

**Agricultural and Natural Resources Engineering.** Students specializing in agricultural and natural resources engineering integrate analysis and design with applied biology to solve problems in producing, transporting and processing biological products leading to food, fiber, energy, pharmaceuticals and other human needs. Students may focus on automation of agricultural activities and on the biomechanics of humans and animals involved in agriculture. Students specializing in agricultural and natural resources engineering may also focus on engineering issues related to the sustainable use of natural resources, particularly water, but also land and air. Agricultural and natural resources engineers design machinery, processes, and systems for productive plant and animal culture, including managing nutrients and waste, while minimizing adverse environmental effects. The recommended electives provide students with the fundamental principles of agricultural production and a broad background in engineering and natural resources.

Depending on their specific interests, agricultural and natural resources engineers are employed as practicing professionals and managers with agricultural producers, equipment manufacturers, irrigation districts, food processors, consulting engineering firms, start-up companies and government agencies. Graduates with particular interests in biomechanics may go on to work on the design, evaluation, and application of human-centered devices and systems (e.g., medical devices), as well as on improving worker's health and safety.

**Recommended biological science electives:**

*Animal Emphasis*

Avian Sciences 100  
Animal Science 143, 144, 146  
Neurobiology, Physiology, and Behavior 101  
Soil Science 100

*Aquaculture Emphasis*

Animal Science 118, 131, 136A  
Applied Biological Systems Technology 163  
Wildlife, Fish, and Conservation Biology 120, 121

*Biomechanics Emphasis*

Biological Sciences 102  
Neurobiology, Physiology and Behavior 101  
Exercise Biology 103  
Cell Biology and Human Anatomy 101

*Plant Emphasis*

Entomology 100,  
Environmental Horticulture 102  
Environmental Science and Policy 100  
Environmental Toxicology 101  
Hydrologic Sciences 124  
Microbiology 120  
Plant Biology 111  
Soil Science 100  
Plant Sciences 101, 110A, 114, 142

**Recommended engineering electives:**

Biological Systems Engineering 114, 120, 128, 145  
Biomedical Engineering 109, 116, 126

Civil and Environmental Engineering 140, 141, 142, 144, 145, 148A, 171,  
Engineering 111, 121, 180

**Additional recommended electives:**

Applied Biological Systems Technology 150, 161, 165

Suggested Advisers: M. Delwiche, J. Fan, F. Fathallah, K. Giles, M. Grismer, B. Hartsough, B. Jenkins, R. Piedrahita, D. Slaughter, S. Upadhyaya, S. Vougioukas, J. VanderGheynst, W. Wallender, R. Zhang