

**Agriculture and Environmental Education 493-N**  
(CRN 86182)

## **Small Engines/Hydraulics**

**Instructor:**

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**Course Meetings:**

T & R 9:30 – 10:45 a.m.  
Room 142 and 144 Agricultural Sciences Annex

**Textbook:**

Hoerner/Bear/Ahrens, *Small Gasoline Engines*  
**REQUIRED**

**Course Description:**

Procedures and practices in developing and demonstrating small engine and hydraulics repair/maintenance.

**Course Objectives:**

Upon completion of this course, the student will have acquired knowledge, skills and attitudes which will allow him/her to:

- a. Identify small engine applications.
- b. Identify the parts of a small engine.
- c. Identify the tools and use them safely and correctly.
- d. Define the theory of operation of four-stroke and two-stroke engines.
- e. Describe the principles of operation of compression, ignition, fuel, cooling and lubrication.
- f. Perform small engine overhaul and service procedures.
- g. Identify hydraulic operations.
- h. Identify hydraulic parts.
- i. Describe the principle operations of hydraulics.
- j. Perform overhaul of a hydraulic system.
- k. Recognize employment opportunities in small engine/hydraulic industry.

## **Required Supplies:**

### Costs to Students

Students are responsible for providing the following items:

- a. Safety glasses/goggles
- b. Slip joint pliers
- c. Proper clothing (safe)
- d. Leather shoes/boots
- e. Materials for individual Projects

## **Evaluation:**

Grades will be based upon the following:

300 points skill exercises

100 points daily quizzes/tests

100 points final examination

500 points total

A = 450 - 500 points

B = 400 - 499 points

C = 350 - 399 points

D = 300 - 349 points

F = 0 - 299 points

(5% will be deducted from the final grade for each unexcused absence)

## **Anticipated Schedule:**

1 period	Orientation Demonstrations Shop Safety Assignments
1 period	Engine operating principles
1-2 periods	Measuring and testing equipment and tools used
3 periods	Engine parts and disassembly
3 periods	Engine assembly

- 1 period      Basic hydraulic principle
- 4 periods     Repair and maintenance of hydraulic systems
- 8 periods     Student projects
- 1-2 periods   State CDE contest

Final Exam:

Written and comprehensive (100 points)

*\*Student are required to assist with State Career Development Event in Agricultural Mechanics*

**\*The instructor reserves the right to alter this syllabus in any way by announcement in a regular class meeting, via email, written notification, or otherwise.**