



Course Outline

2026-2027 Catalog

AET 30 - Tractors and Crawlers

Catalog Description

Transfer Status: CSU

Unit(s): 3.00

Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)

Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)

Total: 85.00 Contact hours/68.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: This course covers design principles, selection, maintenance, adjustment, and safe operation of wheel and crawler type tractors used in agriculture and in the construction industry. (C-ID AG-MA 108L).

Objectives

Upon successful completion of this course, the student should be able to:

1. List all the safety and operation rules for tractors and crawlers.
2. Operate wheel and track type tractors safely and properly.
3. Communicate and work cooperatively with others.
4. Identify tractor parts and their function.
5. Describe power generation and transmission systems.
6. Select the proper equipment for a specific job.
7. Perform operator level maintenance and adjustment of tractor systems.
8. Diagnose and repair minor tractor problems.
9. Back a tractor and trailer through a course safely and accurately.
10. Attach implements to tractor safely and properly.

Course Content

Topic Titles / Suggested Time Topic

Lecture

<u>Topics</u>	<u>Lec Hrs</u>
Introduction	5.00
a. History of the tractor engine	
b. Types of tractors	
c. Terminology	
2. Safety	5.00
a. California division of industrial safety	
b. Hand Signals	
c. Starting and stopping	
d. Hazards	
e. Transportation	
f. Cal OSHA regulations	
Power systems	5.00
a. Engine	
b. Clutch	
c. Transmissions	
d. Final Drives	
e. Hydraulic	
f. P.T.O.	
g. Electrical	
Controls	5.00
a. Starting and stopping	
b. Steering	
c. Hitches	
d. Hydraulic	
e. Electric	
f. Auto Guidance	
Implement	4.00
a. Attachment	

<u>Topics</u>	<u>Lec Hrs</u>
b. Adjustments	
c. Efficiency	
Field operation	5.00
a. Ballast	
b. Stability	
c. Daily maintenance	
d. Selecting speeds	
e. Hazardous situations	
Maintenance	5.00
a. Operators manuals	
b. Tools	
c. Supplies	
d. Inspection, evaluation	

Total Hours: 34.00

<u>Topics</u>	<u>Lab Hrs</u>
Functionality of safety equipment	5.00
Proper application of electrical components	3.00
Performing up-to-date maintenance of lubrication points	5.00
Functionality of engine cooling and lubrication	5.00
Maintenance and assembled fittings of hydraulics	5.00
Proper inflation of tires	3.00
Proper adjustment of implement	5.00
Perform all pre-start procedures on a tractor	5.00
Safe operation of tractors and implements	5.00
Selection of the proper implement for the job	5.00
How to troubleshoot tractor problems	5.00

Total Hours: 51.00

Methods of Instruction

- A. Collaborative Group Work
- B. Demonstrations
- C. Discussion
- D. Field Trips
- E. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- F. Instructor Demonstrations
- G. Lecture
- H. Multimedia Presentations
- I. Reading Assignments
- J. Laboratory (practical application)

Methods of Evaluation

- A. Exams/Tests
- B. Quizzes
- C. Projects
- D. Demonstration
- E. Homework
- F. Class participation
- G. Final Examination
- H. Written Assignments
- I. Practical Evaluations

Examples of Assignments

Reading Assignments

1. Read assigned text chapter on power trains. Be prepared to describe the proper operation of the clutch.
2. Read the chapter on safety. Describe the proper technique for mounting and dismounting a tractor without falling off.

Writing Assignments

1. Answer the essay questions on field patterns from this week's "Lab Howdy" and submit your answers to the instructor.
2. Use the Internet to research agricultural tires. Explain in a one-page paper the difference between an R1 tire and an R3 tire.

Out-of-Class Assignments

1. Supplement your text reading with an on-line search for information about rubber-tracked tractors. Suggested sites are "How Stuff Works" and Wikipedia, or Google the topic you are researching.
2. Form a study group with your classmates to discuss transport safety. Questioning each other is an excellent method to enhance your learning and comprehension.

Recommended Materials of Instruction

Deere & Company. (2008). John Deere Fundamentals of Machine Operation-Tractors. *Moline Illinois, 4th*.

Other Learning Materials

Various equipment manuals checked out of mechanics shop.

Clothing appropriate for operating equipment, including sleeved shirt, long pants, closed toe shoes.

Minimum Qualifications

Agricultural Engineering

Agriculture (Masters Required)

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