

Recommended Curriculum (Standard)

First Year – First Semester

BEN 111	Introduction to Bioengineering I	2
CHY 121	Introduction to Chemistry	3
CHY 123	Introduction to Chemistry Laboratory	1
PHY 121	Physics for Engineers and Physical Scientists I	4
MAT 126	Calculus I	4
ENG 101	College Composition	3
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Second Year – First Semester

BEN 201	Fundamentals of Bioengineering	4
CHY 251	Organic Chemistry I	3
CHY 253	Organic Chemistry Laboratory I	2
MAT 228	Calculus III	4
	Human Values & Social Context Elective ¹	3
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Third Year – First Semester

BEN 401	Applications of Bioengineering	3
BEN 402	Biomaterials and the Cellular Interface	3
ECE 209	Fundamentals of Electric Circuits	3
	Approved Technical Elective I ²	3
	Human Values & Social Context Elective ¹	3
		15

Fourth Year – First Semester

BEN 363	Bioengineering Laboratory II	3
BEN 477	Elements of Bioengineering Design	3
BEN 493	Bioengineering Seminar	0
MEE 252	Statics and Strength of Materials	3
	Approved Technical Elective II ²	3
	Human Values & Social Context Elective ¹	3
		15

First Year – Second Semester

BEN 112	Introduction to Bioengineering II	2
CHY 122	The Molecular Basis of Chemical Change	3
CHY 124	The Molecular Basis of Chemical Change Laboratory	1
PHY 122	Physics for Engineers and Physical Scientists II	4
MAT 127	Calculus II	4
BMB 280	Introduction to Molecular and Cellular Biology	3
		17

Second Year – Second Semester

BEN 202	Transport Processes in Biological Systems	4
CHY 252	Organic Chemistry II	3
MAT 258	Introduction to Differential Equations with Linear Algebra	4
BIO 208	Anatomy and Physiology	4
	Human Values & Social Context Elective ¹	3
		18

Third Year – Second Semester

BEN 403	Instrumentation in Bioengineering	4
CHE 350	Statistical Process Control and Analysis ³	3
BEN 361	Bioengineering Laboratory I	3
BMB 322	Biochemistry	3
BMB 323	Biochemistry Laboratory	2
	Human Values & Social Context Elective ¹	3
		18

Fourth Year – Second Semester

BEN 479	Bioengineering Design Projects	4
BEN 493	Bioengineering Seminar	1
	Approved Technical Elective III ²	3
	Approved Technical Elective IV ²	3
	Human Values & Social Context Elective ¹	3
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Total Credits Required for Graduation = 130

A minimum of **48 credits of engineering topics** is required for graduation. For non-transfer students a minimum of 3 credits of the required 12 credits of Technical Electives must be taken in an Engineering discipline. For transfer students judicious use of Technical Electives should be employed to meet the minimum number of engineering topic credits.

¹ The **Human Values & Social Context Electives (18 credits)** must be selected to meet the University of Maine General Education requirements. These should be selected from a list of approved courses to satisfy each of the five sub-categories: western cultural tradition, social context and institutions, cultural diversity and international perspectives, population and the environment, and artistic and creative expression. Some courses cover more than one sub-category.

² The **Technical Electives (12 credits)** should be upper level (300 level or higher) engineering, mathematics or science courses. A list of approved courses is available at the Department Office or at <http://umaine.edu/chb>.

³ Students may substitute **STS 332 Statistics for Engineers** for **CHE 350 Statistical Process Control and Analysis**. However, the total minimum credits of engineering topics (48 credits) must be satisfied, for example through judicious use of technical electives.

Ethics

The course sequence BEN 111, BEN 477, BEN 479 and BEN 493 satisfies the University of Maine General Education requirements for ethics. Transfer students who do not complete the sequence of courses should make sure that they satisfy the ethics requirement through their choice of Human Values and Social Context electives.