

AGRICULTURE (AGR)

AGR 1000 – Introduction to Agriculture

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Introduces the student to the various disciplines in the field of agriculture. Areas of focus will be Leadership, Biology, Soils, Foods, Plants, Animals, Natural Resources and Mechanics. This course will assist in preparation for the Ohio Agricultural Commodity Testing certification exam.

Offered: Fall.

AGR 1100 – Principles of Agricultural Business Management

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Introduces the basic concepts and methods of business management in an agricultural business enterprise through a comparison of evolving management approaches, and through an examination of motivation, ethics, leadership, communication and decision-making processes within the management functions of planning, organizing, leading and controlling. Past and present agricultural business situations are examined through events currently reported in the news media for the purpose of promoting the application of management principles, theories and techniques.

Offered: Spring.

AGR 1200 – Sustainable Agriculture

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Provides comprehensive coverage to the theory and practice of transforming the field of agriculture into a more environmentally sound operation. Studies include a focus on plants, animals, soils, water, energy and efficiencies as they relate to today's modern agriculture operations.

Offered: Spring.

AGR 1300 – Principles of Agricultural Marketing and Sales

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Introduces the fundamental principles, policies, structure and strategy of agricultural marketing and international trade. Development of a marketing plan, customer sales and service techniques. Digital marketing strategies related to branding and communication. Implications of world trade and political aspects of world food production.

Offered: Fall.

AGR 1401 – Introduction to Soils for Agronomic Production

Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00

Introduces the basic concepts and method of laboratory and traditional activities to determine soil characteristics including chemical, physical and biological properties as related to agronomic production. Investigates conservation practices that improve sustainability and environmental and engineering properties of soil in production systems. Explores irrigation and drainage practices to enhance production. This course will assist in preparation for the Ohio Commercial Pesticide Applicator License and BASF Plant Science Certification.

Offered: Spring.

AGR 1402 – Principles of Crop Management

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Introduces the basic cropping systems used in agronomic crops including input selection, tillage, planting, harvesting and storing of production. Crop growth and development will be emphasized along with managing production risk and using data to make decisions. Prescription data decision making will be emphasized. This course will assist in preparation for the Ohio Commercial Pesticide Applicator License and BASF Plant Science Certification.

Offered: Fall.

AGR 1403 – Principles of Nutrient Management

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Introduces basics of plant nutrition and soil fertility including soil pH and Nitrogen and Carbon cycles as they relate to crop production. Practice and recommend soil testing processes, liming and soil amendments, fertilizing, manure management and other nutrient sources and additives. Analysis of fertilizer calculations and soil and tissue testing will be emphasized. This course will assist in preparation for the Ohio Commercial Pesticide Applicator License and BASF Plant Science Certification.

Offered: Spring.

AGR 1404 – Introduction to Integrated Pest Management

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Introduces the concept and tools of integrated pest management. Develops proficiency in pest identification, control methods and environmental protection through economic pest control techniques and processes. Precision data interpretation will be emphasized. The commercial applicators licensing requirements will be covered. This course will assist in preparation for the Ohio Commercial Pesticide Applicator License and BASF Plant Science Certification.

Offered: Fall.

AGR 1405 – Integrated Weed Management

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Covers the identification and management of weeds in crop production systems, focusing on sustainable control methods. Topics include weed biology, herbicide use and safety, mechanical and cultural control, environmental impacts, and integrated weed management strategies. Students will gain hands-on experience with weed identification, monitoring, and control techniques, along with fieldwork in equipment calibration and pesticide handling.

Offered: Fall.

AGR 1500 – Precision Agriculture Equipment

Credit Hours: 3.00 Total Contact Hours: 5.00 Lecture Hours: 1.00 Lab Hours: 4.00

Includes an exploration of various precision hardware available in the agriculture industry. Basic concepts of electricity, electronics, hydraulics, pneumatics, and controllers as related to precision agriculture equipment will be covered. Demonstrations, along with technical manuals will be utilized to install, troubleshoot and operate display modules, sensors and control components in precision agriculture equipment. This equipment is related to, but not limited to, fertilizer and chemical applications, planting, irrigation, harvesting, and yield monitoring. Hand-held crop scouting and soil sampling hardware will be discussed.

Offered: Fall

Prerequisites: AGR 1000.

AGR 1501 – Prescription Mapping in Agriculture

Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00

Covers the use of precision farming software that is embedded in precision agriculture equipment and the data inputs and outputs that are needed in each to create the desired prescription/application map. Use includes but is not limited to initial setup, management of data and production list creation, data cards, processing field data, creating reports and creating prescription/application maps. Once maps are created, students will interpret the information contained in the maps to recommend an action plan for the mapped field.

Offered: Spring.

AGR 1502 – Agricultural Mechanics and Systems Technology**Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00**

Provides hands-on training in essential agricultural mechanics, including welding, troubleshooting, and repairing electrical, pneumatic, and hydraulic systems. Students will develop skills in metal fabrication, basic diagnostics, and maintenance of these systems. Students will practice the safe use of tools and machinery. Emphasis is placed on practical applications in agriculture, preparing students to solve mechanical problems and maintain equipment in farming. The course includes lab work, safety practices, and real-world scenarios to equip students with the technical knowledge required for modern agricultural systems.

Offered: Fall.**AGR 1515 – Introduction to GPS in Agriculture****Credit Hours: 3.00 Total Contact Hours: 3.00 Lecture Hours: 3.00**

Advances a foundational understanding of global positioning system (GPS) theory and use. Evaluates different applications of GPS by collecting and analyzing data for decision-making and troubleshooting in agriculture. Studies of historical and current events related to GPS will illustrate GPS principles, applications and uses in action.

Offered: Fall.**AGR 1540 – Introduction to GIS in Agriculture****Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00**

Introduces the basic skills, concepts and principles of Geographic Information Systems, geography and using current map generating software. Geographic concepts include world coordinate systems, projections, thematic maps, vector, and raster data layers. Map design includes outputs, geodatabases, spatial and attributed data (digitizing, geocoding, spatial data processing), and analysis in current GIS software. Other topics in map elements and production using collected data will be explored with current and historical case studies. Information will be covered in lecture, computer lab tutorials, and activities based on agriculture uses of geospatial data and mapping.

Offered: Spring.**AGR 1600 – Introduction to Artificial Intelligence in Agriculture****Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00**

Explores the use of Robotics/AI in agriculture. Students will have the opportunity to examine AI components of current agriculture and other equipment. Limitations and challenges of AI in agriculture will be reviewed and discussed. Students will set up and program basic commands of given AI enabled equipment. Included is basic troubleshooting of programming and equipment. Emphasis will be on the current state of northwest Ohio agriculture and the next steps in Robotics/AI for agriculture.

Offered: Fall**Prerequisites:** AGR 1500, AMT 1070, AMT 2030, MET 2310**Corequisites:** AMT 2050, FMS 2110.**AGR 1700 – Technology for Livestock Management****Credit Hours: 3.00 Total Contact Hours: 4.00 Lecture Hours: 2.00 Lab Hours: 2.00**

Introduces key concepts of livestock management for the major herd types typical to Northwest Ohio. A variety of technology will be utilized for data collection and analysis. The principles of scientific inquiry will be reviewed and applied to maximize benefits for techniques such as animal handling, health, nutrition, reproduction and facilities management. Labs will involve field trips and application.

Offered: Fall.**AGR 2970 – Agriculture Technology Capstone** **Credit Hour: 1.00 Total Contact Hour: 1.00 Lecture Hour: 1.00**

Prepares the student to transition into agriculture technology employment. The student will demonstrate comprehensive proficiency by integrating technical knowledge with core skills and abilities. Students will combine the skills acquired in agriculture certificates and apply them to a project arranged with a course advisor. The student will simulate and support teamwork concepts necessary to be successful in agriculture technician related employment on and off farms. The course will include an exit evaluation/presentation of critical thinking and writing, and/or speaking.

Offered: Spring**Corequisites:** AGR 2991.**AGR 2991 – Field Experience****Credit Hour: 1.00 Total Contact Hour: 7.00 Clinical/Other Hour: 7.00**

Enables work activity, which relates to an individual student's occupational objectives. The experience is coordinated by a faculty member of the college who assists the student in planning the experience, visits the site of the experience for a conference with the student and his/her supervisor during the semester and assigns the course grade to the student after appropriate consultation with the employer/supervisor and evaluation of related instruction. The course is graded S/U.

Offered: Summer, Fall, Spring**Corequisites:** AGR 1000.