252 Gasoline and Diesel Engine Technology  
Fall; 3(2-2) SA: AE 052  
Operating principles of gasoline and diesel engines and their systems. Operation and maintenance requirements.

254 Fluid Power Technology  
Spring; 2(2-2) R: Open only to students in Agriculture and Natural Resources. SA: AE 054  
Fluid power in mobile equipment. Operation and characteristics of system components and circuits. Component disassembly. System testing and diagnosis. Offered first ten weeks of semester.

261 Principles of Animal Environments  
Spring; 2(1-2) Interdepartmental with Animal Science. SA: AE 061, ATM 326  

431 Irrigation, Drainage and Erosion Control Systems  
Fall; 3(2-2) RB: (MTH 116 and CSS 210) R: Not open to freshmen or sophomores.  
Principles of soil and water conservation engineering including: land and soil surveying, basic hydraulics, hydrology, soil moisture, and soil and water conservation practices with applications to irrigation, drainage and erosion control systems.

490 Independent Study  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (ATM 240 or BCM 311) R: Open only to majors in Agricultural Technology and Systems Management. Approval of department; application required. Supervised individual student research and study in agricultural technology and systems management.

AGRICULTURE AND NATURAL RESOURCES

College of Agriculture and Natural Resources

101 Preview of Science  
Fall, 1 credit. Interdepartmental with Natural Science; Engineering; Social Science. Administered by College of Natural Science. R: Approval of college.  
Overview of natural sciences, transitional problems, communications and computer skills, problems solving skills. Diversity and ethics problems in science. Science and society.

101A Academic and Career Decision Making  
Fall, Spring. 2(2-0)  
Exploration of the career possibilities in agriculture, natural resources and related areas.

110 New Student Seminar: Issues and Ideas in Agriculture and Natural Resources  
Fall. 1(0-2) R: Open only to freshmen or sophomores. This course also open to juniors or seniors in the College of Agriculture and Natural Resources.  
Issues in agriculture and natural resources. Personal and professional development through discussion and interactive experiences.

192 Environmental Issues Seminar  
Fall, Spring. 1 credit. A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Natural Science; Engineering; Social Science; Communication Arts and Sciences. Administered by College of Natural Science. R: Open only to students in the College of Agriculture and Natural Resources or College of Engineering or College of Natural Science or College of Communication Arts and Sciences or College of Social Science. Approval of college.  
Environmental issues and problems explored from a variety of perspectives, including legal, scientific, historical, political, socio-economic, and technical points of view.

202 Michigan's Agricultural and Natural Resources Heritage  
Fall. 2(2-0) Interdepartmental with ANR Education and Communication Systems. P:M: Completion of Tier I writing requirement.  
Michigan's historical agricultural and natural resources. Orientation to sources for research and learning. Self-directed study integrating agricultural and natural resources heritage to family, community and careers.

210 Pathways in Connected Learning  
Fall, Spring. 3(2-2) R: Approval of college. Active, self-directed, and reflective learning associated with agriculture and natural resource issues, self and social development, and ethical choice making. Development of a learning plan and design of a learning portfolio. Individual and group presentations.

289 Civilizations, Food Crops and the Environment  
Fall, Spring. 3(3-0) Interdepartmental with Crop and Soil Sciences. SA: TCC 289  
Role of the major food crops in the survival of civilizations and cultures from the past to the present, and the resulting environmental impacts.

310 Connected Learning Seminar I  
Fall, Spring. 3(3-0) P:M: (ANR 210)  
Leearner-directed critical analysis of contemporary issues in agriculture and natural resources. Communication of outcomes to professional communities. Collaborative learning integrated with individual experiences.

311 Connected Learning Seminar II  
Fall, Spring. Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (ANR 310)  
Advanced analysis and presentation of contemporary issues in agriculture and natural resources.

392 Agriculture and Natural Resources Seminar  
Spring; 1(2-0) R: Not open to freshmen or sophomores.  
Current agricultural, natural resources and environmental problems and solutions. Discussion leaders from various disciplines.