

# AGRICULTURAL SYSTEMS TECHNOLOGY (AST)

## AST 1413 Introduction to Engineering in Agriculture

**Prerequisites:** MATH 1513 or concurrent enrollment.

**Description:** Application of the physical and engineering sciences to agricultural problems. Energy; energy conversion; thermal, electrical, mechanical and fluid systems; equipment calibration; environmental control of agriculture buildings and irrigation system requirements. Previously offered as MCAG 1413.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Biosystems & Ag Eng

## AST 2313 Surveying

**Prerequisites:** MATH 1613.

**Description:** A study of the equipment and practices used in surveying for small areas. Common practices of plane surveying: differential, profile, and topographic leveling; field notes, accuracy and precision, error and error control, and land measurement. Previously offered as MCAG 2313.

**Credit hours:** 3

**Contact hours:** Lecture: 2 Lab: 3 Contact: 5

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

## AST 3011 Ag Structures

**Prerequisites:** MATH 1513.

**Description:** Study of types of agricultural structures, building materials, construction tools and methods. Laboratory will provide opportunity to apply and develop associated skills. Previously offered as MCAG 3011.

**Credit hours:** 1

**Contact hours:** Lab: 2 Contact: 2

**Levels:** Undergraduate

**Schedule types:** Lab

**Department/School:** Biosystems & Ag Eng

## AST 3102 Principles of Agricultural Electrification

**Prerequisites:** MATH 1513 or MATH 2103.

**Description:** Principles, function, design, operation, and safe application of agricultural electrification systems.

**Credit hours:** 2

**Contact hours:** Lecture: 2 Contact: 2

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Biosystems & Ag Eng

## AST 3211 Engines and Power

**Prerequisites:** MATH 1513.

**Description:** Theory, operation, performance and diagnostics of internal combustion engines for mobile applications. Previously offered as MCAG 3211.

**Credit hours:** 1

**Contact hours:** Lab: 2 Contact: 2

**Levels:** Undergraduate

**Schedule types:** Lab

**Department/School:** Biosystems & Ag Eng

## AST 3222 Metals and Welding

**Description:** Welding safety and the principles and applications of gas, stick and MIG welding, and cutting. Previously offered as MCAG 3223 and MCAG 3222.

**Credit hours:** 2

**Contact hours:** Lecture: 1 Lab: 2 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

## AST 3232 Lab Management and Project Construction

**Prerequisites:** MCAG 3222.

**Description:** Theory and practice of managing secondary school Ag Mechanics laboratories including safety, organization, design, project construction and evaluation of student projects. Previously offered as MCAG 4223 and MCAG 3232.

**Credit hours:** 2

**Contact hours:** Lecture: 1 Lab: 2 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

## AST 4013 Capstone for Agricultural Systems Technology

**Prerequisites:** Senior standing.

**Description:** Application of problem solving skills on team-based professional projects involving agricultural technology.

**Credit hours:** 3

**Contact hours:** Lecture: 2 Lab: 2 Contact: 4

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

## AST 4101 Ag Electrification

**Prerequisites:** MATH 1513.

**Description:** A study of electrical theory and electrical applications in agricultural environments. Previously offered as MCAG 4101.

**Credit hours:** 1

**Contact hours:** Lab: 2 Contact: 2

**Levels:** Undergraduate

**Schedule types:** Lab

**Department/School:** Biosystems & Ag Eng

## AST 4112 Land Measurement and Site Analysis

**Prerequisites:** MATH 1513 or equivalent.

**Description:** Methods and techniques used to locate sites and evaluate physical conditions. Includes map interpretation and land description, use of Global Positioning Systems, Rectangular System of Land Description and determination of land elevations, areas and slopes. Same course as ENVR 4112. Previously offered as MCAG 3311 and MCAG 4112.

**Credit hours:** 2

**Contact hours:** Lecture: 1 Lab: 2 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

**AST 4123 Principles of Food Engineering**

**Prerequisites:** MATH 1513.

**Description:** For non-engineers. Application of the engineering approach to solving heat and mass transfer problems in food processing. An introduction to the basic concepts of the conservation laws, fluid flow, heat transfer, refrigeration, freezing, psychrometrics, and energy conservation. Same course as FDSC 4123. Previously offered as MCAG 4123. May not be used for Degree Credit with AST 5123.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Biosystems & Ag Eng

**AST 4200 Topics in Agricultural Systems Technology**

**Description:** Investigations in specialized areas of mechanized agriculture. Previously offered as MCAG 4200. May not be used for Degree Credit with AST 5200. Offered for variable credit, 1-4 credit hours, maximum of 4 credit hours.

**Credit hours:** 1-4

**Contact hours:** Contact: 1-4 Other: 1-4

**Levels:** Undergraduate

**Schedule types:** Independent Study

**Department/School:** Biosystems & Ag Eng

**AST 4203 Agricultural Water Management**

**Prerequisites:** MATH 1513 or MATH 2103.

**Description:** Irrigation water supplies, characteristics and selection of irrigation systems, selection of pumps, irrigation scheduling and efficiency, environmental impacts. Previously offered as MCAG 4203.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Biosystems & Ag Eng

**AST 4213 Safety and Health in Agriculture**

**Prerequisites:** Junior standing or above.

**Description:** Causes and prevention of accidents in agriculture; acute and chronic risks of machinery, animals, gases, confined spaces, and hazardous materials; understanding of current OSHA and NIOSH requirements and regulations. Previously offered as MCAG 4212 and AST 4212.

**Credit hours:** 3

**Contact hours:** Lecture: 2 Lab: 2 Contact: 4

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

**AST 4220 Advanced Methods in Agricultural Systems Technology**

**Description:** Developing agricultural mechanics programs for vocational agriculture and technical schools. Application of agricultural mechanics methods, practices and skills to advanced projects. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Contact: 1-6 Other: 1-6

**Levels:** Undergraduate

**Schedule types:** Independent Study, Lab, Combined lab & IS

**Department/School:** Biosystems & Ag Eng

**AST 4303 Automation, Sensors and Controls for Agricultural Systems**

**Prerequisites:** MATH 2103 or MATH 2123.

**Description:** Principles of sensors, controllers, actuators, data communication networks and interface electronics applied to agricultural, food and natural systems.

**Credit hours:** 3

**Contact hours:** Lecture: 2 Lab: 2 Contact: 4

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Biosystems & Ag Eng

**AST 5123 Principles of Food Engineering**

**Prerequisites:** MATH 1513.

**Description:** For non-engineers. Application of the engineering approach to solving heat and mass transfer problems in food processing. An introduction to the basic concepts of the conservation laws, fluid flow, heat transfer, refrigeration, freezing, psychrometrics, and energy conservation. May not be used for degree credit with AST 4123.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Biosystems & Ag Eng

**AST 5200 Topics in Agricultural Systems Technology**

**Description:** Investigations in specialized areas of mechanized agriculture. May not be used for degree credit with AST 4200. Offered for variable credit, 1-4 credit hours, maximum of 4 credit hours.

**Credit hours:** 1-4

**Contact hours:** Contact: 1-4 Other: 1-4

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Biosystems & Ag Eng