450-489	3	n
Major-Approved Technical Electives	7	n
Total Required Credits	126 min.	_____
Additional Elective Courses (0 credits min., no max.)		n

†BE satisfies the intro to engineering course and credit requirement through a sequence of courses in the Major. An ENGR1 course is not required of CALS matriculating students.

#In addition to the first-year writing seminars, a technical writing course must be taken as an engineering distribution, liberal studies, approved elective, or Major course.

§Approved courses must be chosen from at least three of the following six groups: (1) Cultural Analysis (CA), (2) Historical Analysis (HA), (3) Literature and the Arts (LA), (4) Knowledge, Cognition, and Moral Reasoning (KCM), (5) Social and Behavioral Analysis (SBA), (6) Foreign Languages (not literature courses). At least two courses must be from the first three groups (CA, HA, LA). At least two of the six courses must be at 200-level or higher.

#The 9 credits of Major-complementary courses are ENGRD 202, CEE 304, or ENGRD 270, and M&AE 323, CEE 331, or CHEME 323.

**If ENGRD/BEE 251 is used as an engineering distribution, an additional Major-approved technical elective must be taken. NOTE: ENGRD/BEE 251 replaces ENGRD/BEE 260 in the Environmental Engineering Option

++BE students matriculating in CALS take BEE 200. Engineering students take ENGRG 150 prior to affiliating with BE.