Internal Combustion Engines  
AGM 310  
Fall 2019  

Name: Dr. Craig Morton  
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Phone: (936) 468-4250  
Office: Agricultural Engineering Technology building (enter on west side)  
Office Hours: M – 3:00 to 5:00, T – 10:00 to 12:00, W – 1:00 to 2:00 and 4:00 to 5:00, R – none, F – 9:00 to 12:00 and 1:00 to 2:00; other times by appointment  
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:**

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<tr>
<th>Requirement</th>
<th>Points</th>
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<tbody>
<tr>
<td>Three one-hour exams</td>
<td>300</td>
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<tr>
<td>Comprehensive final exam</td>
<td>100</td>
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<tr>
<td>Lab exercises and quizzes</td>
<td>200</td>
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<tr>
<td>Lecture attendance and punctuality</td>
<td>100</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>700</strong></td>
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**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
Cooing 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)
2. The student will exhibit problem solving skills. (Problem Solving)
3. The student will demonstrate effective communication skills. (Communication)
4. The student will exhibit leadership and other interpersonal skills needed for career placement and advancement. (Leadership)

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<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