Internal Combustion Engines
AGM 310
Fall 2017

Name: Dr. Craig Morton

Email: rangermorton1972@yahoo.com

Phone: (936) 468-4250

Office: Agricultural Engineering Technology building

Office Hours:

Monday
None

Tuesday
9:00 – 12:00

Wednesday
11:00 – 12:00
4:00 – 5:00

Thursday
9:00 – 10:00

Friday
9:00 – 12:00
1:00 – 2:00

Department: Agriculture

Class meeting time and place:

Lectures MW 10:00 to 10:50, Agricultural Engineering Technology building, room 110; labs M 1:00 to 2:50, Agricultural Engineering Technology building, engines laboratory
**Course Description:**

A study of the theory of single and multiple-cylinder internal combustion engines. Emphasis will be placed on the application, maintenance, problem diagnosis, and repair of internal combustion engines used in agricultural environments as well as identification and proper use of tools and precision measuring instruments.

**Program Learning Outcomes:**

Technical skills relevant to agricultural mechanics  
Problem solving skills  
Written and oral communication skills  
Leadership skills

**Text and Materials:**

No text is required. You will need a calculator. The calculator will be needed in many labs and lectures and should, therefore, be routinely brought to classes and labs.

**Course Requirements:**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points</th>
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<tbody>
<tr>
<td>Three one-hour exams</td>
<td>100 points each</td>
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<tr>
<td>Comprehensive final exam</td>
<td>150 points</td>
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<tr>
<td>Lab exercises and quizzes</td>
<td>150 points</td>
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<tr>
<td>Lecture attendance and punctuality</td>
<td>100 points</td>
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<tr>
<td>Total</td>
<td>700 points</td>
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</tbody>
</table>

**Grading Policy:**

- 630 – 700 = A  
- 560 – 629 = B  
- 490 – 559 = C  
- 420 – 489 = D  
- Below 420 = F
Course Calendar:

Lecture Schedule:

Course Introduction
History of engines
Engine operating principles
Identification and function of engine parts
Fundamentals of machines
Exam I
Exam critique
Fuels and principles of combustion
Fuel systems
Intake and exhaust systems
Valves and valve trains
Controlling engine speed – the governor
Providing clean air for the engine
Igniting the fuel charge
Exam II
Exam critique
Electrical accessories
Diesel engines
Cooling the engine
Lubricating oils and greases
Lubricating systems
Exam III
Exam critique
Course Review
Comprehensive Final Exam

Student Conduct:

Students are expected to assist in maintaining a classroom environment which is conducive to learning. In order to assure that all students have an opportunity to gain from time spent in class, unless otherwise approved by the instructor, students are prohibited from using cellular phones or beepers, eating in class, making offensive remarks, reading newspapers, sleeping or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in, minimally, a request to leave the classroom.
Attendance Policy:

Students are expected to attend all classes and labs. Over 15% of the class grade is determined by attendance. A tardy is equal to an absence; if you miss roll call your attendance grade will suffer. If you arrive after roll call do not ask for attendance credit. Treat this class as you would treat a job – be where you are supposed to be when you are supposed to be there. Except for excused absences, exams and lab exercises cannot be made-up. Excused non-emergency absences must be coordinated in advance or they will be treated as unexcused. Make-up for emergency absences should be coordinated immediately upon return to class.

Academic Integrity (A-9.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp
Withheld Grades Semester Grades Policy (A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

Program Learning Outcomes

1. The student will demonstrate competence of technical subject matter (Technical)
3. The student will exhibit problem solving skills. (Problem Solving)
4. The student will demonstrate effective communication skills. (Communication)
5. The student will exhibit leadership and other interpersonal skills needed for career placement and advancement. (Leadership)
### B.S. Agricultural Engineering Technology Program Learning Outcomes

#### Proficiency Levels

<table>
<thead>
<tr>
<th>Course</th>
<th>PLO 1 Technical</th>
<th>PLO 2 Problem Solving</th>
<th>PLO 3 Communication</th>
<th>PLO 4 Leadership</th>
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**B-Basic** | **I-Intermediate** | **A-Advanced** | **M-Mastery**

### Student Learning Outcomes:

- Disassemble and reassemble an engine
- Calculate engine displacement
- Calculate engine compression ratio
- Demonstrate use of dial indicator
- Demonstrate use of micrometer
- Demonstrate use of dial calipers
- Identify common mechanics’ tools and demonstrate their proper use