

# AGST - AGRICULTURAL SCIENCE AND TECHNOLOGY

## AGST130 Did Yeast Create Civilization? (3 Credits)

Did yeast create civilization? Fermented foods have played a major role in the transition from nomadic to settled agrarian societies, the establishment of social and religious customs, the expansion of empires, and modern economies. To what extent are our past and current attitudes towards fermented foods rooted in historical and cultural imprints? Explore the central role of fermentation in human history and culture, the basic microbiological processes underlying fermentation processes, and the processes used to produce and distribute fermented foods. Find out how the fruits, grains, and dairy products used to produce fermented foods are grown and selected. Students will learn about the development and modern use of fermented dairy products, pickles, bread, tea, chocolate, wine, beer, distilled liquors, and pharmaceutical/manufactured products.

**Recommended:** CHEM103, CHEM131, CHEM135, or CHEM146.

**Cross-listed with:** PLSC130.

**Credit Only Granted for:** AGST130 or PLSC130.

## AGST275 Fundamentals of Agricultural and Environmental Chemistry (3 Credits)

An in-depth discussion of chemistry targeted to students enrolled in plant and animal management curricula offered in AGNR. Covers the nomenclature and basic functional groups in organic chemistry, natural products and pesticides. Current practices of crop, agriculture and environmental management and genetic engineering also discussed.

**Prerequisite:** Minimum grade of C- in CHEM131 and CHEM132; and minimum grade of C- in (PLSC110 and PLSC111) or (PLSC112 and PLSC113) or (BSCI160 and BSCI180 or BSCI161) or (BSCI170 and BSCI180 or BSCI171).

**Restriction:** Must not have completed CHEM104 or CHEM105; and must be in a major within the AGNR-College of Agriculture and Natural Resources; or permission of instructor.

**Credit Only Granted for:** AGST275 or PLSC275.

**Formerly:** PLSC275.

## AGST333 Crafty Beverage Crops (3 Credits)

From soda to wine, a scientific introduction to "crafty beverage crops". Students will expand their horticulture knowledge and gain an appreciation for craft beverages and the plants that made them. Topics include history, biology, production and management techniques, harvest, storage and market potential for crafty beverage crops.

**Recommended:** PLSC110 or PLSC112; or 1 course in BSCI, BCHM, BIOL.

## AGST389 Internship in Agricultural Education (1-3 Credits)

An experiential learning course with a focus on non-formal agricultural education. This is a supervised learning experience within a career focused environment to assist in refinement of a student's career interests prior to graduation.

**Restriction:** Permission of the instructor.

**Repeatable to:** 6 credits if content differs.

## AGST399 Special Problems in Agricultural Science & Technology (1-3 Credits)

A problem based learning course with a focus on class or group based research projects in Agricultural Science and Technology with a focus on addressing outreach targeted needs.

**Restriction:** Permission of the instructor.

**Repeatable to:** 6 credits if content differs.

## AGST400 Advanced Crop Science (3 Credits)

Focuses on the study of the agronomic principles and practices required for the production of food, feed, fiber and fuel crops. This is a project-based course where students will develop a farm plan from knowledge gained in previous courses and built upon in this course. Students will learn to integrate data and information from many sources in order to build and operate a successful and sustainable agronomic farm operation using current and new technology. The use of farm management software will be an integral part of the course and farm project.

**Prerequisite:** (PLSC110 and PLSC111) OR (PLSC112 and PLSC113), BSCI160 and (BSCI180 or BSCI161), and MATH113 or higher.

**Recommended:** ANSC101.

**Credit Only Granted for:** PLSC407 or AGST400.

**Formerly:** PLSC407.

**Additional Information:** There will be two required Saturday field trips during the semester. Because of the changing nature of agriculture, the dates of these field trips will be decided upon at the beginning of the semester by discussion among the students and based on cooperators availability and environmental factors. Students will have a minimum of two weeks notice as to the dates of the field trips.

## AGST401 Tractor and Equipment Operation, Safety and Maintenance (1 Credit)

Provides students with basic skills needed to safely operate and maintain farm equipment, such as tractors and implements used in agronomic production. Students will receive introductory background training in the basic safety and operation of tractors through hands-on learning. Emphasis will also be placed on the mechanical functioning of equipment and the functional similarities and differences between gasoline (two-stroke and four-stroke) and diesel engines as well as electric motors as they relate to farm equipment (mobile and stationary). This knowledge will be used to teach students to safely perform basic care and maintenance of different tractor types as well as various implements. Students will also learn basic implement connection and disconnection, including the safe use of implements that employ a power take-off unit. Included in the course will be an introduction to the equipment and use of satellite navigation systems used in agronomic production.

**Prerequisite:** (PLSC110 and PLSC111) OR (PLSC112 and PLSC113); MATH113 or higher MATH course; and must have completed or be concurrently enrolled in AGST400.

**Restriction:** Must have earned a minimum of 60 credits; and permission of the Department of Plant Sciences and Landscape Architecture.

**Additional Information:** Course location will be the University of Maryland Wye Research & Education Center, Queenstown, Maryland. Because students will be working around machinery with moving parts, there is a strict dress code based on information from the United State Department of Agriculture Cooperative States Research, Education and Extension Service's Hazardous Occupations Safety Training for Agriculture (HOSTA), National Safe Tractor and Machinery Operation Program (NSTMOP) standards. YContact instructor for more information?.

## AGST426 Scientists Teaching and Translating Science (3 Credits)

Explore methods in pedagogy, andragogy, and heutagogy to facilitate science learning through the development of a teaching philosophy, outreach teaching skills, motivation in learning, assessment foundations, and review of current literature on instruction in science fields.

**Credit Only Granted for:** AGST426 or PLSC489L.

**Formerly:** PLSC489L.

**AGST440 Exploring Maryland Agriculture, Agricultural Industry, and Agricultural Literacy (3 Credits)**

Explore the mission and history of the Land Grant System as well as current work conducted through the University of Maryland to extend research to citizens. Often referred to as America in miniature, Maryland boasts diverse people, agricultural practices, cultures, and ecosystems which students will examine to perceive the decision making processes within and across ecological systems as well as the development of advisory boards.

**AGST442 Examining Leadership in Youth and Volunteers (3 Credits)**

Explore fundamental leadership theories and practice related skills utilized in helping youth and adults build community relationships in a variety of teaching environments. Fundamentals of youth development will be the basis for examining how to foster positive learning environments for dynamic learning. The identification of empowerment processes will be explored through case-study discussions.

**AGST489 Special Topics in Agricultural Science and Technology (1-3 Credits)**

Selected novel topics of study in Agricultural Science & Technology (AGST).

**Restriction:** Permission of the instructor.

**Repeatable to:** 9 credits if content differs.

**AGST499 Independent Studies in Agricultural Science and Technology (1-3 Credits)**

An inquiry based learning course with individualized projects designed by student and faculty focused on: research or advanced learning experiences in Agricultural Science and Technology including field, greenhouse, laboratory, educational site, travel abroad and/or library studies. Conducted under the direction of a faculty member.

**Restriction:** By permission of instructor.

**Repeatable to:** 6 credits if content differs.

**AGST605 Extension Research Methods with Applied Data Analysis (3 Credits)**

Examine foundational qualitative and quantitative research methods in real-world social and behavioral settings for extension and outreach educators. This course enables you to distinguish, select and apply research methods to conduct social science research in a non-formal education setting. A variety of data analysis approaches will be examined across Extension and outreach education applications.

**AGST606 Program Planning and Evaluation in Agricultural and Extension Education (3 Credits)**

Learn how to plan and evaluate agricultural and extension education programs: design and administer needs assessments, create a logic model, apply quantitative and qualitative instruments and protocols, engage stakeholders, and gather and analyze data. The course will enable participants to develop an evaluation and program plan tailored to their interest/working area, applying a lens to address inclusion and equity issues.

**Credit Only Granted for:** AGNR606 or AGST606.

**Formerly:** AGNR606.

**AGST630 Adult and Community Development Education (3 Credits)**

Analyze and learn to apply teaching/learning theory and techniques in adult continuing and community development education with a focus on nonformal contexts. This course will examine the curriculum development process as well as in-person, virtual, and remote instructional techniques and methodologies tailored to adults' learning preferences. Scenarios and examples will involve participatory approaches to solving community development problems.

**Credit Only Granted for:** AGNR630 or AGST630.

**Formerly:** AGNR630.

**AGST640 Analysis of Maryland Agriculture (3 Credits)**

An advanced research focused course on examining the mission and history of the Land Grant System as well as appraising the current work conducted through the University of Maryland Extension to extend research to citizens. Often referred to as America in miniature, Maryland boasts diverse people, agricultural practices, cultures, and ecosystems which students will examine to perceive the decision making processes within and across ecological systems. An enriching field practicum with an agricultural agency is required.

**AGST689 Special Topics in Agricultural Science and Technology (1-3 Credits)**

Selected advanced novel topics of study in Agricultural Science and Technology (AGST).

**Restriction:** Permission of the instructor.

**Repeatable to:** 9 credits if content differs.

**AGST699 Advanced Independent Studies in Agricultural Science and Technology (1-3 Credits)**

An inquiry based learning course with individualized advanced projects designed by graduate student and faculty focused on: research projects in Agricultural Science and Technology including field, greenhouse, laboratory, educational site, travel abroad and/or library studies. Conducted under the direction of a faculty member.

**Restriction:** By permission of instructor only.

**Repeatable to:** 6 credits if content differs.

**AGST799 Master's Thesis Research (1-6 Credits)**

Development of a terminal thesis on a problem in extension education, designed to demonstrate comprehensive skills and knowledge achieved in the graduate program. The subject will be selected in consultation with an advisor and periodically reviewed with a committee headed by the advisor.

**Restriction:** Permission of instructor.

**Repeatable to:** 9 credits.