

# AGRICULTURAL ENGINEERING TECHN (AGET)

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## **AGET 2303. Introduction to Agricultural Engineering Technology. 3 Hours. [TCCN: AGRI 2303]**

Students are introduced to current and emerging topics and industry related to agricultural engineering technology. Topics covered may include: bio-diesel, wind energy, GPS/GIS applications, nanotechnology, and theory of fusion of metals, efficiency of internal combustion engines, and other technology-related subjects. Course Equivalents: AGRI 2303

**Prerequisite:** None.

## **AGET 2396. Special Topics in Agricultural Engineering Technology. 3 Hours.**

Students examine special topics/issues in Agricultural Engineering Technology at an introductory level. This course may be repeated up to three times as topics and subject matter changes.

## **AGET 3300. Agricultural Electrification. 3 Hours.**

Students explore principles and theory of electricity and applications in agriculture. Topics covered may include the transmission and distribution of electricity, Ohm's Law, DC/AC current, safety, NEC, converting bio-mass to electrical power, peak demand, dispatchable power, wind energy, photo-voltaic cells, and net-metering. Sophomore standing. Course Equivalents: AGRI 3300

**Prerequisite:** AGET 2303 or ETDD 1361.

## **AGET 3301. Agriculture Power Units and Control Systems. 3 Hours.**

Students study the selection, maintenance, and service of agricultural power units, including small engines overhaul and preventive maintenance on agricultural tractors. Course Equivalents: AGET 2301, AGRI 2301

**Prerequisite:** AGET 2303.

## **AGET 3350. Plasma Arc Cutting Technology. 3 Hours.**

Students examine the principles, technologies, and applications of plasma cutting processes with a focus on applications in the agricultural industry. Topics may include the programming, operating, and controlling plasma tables; the use of plate markers; and related operations. In addition, the selection and use of new and emerging technologies, safety requirements, equipment, and workplace planning, scheduling, supervision, and management are examined.

**Prerequisite:** AGET 2303 or approval of the instructor.

## **AGET 3380. Agricultural Machinery. 3 Hours.**

Students study design, construction, adjustment, operation, and testing of agricultural machinery and equipment systems. Topics may include theoretical and effective capacities, costs of operation, valuation of used equipment and queuing theory. Sophomore standing. Completed 55 hours.

Course Equivalents: AGRI 3380

**Prerequisite:** AGET 2303 or ETDD 1361.

## **AGET 3383. Soil & Water Conservation Engineering. 3 Hours.**

Students explore principles of soil and water conservation, erosion control, storm water management, structures for floodwater routing, culvert design, design of waterways, and retention basins. Plane surveying, topographic mapping, geographical information, and global positioning systems are utilized. Sophomore standing. Course Equivalents: AGRI 3383

**Prerequisite:** AGET 2303 or ETDD 1361.

## **AGET 3386. Agricultural Structures and Environmental Control Systems. 3 Hours.**

Students explore functional requirements of agricultural buildings; valuation, appraisal, and estimating; structural requirements of agricultural buildings; planning and designing major service and processing buildings. Topics discussed may include thermodynamics, confined livestock housing, and environmental controls. Junior standing. Course Equivalents: AGRI 3386

**Prerequisite:** AGRI 2303 or ETDD 1361.

## **AGET 4369. Special Topic. 3 Hours.**

Students examine special topics/issues in Agricultural Engineering Technology at an advanced level. This course may be repeated up to three times as topics and subject matter change. Junior Standing.

**Prerequisite:** AGRI 2303 or ETDD 1361.

## **AGET 4372. Agriculture and Construction Equipment Technology. 3 Hours.**

Students examine advanced agriculture and construction machinery technology, their uses in agriculture and the construction industries, and operate machinery in real-world scenarios. Emphasis will be given to safe machinery operation, machinery management, and economic impact.

**Prerequisite:** AGET 4385 or AGET 4387.

## **AGET 4381. Advanced Metal Fabrication in Agriculture. 3 Hours.**

This course serves as a capstone course for agricultural science students with previous experience in agricultural engineering technology. Teams address and solve a complex problem and as a result may design and construct a building, trailer, or other equipment in the laboratory.

**Prerequisite:** AGET 2303.

**AGET 4384. Fusing & Joining of Metals & Non-Metals. 3 Hours.**

Students engage in a comprehensive study of the theories, principles, and procedures of bonding and fusing metallic and non-metallic materials by the electric arc, oxy-fuel, and adhesive processes. Technical classroom instruction, laboratory exercises, and field trip experiences involve selection and utilization of new and emerging technologies and equipment, workplace planning, supervision, and management. Junior standing. Course Equivalents: AGRI 4384

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 4385. Applied Electronics/Hydraulics. 3 Hours.**

Students explore cutting edge applications and integration of electronic and hydraulic principles and applications in agricultural and industrial processes and distribution systems. Topics may include Ohm's Law, Pascal's Law, and principles and theory of fluid dynamics. Junior standing. Course Equivalents: AGRI 4386

**Prerequisite:** AGET 2303 or ETDD 1361 and AGET 3301 or AGET 3380.

**AGET 4387. Agricultural Engines & Tractors. 3 Hours.**

Students study principles of the internal combustion engine, fuel injection, carburetion, and computerized engine monitoring equipment. Selection, valuation, wear analysis, and maintenance of power units for agricultural and industrial applications, including those powered by alternative fuel, are covered. Junior standing. Course Equivalents: AGRI 4387

**Prerequisite:** AGET 2303 or ETDD 1361 and AGET 3301 or AGET 3380.

**AGET 4390. Turf & Cropland Irrigation & Drainage. 3 Hours.**

Students study design and selection of surface or sub-surface irrigation and drainage systems for golf courses, greenhouses, sports fields, crops, landscape applications, and construction sites. Principles of pressurized irrigation systems including crop water requirements, soil moisture, irrigation scheduling, sprinkler irrigation, trickle irrigation, pumps, pipelines, and irrigation wells are covered. Course Equivalents: AGRI 4390

**Prerequisite:** AGET 2303 or ETDD 1361 and Junior standing.

**AGET 4391. Agricultural Chemical Application Technology. 3 Hours.**

Students examine agronomic crops and pests. A foundation for the safe and effective use of agricultural chemicals and environmental sustainability are emphasized. Students gain experience and knowledge in the calibration, operation, and maintenance of agricultural chemical application equipment. Students are prepared for obtaining a commercial pesticide applicator license.

**Prerequisite:** AGET 2303.

**AGET 4392. Precision Technology Applications. 3 Hours.**

Global positioning and geographic information system software and equipment is applied in settings involving precision farming and construction. Course Equivalents: AGRI 4392

**Prerequisite:** AGET 2303 or ETDD 1361 and Junior Standing.

**AGET 4393. Renewable Energy Sources for Agriculture. 3 Hours.**

Students study existing and potential alternative energy sources and production capacities, including wind, solar, bio-mass conversion, hydrogen, ethanol, vegetable oil, and bio-diesel. Impacts on the environment, ecological systems, world food supply, and economy are studied. Course Equivalents: AGET 4393

**Prerequisite:** AGET 2303 or ETDD 1361.

**AGET 4394. Grain Harvesting and Management in Agriculture. 3 Hours.**

Students examine transportation, storage, and safety challenges found within the U.S. grain industry. Students explore selection and management of technology applications for improved grain handling. Additionally, safety and economic storage of grain forage and hay crops are emphasized.

**Prerequisite:** AGET 2303.

**AGET 4396. Directed Studies in Agricultural Engineering Technology. 3 Hours.**

Arranged professional development learning experiences incorporating a practical application of Agricultural Engineering Technology skills and practices. To include internships, individual research and industry studies. May be repeated for credit up to six hours.

**Prerequisite:** Sophomore standing.