

### **Instructor**

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Office Hours: By appointment

### **Time and Location**

TTH 10:00 am – 11:50 am – Lab Room 108, Industrial Tech Building

### **Course Description**

This course of study was designed to provide the student with an opportunity to acquire basic knowledge in power technology as it relates to typical two and four stroke cycle engines. The student will also be exposed to problem solving skills in engine troubleshooting. Finally the student will be exposed to the technology relating to maintenance and repair of common two and four stroke cycle engines. These objectives are consistent with parts of Domain #5, Energy, Power, and Transportation, on the TExES Certification Exam.

Topics will include: cooling systems, engine construction, engine safety, engine terminology, fuel, fuel systems, history of small engine usage, ignition systems, lubrication, measuring instruments, operating principles of four stroke cycle engines, operation principles of two stroke cycle engines, common and specialty tool use.

### **Course Objectives**

#### **Upon completion of this course the student will be able to:**

1. Demonstrate an understanding of the operation of 4 stroke cycle engines through participation in class discussions and correctly answering various styles of questions presented on worksheets and tests.
2. Demonstrate an understanding of the operation of 2 stroke cycle engines through participation in class discussions and correctly answering various styles of questions presented on worksheets and tests.
3. Evaluate a poorly working engine and recommend tune-up procedures needed.
4. Evaluate and troubleshoot a non-working engine and recommend procedures for repairs.
5. Disassemble a 4 stroke cycle engine and accurately measure necessary parts.
6. Reassemble a 4 stroke cycle engine with proper corrections so the engine runs correctly.
7. Disassemble a 2 stroke cycle engine and accurately measure necessary parts.
8. Reassemble a 2 stroke cycle engine with proper corrections so the engine runs correctly.
9. Demonstrate an understanding of fuels and fuel systems through participation in class discussions and correctly answering various styles questions on worksheets and tests.
10. Demonstrate an understanding of engine lubricants and lubrication systems through participation in class discussion, completion of simple lab experiments, and correctly answering questions on worksheets and tests.
11. Demonstrate an understanding of ignition systems through participation in class discussion, completion of simple lab experiments, and correctly answering questions on worksheets and tests.

12. Demonstrate an understanding of engine cooling systems through participation in class discussion, completion of simple lab experiments, and correctly answering questions on worksheets and tests.
13. Describe, either orally or in writing, the operation of governor systems in small engines.
14. Explain a brief history and usage of small engines
15. Correctly use small engine terminology in class discussion and trouble shooting and repair procedures.
16. Work safely while working with engine mechanics tools
17. Select and use Measuring instruments such as; Micrometer, Vernier caliper, Hole gauge, Thickness gauges, Dial gauges, Plastigauge

### **Reading**

The text required for this course:

**Small Engine Technology** by William A. Schuster. Published by: Delmar Publishers. (2<sup>nd</sup> edition) There will also be some reading material in the form of handouts. Students will be responsible for that information at test and quiz time. There are also other books available in the IT office for reference if other sources are required.

### **SRSU Disability Services**

Sul Ross State University (SRSU) is committed to equal access in compliance with Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email [rebecca.wren@sulross.edu](mailto:rebecca.wren@sulross.edu). Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832.

### **Library Information**

The Bryan Wildenthal Memorial Library in Alpine offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, [library.sulross.edu](http://library.sulross.edu). Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email ([srsulibrary@sulross.edu](mailto:srsulibrary@sulross.edu)), or phone (432-837-8123).

The Southwest Texas Junior College (SWTJC) Libraries at Uvalde, Del Rio, and Eagle Pass. Offer additional access to library spaces and resources. Del Rio, Eagle Pass, and Uvalde students may also use online resources available through SWTJC website, [library.swtjc.edu](http://library.swtjc.edu). The SWTJC Libraries serve as pick-up locations for Inter-Library Loan (ILL) and Document Delivery from the Alpine campus.

## **Diversity Statement**

"I aim to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, socioeconomic class, age, nationality, etc.). I also understand that the crisis of COVID, economic disparity, and health concerns, or even unexpected life events could impact the conditions necessary for you to succeed. My commitment is to be there for you and help you meet the learning objectives of this course. I do this to demonstrate my commitment to you and to the mission of Sul Ross State University to create an inclusive environment and care for the whole student as part of the Sul Ross Familia. If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you."

## **Classroom Climate of Respect**

Importantly, this class will foster free expression, critical investigation, and the open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still, we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

## **Attendance**

Attendance will be taken each scheduled class period in accordance with University and Departmental Policy and will count as part of the daily work grade. After 9 hours of absences the instructor may drop a student from the course with a grade of 'F', in accordance with the Student Handbook. Attendance will be taken at the beginning of each class period. **If you are tardy and miss the roll call you will be charged with one absence.**

## **Class Structure**

Class will be run in a lecture/lab format. Lectures will utilize overheads, power points, demonstrations, slides, videos, demonstrations, and laboratory experiences. **Lectures are given primarily to enhance the material that should have been studied prior to the class period**, answer questions about the material, and as preparation for the activities that will be completed in the labs. There may be some step-by-step guided practice and individual assistance during the scheduled class time. Students are expected to study, read, and practice in the lab prior to class time. Students will be expected to use and develop their problem solving skills to discern and apply the information assigned. It is essential that everyone be in attendance for the scheduled meetings so questions are answered and demonstrations are not missed. It is important that plans also be made to work in the lab outside scheduled class time.

## **Time Commitment**

Students should be prepared to spend 4-6 hours per week outside of class on assignments that will Include: Homework, Reading Assignments, Lab work and studying for tests and quizzes.

## **Phones & Electronic Devices**

No electronic devices other than calculators are allowed in the class or lab.

## **Assignments**

Daily work will consist of reading, worksheet pages, building in the lab, lab record sheets. Daily work and lab activities must be completed in preparation for classroom discussions and tests.

## **Grades**

Grades will be earned on the basis that "C" is average work, "B" is good work, and "A" is excellent work. Grades will be based on written examinations, research projects, lab work, and daily activities. **If any work is left undone** a grade of 'C' will be the highest possible grade awarded regardless of grades received on individual work assignments turned in. Barring extraordinary circumstances, there will be no "Incomplete" grades assigned.

### **Grading Scale**

A = 90-100%    B = 80-89%    C = 70-79%

D = 60-69%    F = below 60%

## **Academic Honesty**

All students are expected to do their own work at all times. Any dishonest conduct will be promptly rewarded with an immediate "F".

## **Lab Time**

There **will** be required lab work in this course. The lab will be open for use during normal business hours (usually 8 - 5 daily). The lab may be open some evenings as well when the lab assistant schedules are complete. No one will be left in the building without a lab assistant.

## **Equipment and Supplies**

Most of the equipment needed for this course and lab work will be supplied through the department. Safety glasses or goggles are **required** for this course.

## **Storage**

The lockers in the hallway may be checked out and used for storing your equipment and supplies. These lockers must be signed out with the secretary in the IT main office. You must supply your own lock.

## **Quizzes**

Everything we discuss and in the assigned reading, including laboratory material is fair game for quizzes. You will not be given notice for quizzes. They will be primarily written in nature, but may include practical components. There will be no make-up quizzes.

## **Tests**

Everything we discuss and in the assigned reading, including laboratory material is fair game for tests. You will be given notice for all unit tests. They will be primarily written in nature covering terminology, but you can expect some practical exercise portions on each exam. Makeup tests will not be given, although tests will be administered early in case of a planned absence (sports, etc.).

## **Final Exam**

The final exam will be the week of October 14, 2022. There will be no make-up exam given if you are not in attendance.