



Basic Course Information

Semester:	Fall 2022	Instructor Name:	Andres Estrada
Course Title & #:	Diesel Engine Maintenance & Repair AUT 140	Email:	andres.estrada@imperial.edu
CRN #:	10919	Webpage (optional):	
Classroom:	1102	Office #:	
Class Dates:	August 15 - December 10	Office Hours:	M-Th: 11:30am - 12:30pm
Class Days:	Monday & Wednesday	Office Phone #:	
Class Times:	8:00am – 11:10am	Emergency Contact:	Tisha Nelson: 760-355-6361
Units:	4.0	Class Format:	Face to Face

Course Description

This course provides the theory and skills for repairing diesel engines and related accessories. The proper procedures for disassembling, measuring, and rebuilding are covered. The complete engine is reviewed with emphasis on the status of engine components and to return it to service after proper reassembly, adjustments, and testing. (Nontransferable, AA/AS degree only)

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. Define the terms that describe basic diesel engine operation.
2. Identify the differences between a natural aspirated engine and a manifold boosted engine.
3. Explain how energy of the fuels is converted to kinetic energy.
4. Explain engine torque, horsepower, and rating for diesel engines.
5. Explain volumetric efficiency, thermal efficiency, and total engine power.

Course Objectives

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

1. A. Identify safety procedures and shop equipment operation.
2. B. Apply the proper procedures to use the correct tools.
3. C. Troubleshoot major diesel engine component failures and related units.
4. D. Inspect and repair engine blocks.
5. E. Identify, inspect, and repair engine crankshafts.
6. F. Inspect and repair pistons, rings and connecting rods.
7. G. Inspect and repair cylinder heads and components.
8. H. Inspect and repair camshaft and related components.
9. I. Inspect and repair lubrication systems.
10. J. Inspect, service and repair cooling systems.
11. K. Test and troubleshoot engine performance.

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 – 807-897 of points = Excellent

B – 717-806 of points = Good

C – 627-716 of points = Acceptable

D – 538-626 of points = Below Average

F – 537 and Below = Failing

Activities	Points
Homework, Class Activities, Lab	697
Mid-Term Exam	100
Final Exam	100
Total Points	897

***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 important 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. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.



IMPERIAL VALLEY COLLEGE

Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as excused absences.

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 end of class to allow time for cleaning areas and returning tools.

Projects

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

In addition to 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

[Provide a tentative overview of the readings, assignments, tests, and/or other activities for the duration of the course. A table format as in the example below may be used for this purpose.]



Date or Week	Activity, Assignment, and/or Topic	Pages/ Due Dates/Tests
Week 1	Syllabus & Introduction Shop Safety Test	
Week 2	Chapter 1: Intro to Diesel Engines Chapter 2: Shop Safety	Pages 15-35 Class Activities
Week 3	Chapter 4: Principles of Engine Operation	Chapter 1&2 homework due Pages 61-85 Class Activities
Week 4	Chapter 8: Cylinder Head & Related Components	Chapter 4 homework due Class Activities Pages 153-177
Week 5	Chapter 6: Crankshafts Chapter 9: Camshaft & Valve Train Components	Chapter 8 homework due Class Activities Pages 109-111,117-129 179-199
Week 6	Chapter 5: Engine Blocks	Chapter 6&9 homework due Class Activities Pages 87-107
Week 7	Chapter 7: Pistons, Rings & Connecting Rods	Chapter 5 homework due Class Activities Pages 131-151
Week 8	Mid-Term Exam	Chapter 7 homework due
Week 9	Chapter 26: Engine Reassembly & Installation	Class Activities Pages 531-543
Week 10	Chapter 14: Diesel Fuels Chapter 15: Basic Fuel Systems	Chapter 12&13 homework due Class Activities Pages 307-335
Week 11	Chapter 10: Lubrication Systems Chapter 11: Cooling Systems	Chapter 14/15 homework due Class Activities Pages 201-261
Week 12	Chapter 17: Injection System Fundamentals Chapter 18: Injection Nozzles	Chapter 10/11 homework due Class Activities Pages 349-385
Week 13	Chapter 19: Multiple Plunger Inline Injection Pumps Chapter 20: Distributor Injection Pumps	Chapter 17&18 homework due Class Activities Pages 387-423
Week 14	Chapter 23: Electronic Eng. Controls & Fuel Injection.	Chapter 19&20 homework due Class Activities Pages 463-492
Week 15	Chapter 12: Air Intake Systems Chapter 13: Exhaust Systems	Chapter 23 homework due Class Activities Pages 263-304
Week 16	Final Exam	Chapter 12&13 homework due

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



IMPERIAL VALLEY COLLEGE
