I. **OVERVIEW**
   The following information will appear in the 2011 - 2012 catalog

   AGM 200  *Introduction to Mechanical Technology*  3 Units
   Also offered as: INTEC - 200: Introduction to Mechanical Technology

   Basics in woodworking, cold metal, electrical wiring, plumbing, masonry and welding as related to agriculture maintenance and repair. Designed for students who seek to develop basic mechanical skills.

   **Materials Fee Required**

   Field trips might be required.  (A-F Only) Lecture /Lab

   **Transfer:** (CSU)

II. **LEARNING CONTEXT**
   Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

   A. **COURSE CONTENT**

      1. **Required Content:**

         a. Rope work

            i. Rope types and common uses

            ii. Care and repair

            iii. Types of splices and knots

         b. Farm woodwork

            i. Selection and Grading of lumber

            ii. Measuring, marking and project layout

            iii. Hand tool selection, their care, proper use and operation

            iv. Power tool selection, their care, proper use and operation

            v. Material fastening and joint construction

            vi. Woodworking safety

         c. Cold metal

            i. Use and sharpening of hand bench tools such as chisels, punches, scribes, taps, and dies

            ii. Cold metal joining selection and procedures

            iii. Bending, drilling, marking, threading, and sawing metal
d. Hot metal
   i. Use and care of gas torch for cutting, welding, and heating
   ii. Operation of electric welder using both D.C. and A.C. polarities
   iii. Forging and heat-treating metal using a forge

e. Sheet metal
   i. Material selection and layout
   ii. Cutting and bending
   iii. Soldering
   iv. Operation and care of sheet metal tools

f. Plumbing
   i. Selection, operation and care of plumbing tools
   ii. Fitting types and selection
   iii. Project layout, measuring, and construction

g. Construction materials
   i. Properties of metals, woods, etc.
   ii. Calculation of a proper bill of materials
   iii. Fastener selection, strength and use

h. Blueprints
   i. Sketching and three view drawings
   ii. Blueprint reading and symbol identification

i. Concrete
   i. Physical properties and strength
   ii. Estimating quantities and calculating costs
   iii. Estimating material and labor costs

j. Paints and finishes
   i. Types
   ii. Estimating quantities
   iii. Mixing and application

k. Electrical Wiring
i. Circuit connections and splices

ii. Lighting circuit layout and construction

iii. Receptacle circuit layout and construction

2. **Required Lab Content:**

Using skill gained in the lecture, students are required to complete a project in each of the following disciplines:

a. Wood work

b. Electrical

c. Plumbing

d. Sheet metal

e. Cold metal

f. Concrete

B. **HOURS AND UNITS**

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<th>INST METHOD</th>
<th>TERM HOURS</th>
<th>UNITS</th>
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<td>Lect</td>
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C. **METHODS OF INSTRUCTION (TYPICAL)**

Instructors of the course might conduct the course using the following method:

1. Lecture/discussion/demonstration/audio-visual materials.

2. Assigned reading.

3. Required drawings and assignments.


5. Laboratory exercises.

6. Field trips when appropriate.


8. Instructor supervision of practical application: a. Implementation of ideas, plans, and procedures; b. Identification of potential weaknesses, stress points, and strengths; and c. Selection of proper materials and applications.

D. **ASSIGNMENTS (TYPICAL)**

1. **EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS**

*Time spent on coursework in addition to hours of instruction (lecture hours)*
a. Weekly quizzes
b. Weekly reading assignments
c. Weekly problem solving and calculations
d. Per term, midterm and final
e. Weekly lab projects and reports

2. **EVIDENCE OF CRITICAL THINKING**

Assignments require the appropriate level of critical thinking

a. Sample Project: Concrete
   Given an actual concrete project, students will determine concrete mix, finish, thickness and reinforcement needed and develop a bill of materials required for project completion. Students will then be required to complete the project by pouring and finishing an actual pour.

b. Sample Project: Electrical
   Students will be given a electrical circuit scenario that they will have to analyze and construct to conform with the National Electrical Code.

E. **TEXTS AND OTHER READINGS (TYPICAL)**


   2. Other: State law requires safety glasses for all students.

III. **DESIRED LEARNING**

A. **COURSE GOAL**

As a result of satisfactory completion of this course, the student should be prepared to:

specify, select and order material common to the agriculture mechanics industry and utilize that material in various construction situations and projects.

B. **STUDENT LEARNING GOALS**

Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. **Required Learning Goals**

   Upon satisfactory completion of this course, the student will be able to:

   a. Differentiate between the four different metal joining processes demonstrated in class.
   b. Select the proper method of joining metals and materials.
   c. Identify the tools, materials, and machines found in the farm shop.
   d. Demonstrate the correct use, care, and maintenance of the tools, materials, and machines commonly found in the farm shop.
   e. Compute common shop problems regarding measuring and ordering supplies and equipment for given applications.
   f. Identify safety hazards and eliminate them before accidents occur.
Identify and care for various kinds of rope.

Select the most adequate (cost and quality) supplies (lumber, steel, materials) for a given situation — fence, building, etc.

Assemble an electrical wiring board or display as per instructions.

Explain the methods of painting, types of paints, their preferred uses, and cleanup procedures.

2. **Lab Learning Goals**
   
   Upon satisfactory completion of the lab portion of this course, the student will be able to:
   
   a. Prepare a simple three-dimension drawing showing top, end, and side views.
   
   b. Apply the techniques of sharpening and refitting the more common farm tools.
   
   c. Assemble an electrical wiring board or display as per instructions.
   
   d. Identify types of threads and properly use taps, dies, and tap drills.
   
   e. Measure and thread pipe, and correctly identify the more commonly used fittings.
   
   f. Illustrate knowledge of concrete by forming, pouring, screeding, and finishing a slab to a proper size and slope.

IV. **METHODS OF ASSESSMENT (TYPICAL)**

**A. FORMATIVE ASSESSMENT**

1. Evaluation of skills
2. Evaluation of student projects
3. Classroom discussion
4. Midterm exam
5. Written examinations

**B. SUMMATIVE ASSESSMENT**

1. Evaluation of student projects
2. Final exam