Course Syllabus

DEMR 1313 (3:2:4)

Fuel Systems

Diesel Service Technology

Industrial Technology

Technical Education Division

South Plains College

Levelland, Texas

Fall 2025

Course Title: Fuel Systems

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Thursday 8am-3:30pm & Friday 8am-2:30

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General Course Information

Course Description

Diesel Fuel Systems provide the stored energy to produce engine torque in an efficient and reliable way. Different types of fuel delivery systems are used in Diesel engines, about which you will learn, including fuel storage, filtration, low pressure delivery and different types of fuel injection systems. Each system has its own strengths and weaknesses, and you will learn diagnostic and repair procedures for those systems.

Course Outline

Diesel Fuels, Filters and Conditioners
Injection Systems, including HEUI Systems, Common rail Systems, Line-Pump systems.
Injection Nozzles and Unit Injectors; mechanical, electrical and hydraulic.
Injection Pumps; line pumps, distributor and common rail.

Course Competencies / Learning Outcomes

This course uses established industry competencies. Upon completion of this course the student must demonstrate the ability to:

Identify components in various injection pumps, unit injection systems, line-pump systems, low pressure systems, filtration and how those systems operate and influence diesel engine performance. Inspect and evaluate components using industry standard precision instruments, computers, and test equipment.
Rebuild and calibrate various pumps and injectors.
Diagnose and repair various fuel system components.

SCANS and Foundation Skills

C1 through C20 and F1 through F17. A description of these SCANS skills is printed on the back of the syllabus cover sheet for reference.

Verification of Workplace Competencies

All graduating students in the diesel service technology program will have a comprehensive, exit review
exam administered in order to comply with the state requirement for a capstone learning experience.

Specific Course / Instructor Requirements

Required Materials

Cengage Unlimited-Access - You should still have access from Freshman year if you purchased the 2 year access. Otherwise you will need the 12 Month access - ISBN: 9780357700044 - You will only need one copy for all of your Diesel courses.
Tools per provided list.
Notebook (quality, you will be using it in the lab. One may be shared across all of your DST classes.) Writing utensils.
Safety Glasses.
Safety Toe Shoes.
Cut Level 2 or better gloves.
Pocket Knife (not a box cutter).

Recommended Materials

Daily or Weekly Planner

Syllabus Agreement

This syllabus is a contract with the student and is used in college courses to outline the expectations of the course, the student and the instructor. Please fill out and submit the Student Syllabus Agreement form, expressing that you have read, understand, and agree to the course rules and expectations outlined in the syllabus.

Student Conduct

Student Conduct will follow the outlines of the Student Guide (http://catalog.southplainscollege.edu/mime/media/view/53/1585/2020-21StudentGuide.pdf) for anything not covered under the purview of this syllabi.
Failure to follow lab rules and course directives may result in being excused from class with an absence at the instructor's discretion.

Academic Integrity

See current Student Guide for policy details. Cheating and/or plagiarism will result in a zero grade, and disciplinary action may be taken at the discretion of the instructor.

Attendance

Students that attains more than three (3) absences are considered excessively absence, and there are no excused absences. An absence will be issued when a student attends less than three quarters (1/2) the scheduled time, for that particular day, leaves class without notifying the instructor. Students who have a grade average below 70 and excessive absences will be dropped, and may also be dropped from concurrent courses. A student is tardy if they are not present when roll is taken. Three (3) tardy circumstances are equal to one absence.

Sleeping in Class or Lab

The inability to stay awake in class or lab is an indication that you are too tired to function safely in our environment, and you will be dismissed for safety reasons. This is considered an absence since you are not present.

Bullying, Hazing & Other Misconduct

Bullying, hazing, or any other misconduct toward fellow students, the instructors or visitors to the program will not be tolerated. Disciplinary action will be taken per the standards set in the Student Handbook and may lead to expulsion. The instructor may choose to excuse you from class with absence.

Work Missed if Absent

Students are responsible for all work covered during absences from class, even in cases in which they are able to satisfy the instructor that the absence was unavoidable. When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. In such case, it is the student's responsibility to complete work missed within a reasonable period of time as determined by the instructor. This is merely for work missed, and does not make any absence excused. This does not apply to classroom tests/quizzes or lab tests/quizzes.

Late Assignments

Assignments turned in after the assigned due date will not be accepted and will result in a zero grade for that assignment. Reasonable circumstances for a late assignment may be accepted with a penalized grade with the instructor’s permission.

Grading

Exams will be given periodically throughout the semester at the instructor's discretion. Lab assignments will be given and completed at the assigned dates. At the end of the semester, a comprehensive final exam will be given. There are five categories taken into consideration when computing the final semester grades: Lab Assignments

a) Classroom grades: These grades will consist of 60% Lab, Exams 20%, Quizzes & Assignments, Homework 20%
b) Tutoring – Students who do not pass their first exam will be required to attend three hours of tutoring each week until they pass their next exam. This is a course requirement and will be reflected in the course grade.

c) Lab grades: These grades will constituent 60% of the final semester grade. Lab projects and task sheets will be completed by the assigned date. Each student must complete the assigned lab projects for the semester. In addition, there will also be lab benchmark tests throughout the semester.

d) Point deduction from lab projects
   i) Late or not showing up for the end of semester clean-up will result in forfeit of all lab points.
   ii) Leaving a lab project partially disassembled, leaving out parts, or not turning in complete work order results in a zero on that assignment.
   iii) Damaging lab projects will result in a deducted grade for projects as follows:
   iv) Damaged, but repaired correctly -5%
   v) Damaged, required part replacement -10% vi) Damaged, not repairable -20% vii) Damaged, abandoned -100%

e) Outline of Engine Rebuild grading Policy
   i) Engine not started -100 %
   ii) Minor leak (oil, coolant, or fuel) per infraction

(1) Less than one drop per 1 minute -30% iii) Major leak (oil, coolant, or fuel) per infraction

(2) More than one drop per 1 minute -100% iv) Missing bolts per infraction -10% v) Knocks of any type -100% vi) Brackets missing or not fastened per infraction -10 % vii) Out of specification oil pressure (high or low) -100% viii) Improper work order per infraction -5%

ix) Improper engine function per fault -30%

f) **Note**: When you apply for a signature on a project, you will be randomly, verbally, quizzed on your knowledge of the project, procedures, ect. Inability to answer questions will result in an incomplete until you comply with the research assigned at that moment.

g) Grade Levels: There are four levels of attainable grades in the diesel technology program. The levels are A - (90 and above); B - (80-89); C - (70-79); F - (69 and below). This grading policy follows industry standards used in certification testing.

h) **Course Outline**

The student will learn the following in this course on how to established industry competencies. Upon completion of this course the student must demonstrate the ability to:

Identify components in various injection pumps, unit injection systems, line-pump systems, low pressure systems, filtration and how those systems operate and influence diesel engine performance. Inspect and evaluate components using industry standard precision instruments, computers, and test equipment.

Rebuild and calibrate various pumps and injectors.

Diagnose and repair various fuel system components.

Hazardous Materials

Students will come in contact with chemicals and other materials, which come under the "Hazardous Material" classification as defined by Title 83, Article 5182b of the Hazard Communication Act. Material Safety Data (MSD) information will be posted in the lab area. Safety information will be given and shown in class before the safety test. (Examples of materials: used engine oil, fuel, antifreeze, etc.)

Students can find statements for:

Intellectual Exchange, Disabilities, Non-Discrimination, Title IX Pregnancy Accommodations, CARE (Campus Assessment, Response, and Evaluation) Team, and Campus Concealed Carry at Syllabus Statements https://www.southplainscollege.edu/syllabusstatements/

DST Classroom and Lab Area Rules

1. Always follow safety rules. They are for your protection.
2. Personal Protection Equipment: Safety glasses will be properly worn at all times. Acceptable lens colors: clear, yellow colored lenses. Mirrored or dark lenses will be permitted for outside work only. Sunglasses will not be allowed indoors or outdoors. All safety glasses must be “ANSI Z-87-1” or better certified. Safety toe footwear are required and will be worn at all times. Non-compliance will result in dismissal for the day with an absence.
3. Service bay doors will be either fully raised or lowered. Not left partially open.
4. No tobacco products are allowed in campus buildings, and smoking must not be done within 25 feet of the building, per campus policy. This policy includes vaping.
5. No shorts to be worn in the lab areas. Clothing should be well-fitting and appropriate for work. Clothing with obscene, profane or otherwise inappropriate language or images will not be allowed.
6. No student parking is allowed inside the south fenced-in area.
7. The DST program adheres to the South Plains College zero tolerance policy for controlled substances. Should an instructor suspect a student is under the influence of drugs or alcohol while on campus, they will remove the student from class and/or lab and the appropriate disciplinary measures will be enforced.
8. All electronic devices will not be allowed, this can result in your dismissal for the day with an absence

9. You are required to have your own tools to be able to participate in class.
10. Do not store South Plains College tools, equipment or project parts in your toolbox. If you do put SPC property in your box, we can and will use any means necessary to open your box if you are not present. While your box is present in our facility, it is subject to search at any time at an instructor's discretion. We are not responsible for any damage or losses that may occur due to this policy. You are welcome to register a spare key with your instructor for the semester to avoid such situations.
11. In accordance with Texas Commission on Environment Quality (TCEQ), there are to be no open or unlabeled containers in the lab or classroom areas. Only small quantities may be held in open containers, which must be labelled, and currently in use.
12. All SPC property, including equipment keys and tools, must be put away at class clean up. You are responsible for putting away all your personal tools, sorting equipment neatly and disposing of all trash daily.
13. When lifting/moving materials, equipment, etc with the forklift, gantry or engine lifts must be safely secured and use of a safety chain is required where applicable.
14. Maintain awareness of your surroundings and your peers in the lab.
15. Maintain a clean workspace, clean up spills, debris, etc. immediately, and clean up your workspace and tools daily.
16. Do not drive bearings with hard steel tools.
17. Do not spin bearings or turbochargers with compressed air.
18. Intentional destruction of school property will result in immediate dismissal from the program.
19. You will be around chemicals, electricity and moving equipment, exercise caution and self-awareness in your actions and daily assignments.

SCANS COMPETENCIES

C-1 **TIME**--Selects goal--relevant activities, ranks them, allocates time, and prepares and follows schedules. C-2 **MONEY**--
Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives C-3 **MATERIALS & FACILITIES**-Acquires, stores, allocates, and uses materials or space efficiently. C-4 **HUMAN RESOURCES**--Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

INFORMATION--Acquires and Uses

Information C-5 Acquires and evaluates information.

C-6 Organizes and maintains information.

C-7 Interprets and communicates information. C-8 Uses computers to Process information.

INTERPERSONAL--Works With Others

C-9 Participates as members of a team and contributes to group effort.

C-10 Teaches others new skills.

C-11 Serves clients/customers--works to satisfy customer's expectations.

C-12 Exercises leadership--communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.

C-13 Negotiates-Works toward agreements involving exchanges of resources resolves divergent interests.

C-14 Works with Diversity-Works well with men and women from diverse backgrounds.

SYSTEMS--Understands Complex Interrelationships

C-15 Understands Systems--Knows how social, organizational, and technological systems work and operates effectively with them

C-16 Monitors and Correct Performance-Distinguishes trends, predicts impacts on system operations, diagnoses systems' performance and corrects malfunctions.

C-17 Improves or Designs Systems-Suggests modifications to existing systems and develops new or alternative systems to improve performance.

TECHNOLOGY--Works with a variety of technologies

C-18 Selects Technology--Chooses procedures, tools, or equipment including computers and related technologies. C-19 Applies Technology to Task-Understands overall intent and proper procedures for setup and operation of equipment.

C-20 Maintains and Troubleshoots Equipment-Prevents, identifies, or solves problems with equipment, including computers and other technologies.

FOUNDATION SKILLS

BASIC SKILLS--Reads, writes, performs arithmetic and mathematical operations, listens and speaks F-1 Reading-locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules. F-2 Writing-Communicates thoughts, ideas, information and messages in writing, and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.

F-3 Arithmetic--Performs basic computations; uses basic numerical concepts such as whole numbers, etc. F-4 Mathematics--Approaches practical problems by choosing

appropriately from a variety of mathematical techniques. F-5 Listening--Receives, attends to, interprets, and responds to verbal messages and other cues.
F-6 Speaking--Organizes ideas and communicates orally.
THINKING SKILLS--Thinks creatively, makes decisions, solves problems, visualizes, and knows how to learn and reason F-7 Creative Thinking--Generates new ideas.

F-8 Decision-Making--Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.

F-9 Problem Solving--Recognizes problems and devises and implements plan of action.

F-10 Seeing Things in the Mind's Eye--Organizes and processes symbols, pictures, graphs, objects, and other information.

F-11 Knowing How to Learn--Uses efficient learning techniques to acquire and apply new knowledge and skills. F-12 Reasoning--Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

PERSONAL QUALITIES--Displays responsibility, self-esteem, sociability, self-management, integrity and honesty F-13 Responsibility--Exerts a high level of effort and preservers towards goal attainment.

F-14 Self-Esteem--Believes in own self-worth and maintains a positive view of self.

F-15 Sociability--Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings. F-16 SelfManagement--Assesses self accurately, sets personal goals, monitors progress, and exhibits self-control. F-17 Integrity/Honesty-Chooses ethical courses of action.

Student Syllabus Agreement

I, _____(Name), have read and understand the syllabus for 1313 Fuel Systems, the rules outlined there, as well as the attendance, academic integrity and grading polices. I agree to abide by and follow the rules and policies of the syllabus, as well as the South Plains College Student Handbook.

Date: _____

Signature: _____