

AGRI 0213 - AGRICULTURE MECHANICS

Catalog Description

Hours: 90 (36 lecture, 54 laboratory)

Description: Shop skills essential to mechanized agriculture, including welding, metal and wood fabrication tools, electrical and plumbing. Proper selection, use, repair, and safety of the tools and equipment will be emphasized. (CSU)

Course Student Learning Outcomes

- CSLO #1: Complete projects utilizing wood, metal, concrete, plumbing, electrical materials, tools and equipment based on blueprints/project plans.
- CSLO #2: Demonstrate safe use and maintenance of tools, materials, and machinery appropriate to perform tasks and complete projects.
- CSLO #3: Evaluate project plans/blueprints and formulate quantities of materials needed to complete.

Effective Term

Spring 2021

Course Type

Credit - Degree-applicable

Contact Hours

90

Outside of Class Hours

72

Total Student Learning Hours

162

Course Objectives

Lecture Objectives:

1. Identify agricultural mechanics industry careers and their required skills.
2. Explain safety rules including color codes and relate them to the safety aspects of agricultural mechanics.
3. Assess projects to create a bill of materials, tools and machinery for completion.
4. Assess agricultural applications of wood working, metallurgy, concrete work, plumbing and electrical skills.
5. Evaluate materials for project appropriateness based on cost and quality.

Laboratory Objectives:

1. Recommend proper tools, materials, and machinery to carry out mechanical tasks.
2. Demonstrate safe use, care, and maintenance of tools, materials, and machinery.
3. Evaluate project plans/blueprints and formulate quantities of materials needed to complete.

4. Assemble, construct and complete projects utilizing wood, metal, concrete, plumbing, electrical materials, tools and equipment based on blueprints/project plans.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Objective Examinations
 - Example: 1. Students will be given an examination on general ag mechanics safety. Example Questions: MSDS stands for: a. Marginal Safety for Dangerous Substances. b. Material Safety Data Sheet. c. Material Safety Disability Sheet. d. Material Safety Data Shear Which of the following safety colors is NOT matched to the correct meaning? a. RED = danger b. YELLOW = caution c. ORANGE = safety d. GREEN = Information What does the color label red, yellow and green represent? a. Danger, caution, and safety b. Danger, caution, and information c. Danger, caution, and floor color d. Caution, caution, and safety
- Projects
 - Example: Students will mix concrete, create a simple form, pour, and finish concrete by building a stepping stone. This activity will give students practice in calculating the concrete volume for large and small projects. Students will be graded on form size (width, length, square), finished stepping stones (finish, craftsmanship), participation and cleanup, and calculations.
- Skill Demonstrations
 - Example: Students will work with rope by tying common knots. Students will demonstrate securing loads with common binders and rope. The following knot types will be evaluated for proper tying: Clove Hitch, Bowline, Truckers Hitch, Square Knot and Figure 8.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Instructor will demonstrate how to set up the metal sheer and make a simple cut. Students will participate in a discussion on how this process is done properly. The students will perform the demonstrated cut. Students will be evaluated by the instructor on their ability to perform this activity correctly. This includes performing the activity in a safe manner, the ability to hit the target dimension (measurement), the ability to hold a specific tolerance (the measurement cannot vary too much), and the ability of the newly manufactured part to fit together into a greater assembly. Lab Objective 2

Lecture:

1. The instructor will lecture on reading plans and blueprints. Students will then work in groups and make a list of the most common symbols. Lecture Objective 3

Distance Learning

1. The instructor will present materials on how to read plans and blueprints. Students will then work in groups in the LMS and develop a list of the most common symbols. Lecture Objective 3

- Author: Burkybile
- Publisher: Prentice Hall
- Publication Date: 2006
- Text Edition: 1st
- Classic Textbook?: No
- OER Link:
- OER:

Typical Out of Class Assignments Reading Assignments

1. Required college level readings from chapters in the textbook regularly assigned. Students are expected to participate in the lecture/discussions based upon these readings. Critical thinking and problem solving are part of these assignments. Sample 1: Read chapter on construction drawings and be prepared to discuss in class. Sample 2: Research and read article on land measurement and develop step by step instructions for using an auto level to measure elevation profiles.

Writing, Problem Solving or Performance

Students are required to work in a team, read project plans/blueprints and determine which materials, machinery and tools are best suited to complete the project. Sample 1: Using results from sample 2 in section 12a, write a report to compare and contrast various materials suitable to complete the project in written form including quality and cost aspects. Sample 2: Choose appropriate materials and formulate quantities needed of each to complete the project.

Other (Term projects, research papers, portfolios, etc.)

After reading project plans/blueprints and selecting appropriate type and quantities of materials students will assemble/construct and complete projects utilizing wood, metal, concrete, plumbing, electrical materials, tools and equipment based on blueprints/project plans.

Required Materials

- Agriculture Mechanics Fundamentals
 - Author: Ray V. Herren
 - Publisher: Delmar Cengage Learning
 - Publication Date: 2014
 - Text Edition: 7th
 - Classic Textbook?: No
 - OER Link:
 - OER:
- Agriculture Technical Systems and Mechanics
 - Author: Koel and Mazur
 - Publisher: Amer Technical Pub
 - Publication Date: 2013
 - Text Edition: 1st
 - Classic Textbook?: No
 - OER Link:
 - OER:
- Modern Agricultural Mechanics

Other materials and-or supplies required of students that contribute to the cost of the course.