

**DET 86.1 Course Outline as of Fall 2017****CATALOG INFORMATION**

Dept and Nbr: DET 86.1 Title: FARM MACHINERY REPAIR 1

Full Title: Farm Machinery Repair 1

Last Reviewed: 9/27/2010

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.50	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	1.50	Lab Scheduled	1.50	8	Lab Scheduled	26.25
		Contact DHR	0		Contact DHR	0
		Contact Total	2.50		Contact Total	43.75
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00

Total Student Learning Hours: 78.75

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As: AGMEC 61

Formerly: DET 83

**Catalog Description:**

This class will investigate the use, maintenance, repair and adjustment of equipment and light utility machinery commonly used in Sonoma County agriculture. Students will study and practice the maintenance and repair of machinery and tractors.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100

**Limits on Enrollment:****Schedule of Classes Information:**

Description: This class will investigate the use, maintenance, repair and adjustment of equipment and light utility machinery commonly used in Sonoma County agriculture. Students will study and practice the maintenance and repair of machinery and tractors. (Grade Only)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
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<b>CSU Transfer:</b>	Effective:	Inactive:
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<b>UC Transfer:</b>	Effective:	Inactive:
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**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon successful completion of this course students will be able to:

1. Describe the operating principles of farm machinery.
2. Describe the operation of typical mechanical and hydraulic systems as related to agricultural equipment.
3. Identify mechanical and hydraulic components of farm equipment and machinery.
4. Diagnose minor mechanical problems with farm machinery and perform basic repairs.
5. Evaluate condition of tractors and agricultural equipment by performing basic safety, maintenance, and operational checks.
6. Perform failure analysis of mechanical and hydraulic components and systems.
7. Demonstrate safe and orderly work practices.

### **Topics and Scope:**

- I. Introduction to farm machinery
  - A. Variety of equipment and its uses
  - B. Maintenance and repair options
- II. Basic safety and environmental practices in the farm shop
  - A. Safety related to lifting and supporting equipment to be serviced or repaired
  - B. Safe use of tools and equipment
  - C. Proper disposal of coolant, lubricants, and contaminated fuel
- III. Principles of power
  - A. Elements of force, work, and power
  - B. Internal combustion engines as power sources
- IV. Power transmission
  - A. Belts
  - B. Chains
  - C. Gears
  - D. Hydraulics

- E. PTO (power take-off) drives
- V. Electricity and electrical systems
  - A. Volts, ohms, and amps
  - B. Series and parallel circuits
  - C. Starting and charging systems
  - D. Tools and diagnosis
- VI. General maintenance practices
  - A. Daily service
  - B. Service records
  - C. Parts acquisition
  - D. Operator level problem diagnosis
- VII. Engine system operation, maintenance and repair
  - A. Fuel systems
  - B. Lubrication systems
  - C. Cooling systems
- VIII. Hydraulic system operation, maintenance and repair
  - A. Pumps
  - B. Valves
  - C. Rams
  - D. Filters
- IX. Miscellaneous equipment
  - A. Loaders and blades
  - B. Pumps and generators
  - C. Specialized equipment

**Assignment:**

1. Reading 40 to 60 pages a week
2. Complete structured lab workbook exercises; diagnosing minor mechanical problems and making repairs
3. Research equipment and maintenance procedures and prepare a written report (3 to 5 pages)
4. Exams (3 to 5)

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written report
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Writing 5 - 15%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None
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Problem solving 0 - 0%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Structured lab exercises; diagnosing minor mechanical problems and making repairs

Skill Demonstrations  
40 - 55%

**Exams:** All forms of formal testing, other than skill performance exams.

Exams: multiple choice, true/false, matching, completion

Exams  
40 - 55%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

Hydraulics, John Deere Publishing, 2009.

Powertrains, John Deere Publishing, 2009.