DESIGNATOR & NUMBER: MFGT 71

COURSE TITLE: Agricultural and Industrial Equipment Operation

CREDIT UNITS: 3

FACULTY INITIATOR: Albert Graham

SEMESTER HOURS:

<table>
<thead>
<tr>
<th>Lecture Contact Hours</th>
<th>32.00 - 36.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Contact Hours</td>
<td>48.00 - 54.00</td>
</tr>
<tr>
<td>Total Contact Hours</td>
<td>0.00</td>
</tr>
<tr>
<td>Total Out-of-Class Hours</td>
<td>4.00</td>
</tr>
<tr>
<td>Total Student Learning Hours</td>
<td>0.00</td>
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</tbody>
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TOTAL CONTACT HOURS (BASED ON 16-18 WEEKS)

<table>
<thead>
<tr>
<th>Lecture</th>
<th>32.00 - 36.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab</td>
<td>48.00 - 54.00</td>
</tr>
<tr>
<td>By Arrangement Lab Hours (DHR)</td>
<td>0.00</td>
</tr>
</tbody>
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GRADING BASIS:
Grade Only

PREREQUISITE:

COREQUISITE:

ADVISORY:

OTHER:

COURSE DESCRIPTION:
Design principles, selection, maintenance, adjustment, and safe operation of wheel and track type tractors used in agriculture and in the construction industry. Students will operate a variety of equipment. Principles and application of safety will be stressed. Includes field trips. Formerly AIT-71. Not open to students who have completed AIT-71 with a grade of "C" or better

COURSE OBJECTIVES:
Upon satisfactory completion of the course, students will be able to
1. operate wheel and track type tractors safely and properly.
2. demonstrate the ability to properly and safely connect working implements.
3. demonstrate ability to back equipment with a trailer attached.
4. identify correct tractor parts and their terminology.
5. describe power generation and transmission systems.
6. analyze a given situation and match the tractor and equipment to the job.
7. perform operator-level maintenance and adjustment of tractor systems.
8. inspect, diagnose, and repair minor tractor problems.
9. demonstrate ability to communicate and work cooperatively with others.

COURSE CONTENT:

I. Introduction
   A. History of the tractor engine
   B. Types of agricultural and industrial equipment
   C. Terminology

II. Safety
   A. California Division of Industrial Safety
   B. ROPS (Rollover Protection Structure) and related equipment
   C. Hand Signals
   D. Starting and stopping
   E. Hazards
   F. Transportation

III. Power systems
   A. Engine
   B. Clutch
   C. Transmissions
   D. Final Drives
   E. Hydraulic
   F. P.T.O. (Power Take Off)
   G. Electrical

IV. Controls
   A. Starting and stopping
   B. Steering
   C. Hitches
   D. Hydraulic
   E. Electric

V. Implements
   A. Attachment methods and techniques
   B. Adjustments
   C. Efficiency and safety

VI. Field operation
   A. Ballast
   B. Stability
   C. Daily maintenance
   D. Selecting speeds
   E. Hazardous situations

VII. Maintenance
   A. Operators manuals
   B. Proper care and use of tools
   C. Supplies
D. Inspection, evaluation, and repairs

LAB CONTENT:

I. Safety
   A. personal
   B. equipment
   C. shop
II. Operational checkout procedures
III. Driving
   A. solid tire equipment
      1. Two-wheel drive equipment
      2. Four-wheel drive equipment
   B. pneumatic tire equipment
      1. Two-wheel drive equipment
      2. Four-wheel drive equipment
   C. Tack equipment
IV. Attaching and removing implements
   A. 3 point hitch
   B. PTO
   C. draw bar
   D. goose neck hitch
   E. bumper pull hitch
V. Pulling and reversing implements
   A. 3 point hitch
   B. draw bar
   C. goose neck hitch
   D. bumper pull hitch
VI. Field operation
VII. Transporting of equipment and implements
VIII. Basic maintenance
IX. Storage of equipment and implements

INSTRUCTIONAL METHODOLOGY:

Lecture
Lab Activity
Individual Assistance
Audiovisual (including PowerPoint or other multimedia)
Demonstration
Discussion
Group Activity
Requires a minimum of three (3) hours of work per unit including class time and homework.

METHODS OF EVALUATING OBJECTIVES OR OUTCOMES:

Methods of evaluation to determine if students have met objectives may include, but are not limited to the following:

CLASSROOM EXPLANATION
Students will be expected to wear proper safety attire to each
Class Activity

- Attend class meeting, and participate during class discussion through sharing of ideas, asking questions that are pertinent to class content. This will make up 12%-25% of their grade.

Lab Activity

- Each week students will be learning about a different equipment and how it is applied to industry. During the lab students will have to apply the information taught in lecture and demonstration and student operation of equipment, checking systems. The projects will build on each other. This will make up 40%-50% of their grade.

Written Assignments

- There will be weekly homework assignments. In the assignment students will have to learn industry terms and complete questions at the end of each chapter. This will make up 10%-12.5% of their grade.

EXAMS EXPLANATION

- **Comprehensive Final**
  - Students will have a comprehensive final which will include: essay, fill in the blank, multiple choice, short answers. This will make up 20%-25% of their grade.

- **Problem Solving**
  - Explanation of possible solutions to equipment problems and applications, or related problems.

- **Skill Demonstration**
  - Students will be able to demonstrate proper shop safety, operate equipment, connect implements and back equipment with a trailer attached. The grade from skills demonstrations will be reflected in the lab activities.

- **Quizzes**
  - Daily quizzes will be given about information that was presented in the previous class. This will make up 10%-12.5% of their grade.

MINIMUM STUDENT MATERIALS:

- **Textbook(s) similar to:**

ADDITIONAL RESOURCES

- Safety glasses Z87.1
- Tan/khaki colored work shirt
- Work boots and appropriate clothing for shop

COURSE ASSIGNMENTS

**Examples of Reading Assignments**

- Weekly readings from the textbook; approximately 20-30 pages per week.

**Examples of Writing Assignments**

- Students will be assigned articles to read throughout the semester and write a response about the article and how it applies to the industry.

**Examples of Outside Assignments**

- Weekly homework assignments that include completing review questions at the end of textbook chapters.