B.S. Degree in Bioengineering (Standard)

Recommended Curriculum Sequence
(For Students Matriculating before Fall 2016)

1st Year - Fall Semester
BEN 111  Introduction to Bioengineering*  2  
CHY 121  Introduction to Chemistry  3  
CHY 123  Introduction to Chemistry Lab  1  
PHY 121  Physics for Engineers and Physical Scientists I  4  
MAT 126  Calculus I  4  
ENG 101  College Composition  3  

1st Year - Spring Semester
BEN 112  Introduction to Bioengineering II*  2  
CHY 122  Molecular Basis of Chemical Change  3  
CHY 124  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 Cell Biology  3  

2nd Year – Fall Semester
BEN 201  Fundamentals of Bioengineering*  4  
CHY 251  Organic Chemistry I  3  
CHY 253  Organic Chemistry Lab  2  
MAT 228  Calculus III  4  

Human Values & Social Context Elective  3  

2nd Year- Spring Semester
BEN 202  Transport in Biological Systems*  4  
MAT 258  Introduction to Differential Equations with Linear Algebra  4  
CHY 252  Organic Chemistry II  3  
BIO 208  Anatomy and Physiology  4  
Human Values & Social Context Elective  3  

3rd Year – Fall 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  2  
Approved Technical Elective  2  
Human Values & Social Context Elective  1  

3rd Year – Spring Semester
BEN 403  Instrumentation in Bioengineering*  4  
CHB 350  Statistical Process Control*  3  
BEN 361  Bioengineering Laboratory I*  3  
BMB 322  Biochemistry  3  
BMB 323  Biochemistry Laboratory  2  
Human Values & Social Context Elective  3  

4th Year - Fall Semester
BEN 363  Bioengineering Laboratory II*  3  
BEN 477  Elements of Bioengineering Design*  3  
BEN 493  Bioengineering Seminar*  0  
MEE 252  Statics & Strength of Materials*  3  
Approved Technical Elective  2  
Approved Technical Elective  2  
Human Values & Social Context Elective  1  

4th Year – Spring Semester
BEN 479  Bioengineering Senior Design Projects*  4  
BEN 493  Bioengineering Seminar II*  1  
Approved Technical Elective  3  
Approved Technical Elective  3  
Human Values & Social Context Elective  3  

Total Credits Required for Graduation = 130

A minimum of 48 credits of engineering topics is required for graduation. Courses that meet this criteria are indicated with an asterisk (*). 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. It is recommended that students consider completing their elective requirements during extra sessions such as summer, winter or May terms. Doing so provides scheduling flexibility for the addition of minors or COOP activities.

(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://www.umche.maine.edu/chb.

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.