IMPERIAL VALLEY COLLEGE

Basic Course Information

Semester:	**Spring 2023**	Instructor Name:	**Andres Estrada**
Course Title & #:	**AUT 240 Diesel Engine Tune-Up**	Email:	**Andres.estrada@imperial.edu**
CRN #:	**20638**	Webpage (optional):	
Classroom:	**1102**	Office #:	**1102**
Class Dates:	**Tuesday / Thursday**	Office Hours:	**M/W 1pm-2pm T/Th 9am-10am**
Class Days:	**February 13th – June 9th**	Office Phone #:	
Class Times:	**1:00pm – 3:30pm**	Emergency Contact:	**Tisha Nelson – Staff Support Technician (760) 355-3631**
Units:	**3.0**	Class Format:	**Face to Face**

Course Description

This course covers the principles of tune-up and the procedures for servicing the diesel engine. Practical emphasis is placed on proper disassembling, diagnosis, calibrating, and testing different types of pumps and injectors. Proper servicing procedures will be followed in servicing, testing, and analyzing the fuel system and electrical circuits. (CSU)

Course Prerequisite(s) and/or Corequisite(s)

None

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. Describe the typical difference between a minor tune-up and major tune-up for diesel engines.
2. Identify all the steps or procedures to perform a diesel engine tune-up.
3. Remove and reinstall different types of diesel pumps and injectors.
4. Test, service and analyze the fuel system and electrical circuits.

Course Objectives

Upon satisfactory completion of the course, students will be able to:

5. demonstrate a knowledge of the principles and history of the diesel engine.
6. define the fuel flow through all systems presented.
7. List the proper steps for taking a pump and injector apart with proper care.
8. identify the design and construction of the injector and name the components.
9. properly time and calibrate pumps and injectors.
10. properly mount, time the pump, and bleed the system.
11. diagnose compression problems.
12. analyze smoke problems.
13. demonstrate the proper operating parameters of the fuel system and diagnose problems with the system.
14. demonstrate knowledge of the engine electrical circuits.

Textbooks & Other Resources or Links

Textbook Used: Diesel Engine Technology 9th Edition (ISBN 978-1-64564-685-3)
Access to computer, Internet, and word type applications.
Pen and pencils
Standard writing paper and notebook.
Lab days will require: Safety glasses, work footwear (no open toe shoes, slip resistant), proper shirts and pants.

Course Requirements and Instructional Methods

This course will consist of a variety of instructional methods and assignments including, but not limited to, lectures, class discussions, group activities, a research paper, interviews, and hands-on shop experiences.

Course Grading Based on Course Objectives

Grading System:
A – 405-450 of points = Excellent
B – 360-404 of points = Good
C – 315-359 of points = Acceptable
D – 270-314 of points = Below Average
F – 269 points and below = Failing

Activities	**Points**
Homework, Class Activities, Lab	290
Mid-Term Exam	80
Final Exam	80
Total Points	450

***There are no make-up exams unless arrangements with the instructor are made prior to exam.

Course Policies

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink: Food and drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the General Catalog.

- Children in the classroom: Due to college rules and state laws, only students enrolled in the class may attend; children are not allowed.

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the importance of acknowledging and safeguarding intellectual property. There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to cite a source correctly, you must ask for help.

Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question. Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following:

- plagiarism
- copying or attempting to copy from others during an examination or on an assignment
- communicating test information with another person during an examination
- allowing others to do an assignment or portion of an assignment
- using a commercial term paper service.

Attendance: A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.

Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped.

Other Course Information

Shop/Lab Area Safety

- Safety test must be passed to work in the shop and complete required lab exercise.
- Safety glasses are required to be worn at all times while in the shop area, safety glasses are the student's responsibility (students not wearing safety glasses will be asked to leave lab for that day, no exceptions).
- Clean up your area and any other loose debris, trash, or spills.
- Wear all required safety protection and comply with posted signs.
- No shorts or open toe footwear, always be prepared for lab exercises.

- Comply with tool check out policy and clean tools before returning.
- Damaged or missing tools must be reported immediately. Tools are the students' responsibility.
- Do not perform any work on any vehicle outside the assigned task without permission from your instructor.
- Long hair must be kept in a ponytail or tucked away for safety.
- Jewelry such as rings and necklaces must be put away or tucked in for safety.
- Lab work will cease 20 minutes prior to the end of class to allow time for cleaning areas and returning tools.

Projects

- All projects must be approved by the instructor and require a written work order.
- All projects must be removed from campus prior to finals.
- Projects are taken with students at the end of class unless approved by the instructor.

In addition to the standard course curriculum, portions of this course will prepare you for ASE certifications.

IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visit http://www.imperial.edu/studentresources or click the heart icon in Canvas.

Anticipated Class Schedule/Calendar

Date or Week	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
Week 1	Syllabus & Introduction Chapter 2 Shop Safety Safety Test	Pages 27-34
Week 2	Chapter 3 Tools, Precision Tools, & Fasteners Tool Use Lab	Pages 37-59
Week 3	Chapter 4 Principles of Engine Operation Lab	Chapter 3 homework due Pages 61-85
Week 4	Chapter 22 Basics of Electricity Basic Electrical Lab	Chapter 4 homework due Pages 435-460
Week 5	Chapter 23 Electronic Engine Controls & Fuel Injection Scan Tool Lab	Chapter 22 homework due Pages 463-492
Week 6	Chapter 24 Diesel Engine Charging Systems Charging Systems Lab	Chapter 23 homework due Pages 495-509
Week 7	Chapter 25 Diesel Starting Systems Starting Systems Lab	Chapter 24 homework due Pages 513-527

Week 8	Mid-Term Exam	Chapter 25 homework due
NO SCHOOL	SPRING BREAK	ENJOY
Week 9	Chapter 27 Preventative Maintenance & Troubleshooting Troubleshooting Lab	Pages 545-563
Week 10	Chapter 14 Diesel Fuels Chapter 16 Fuel Filters & Conditioners	Chapter 27 homework due Pages 307-317/337-346
Week 11	Chapter 12 Air Intake Systems Intake System Lab	Chapter 14/16 homework due Pages263-278
Week 12	Chapter 13 Exhaust System Exhaust System Lab	Chapter 12 homework due Pages 281-303
Week 13	Chapter 17 Injection System Fundamentals Injection System Lab	Chapter 13 homework due Pages 349-366
Week 14	Chapter 19 Multiple Plunger Inline Injection Pumps Chapter 20 Distributor Injection Pumps	Chapter 17 homework due Pages 387-423
Week 15	Chapter 29 Workplace Employability Skills	Chapter 19/20 homework due
Week 16	Final Exam	Chapter 29 homework due

*****Subject to change without prior notice*****