An Alternative to Mechanical Engineering

Are you interested in designing machinery systems, power transfer or alternative fuels, do you want to be an engineer, and are you looking for an alternative program to Mechanical Engineering? Then the **Agricultural Engineering Option of the Biological Engineering (B E)** major may be just the right choice for you!

Agricultural Engineering draws on mechanical engineering concepts for design and development of particular applications. The following examples illustrate this:

Example 1. Fluid Power
The Agricultural Engineering Option emphasizes design of fluid power systems for power transmission and motion control, for mobile equipment or food processing facilities.

Example 2. Power Generation and Transmission
The Agricultural Engineering Option emphasizes design of power generation and transmission systems for off-road equipment, food manufacturing, feed delivery, etc.

Example 3. Bio-fuels
The Agricultural Engineering Option emphasizes design of processing systems to turn bio-mass into alternative fuels such as ethanol.

In addition, the B E major offers emphasis in the application of engineering to bio-based energy, natural resource protection, design of structures, food manufacturing, and biological production and processing.

The B E major is relatively small (50 graduating students per year), which means there are great opportunities! Some highlights are:

Small classes
Close to 100% career placement
Great scholarship availability
Non-public departmental computer lab available to B E students 24 hours per day
Internships, co-op, and/or wage positions with in the department are readily available

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Program Comparison

The Agricultural Engineering Option of B E and Mechanical Engineering require common courses that can be used for either program. Certain first and second year courses that are unique to Mechanical Engineering can still be used if a student switches to the Biological Engineering major, which has a great deal of flexibility in using credits from other engineering programs. This is illustrated in the two tables below:

First and second year courses that are common to both programs	
ENGL 15 – Composition & Rhetoric	ECON 2, 4 – Economic Principles
CHEM 110 – Chemical Principles I	First Year Seminar
MATH 140 – Calculus I	PHYS 211 – Mechanics
MATH 141 – Calculus II	PHYS 212 – Electricity and Magnetism
EDSGN 100 – Intro to Engineering Design	MATH 231 – Calculus of Several Variables
M E 300 – Thermodynamics	MATH 251 – Differential Equations
E MCH 211 – Statics	E MCH 212 – Dynamics
E MCH 213 – Strength of Materials	CAS 100A/B – Effective Speech
General education requirements are the same, including GA, GS, GH, GHA	
Mechanical Engineering program courses that can be applied to the B E Major	
Course taken for ME:	**Counts in B E as:**
CHEM 112 – Chemical Principles II	Technical Elective or Basic Science
CMPSC 200 – Programming	Technical Elective (up to 6 credits)
MATH 220 – Matrices	Technical Elective or Basic Science
PHYS 214 – Waves and Quantum Physics	Technical Elective or Basic Science
BIOL 141 – Introductory Physiology	Ag/Biological Elective or Basic Science
Other ME courses	Engineering Science/Design Elective (up to 6 credits)
With the Ag Engineering Option of the B E major, the Off-Road Equipment minor can be accomplished without taking extra credits if the student plans carefully with help from a B E advisor	

For more information about the Biological Engineering major and the Agricultural Engineering Option, please contact:

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