Biological Engineering Curriculum  
Effective Fall 2010

**General Education Core:**

*English Composition* (FW: ENG 100, 100A, 101/101L, or ELI 100)

*Multicult. Persp.* (FG: e.g. HIST 151 and 152)

*Economics* (ECON 120, 130, or 131)

*Social Sciences* (DS: 1 course)

*Humanities, Art, & Literature* (DH, DL, or DA: 2 courses from different categories)

In addition, courses must be taken fulfilling the following focus designations:

*Contemporary Ethical Issues* (E: 1 course)

*Hawaiian, Asian, or Pacific Issues* (H: 1 course)

*Oral Communication* (O: 1 course)

*Writing Intensive* (W: 5 courses)

**Math and Science Core**

*Math:

MATH 241-244 (Calculus I-IV) or;
MATH 251A-253A (Accel. Calculus)

*Biology:

BIOL 171/171L (Intro. Biol.)
BIOL 172/172L (Intro. Biol. II)
Biology Elective (BIOL 275/275L, MICR 351/351L, or MICR 485/485L)

*Chemistry:

CHEM 162/162L or 181/181L (General Chem.)
CHEM 272/272L (Organic Chem.)

*Physics:

PHYS 170/170L (General Phys. I)
PHYS 272/272L (General Phys. II)

*Statistics* (NREM 310)

**Engineering Core**

*Programming* (EE 160)

*Circuit Analysis* (EE 211)

*Statics* (CEE 270)

*Thermodynamics* (ME 311)

*Fluid Mechanics* (ME 322 or CEE 320)

**Biological Engineering**

*BE Core Courses (required):*

BE 260 (Mass and Energy Balances)
BE 350/350L (Dynamic Syst. Model.)
BE 373 (Transport Phenomena)
BE 481 (Senior Engineering Design I)
BE 482 (Senior Engineering Design II)

*BE Electives (must take ≥ 15 credits):*

BE 405 (Engineering Economics)
BE 410 (Biomass Conversion for Biofuel and Bioenergy)
BE 411 (Food Engineering)
BE 420 (Sensors and Instrumentation for Biological Systems)
BE 421 (Bioprocess Control)
BE 431 (Environmental Biotechnology)
BE 437 (Biosystems Unit Operations)
BE 440 (Bioremediation: Principles and Practice)
BE 460 (Bioreactor Design and Analysis)
BE 470 (Bioproducts and Bioprocess Design)
CEE 355 (Geotechnical Engineering)
ME 371 (Mechanics of Solids)

For More Information about the BE major at UH Manoa, please contact:
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