

MURRAY STATE UNIVERSITY

Revised 9/15

SCHOOL OF AGRICULTURE

COURSE PREFIX: AGR COURSE NUMBER: 570 CREDIT HOURS: 3

I. TITLE:

Agricultural Systems Technology Laboratory Management

II. BULLETIN DESCRIPTION:

This course is a study of theories involving agricultural mechanization and systems technology. Emphasis is placed on understanding the technology involved in operating, maintaining and managing power and machinery, electricity, precision agriculture, soil and water engineering, metallurgy and fabrication, and safety systems. Skill development emphasized. (Fall only)
Prerequisite: AGR 170.

III. COURSE OBJECTIVES:

- A. To develop safety practices and training in handling, transporting, storing, and using agricultural mechanization equipment.
- B. To develop a comprehensive understanding of planning and organizing agricultural mechanization laboratories.
- C. To develop a basic understanding of agricultural mechanization equipment handling, operation, and management.
- D. To become familiar with the fundamentals and applications of electricity.
- E. To develop fundamental skills used in arc, MIG and oxy-acetylene welding, brazing, soldering and plasma arc and oxy-acetylene cutting.
- F. To become familiar with precision farming application tools.
- G. To develop fundamental skills operating hand tools and power tools utilized in the agricultural mechanization laboratory.

IV. CONTENT OUTLINE:

- A. To develop basic knowledge of:
 1. Principles of engines and machinery
 - Engine types
 - Basic engine operation
 2. Surveying and GPS equipment
 - Principles of surveying
 - Precision agriculture product analysis and use
 3. Procedures in agricultural construction
 - Hand tool operation, maintenance, and application
 - Power tool operation, maintenance and application
 4. Electrical wiring and electrical theory

- Electrical education applications
- Electrical fundamentals
- 5. Fundamentals of welding
 - Arc welding
 - Oxy-acetylene welding
 - Mig welding
 - Oxy-acetylene cutting
 - Plasma arc cutting
- 6. Management of the agricultural mechanization laboratory
 - Inventory management
 - Equipment maintenance
 - Facility management
 - Safety

V. INSTRUCTIONAL ACTIVITIES:

- A. Demonstrations
- B. Study Questions
- C. Lecture
- D. Labs
- E. Audio-video presentations
- F. Computer programs

VI. FIELD AND CLINICAL EXPERIENCES:

- A. To develop basic knowledge of:
 - 1. Principles of engines and machinery
 - Engine types
 - Basic engine operation
 - 2. Surveying and GPS equipment
 - Principles of surveying
 - Precision agriculture product analysis and use
 - 3. Procedures in agricultural construction
 - Hand tool operation, maintenance, and application
 - Power tool operation, maintenance and application
 - 4. Electrical wiring and electrical theory
 - Electrical education applications
 - Electrical fundamentals
 - 5. Fundamentals of welding
 - Arc welding
 - Oxy-acetylene welding
 - Mig welding
 - Oxy-acetylene cutting
 - Plasma arc cutting
 - 6. Management of the agricultural mechanization laboratory
 - Inventory management

Equipment maintenance
Facility management
Safety

VII. TEXTS AND RESOURCES:

REQUIRED:

Planning Organizing and Teaching Agricultural Mechanics, 2nd Edition by Bear & Hoerner. Hobar Publications: ISBN: 0-913163-18-x

RECOMMENDED:

Agricultural Mechanics, 5th Edition by R.V. Herren. Thomson Delmar Publications: ISBN: 0-4018-5956-9

OTHER REQUIRED MATERIALS:

Non-flamable pants
Non-flamable shirt
Welding gloves
Leather high top shoes

Cutting goggles and safety glasses will be provided; students have the option to purchase their own.

- A. Millermatic 251
- B. Millermatic 200
- C. Lincoln AC-DC arc welders
- D. Portable gas powered Lincoln generator welder
- E. Portable oxy-acet cutting system
- F. Plasma Arc Cutter
- G. Metal, cutting goggles, and other accessories provided
- H. Briggs and Stratton Small Engines
- I. Hako models
- J. Cutaways
- K. Lab buzzboards and test panels
- L. Electrical panels, circuit boards, etc
- M. GPS receivers
- N. Textbooks on reserve
- O. Handouts

VIII. GRADING PROCEDURES:

90 - 100 = A
80 - 89 = B
70 - 79 = C
60 - 69 = D
Below 60 = E

- A. There will be three one-hour exams worth 200 points each. The final exam will be comprehensive.
- B. Missed exams and late assignments may only be made up provided there is a reasonable excuse. A failing grade in the lab will result in a failing grade for the course.
- C. All lab exercises must be completed in the Howton Agriculture Building. No exceptions.
- D. All projects must conform to the Lab Instruction Guide.

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current *MSU Bulletin*.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

- 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
- 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
- 3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Institutional Diversity, Equity and Access. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

NOTE: The School of Agriculture Faculty have adopted and implemented an Academic Honesty Policy in addition to the University Honesty Policy, which can be found in the current *Undergraduate Bulletin and Graduate Bulletin*. The policy sets guidelines regarding acts of dishonesty and the procedure to follow should an event occur. It is each Agriculture student's responsibility to obtain and read a copy of this document. The School's Academic Honesty Policy can be obtained by asking for a copy from any Agriculture Faculty member or the Secretary.

XI. NON-DISCRIMINATION POLICY AND STUDENTS WITH DISABILITIES:

Policy Statement

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

Students with Disabilities

Students requiring special assistance due to a disability should visit the Office of Student Disability Services immediately for assistance with accommodations. For more information, students should contact the Office of Student Disability Services, 423 Wells Hall, Murray, KY 42071. 270-809-2018 (voice) 270-809-5889(TDD).

XII. MSU SCHOOL OF AGRICULTURE CELL PHONE POLICY

The School of Agriculture recognizes that in today's world cell phones are a familiar and often necessary form of communication for students.

It shall be the policy of the School that no cell phone usage shall be allowed in class and/or labs without the prior consent of the course instructor. This shall include verbal calling, incoming calls, email, text messaging, and use of cell phone calculators on tests and quizzes.

Cell phones must be kept off and out of sight (i.e. secured to a person's belt or kept in a bag or purse away from desks and lab counters).

Should a student's cell phone be visible, ring, or other form of unauthorized usage that is interruptive to the class or lab, the student may be asked to leave class and not return for that class/lab period.

Upon prior consent of the instructor, a student may obtain permission to have their phone on in case of an emergency or in critical family situations.

This policy also includes pagers and other electronic equipment such as blackberries and/or computers/laptops.

XIII. CLASSROOM AND LABORATORY POLICY

The following policies are set for a functional and conducive learning environment.

1. Be on time to lecture and laboratory meetings.
2. Report any broken or defective equipment to the instructor immediately.
3. Be courteous to your fellow students by returning all tools (in clean condition) to their proper place after use.
4. Adhere to the Lab Clean Up Check-off sheet at the end of each Lab. Be sure to clean your work area as well as a team to clean the facility each and every lab period. Failure to clean your work area will result in a 30% grade reduction for the daily laboratory activity.

XIV. SAFETY

Students must adhere to all safety procedures and policies at all times. Safety glasses must be worn at all times while in the shop, including under your helmet while welding. Students are also required to wear long sleeve shirts (or coveralls), pants, high top leather shoes and welding gloves while in the laboratory.

Failure to comply with safety procedures will result in the loss of a laboratory grade for minor infractions and removal from the course for major infractions. This policy is in effect for your safety as well as your fellow students and instructor.