



Basic Course Information

Semester:	FALL 2025	Instructor Name:	Ricardo Pradis
Course Title & #:	EMISSIONS CONTROL & COMPUTER SYSTEMS AUT-230	Email:	ricardo.pradis@imperial.edu
CRN #:	10917	Webpage (optional):	
Classroom:	BLDG 1100	Office #:	1100 bldg.
Class Dates:	Aug 11 – Dec 6	Office Hours:	M-W 5:30-6:00 pm
Class Days:	Monday's & Wednesday's	Office Phone #:	760-355-6403
Class Times:	6:00-7:05 7:15-8:40 pm	Emergency Contact:	760-355-6361 (Secretary)
Units:	3.0	Class Format:	Face to Face

Course Description

This is an advanced engine computer and drivability course. It emphasizes diagnostic procedures and techniques using all types of equipment and procedures. This class brings together all knowledge from AUT 160, and AUT170, and allows the students to diagnose all systems of the automobile. Upon successful completion of this course students are prepared to take the Automotive Service Excellence (ASE) certification examination in electronics, engine performance, and advance engine performance.

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

None

Student Learning Outcomes

1. Diagnose the causes of emissions or drivability concerns with store or active diagnostic trouble codes; obtain graph and interpret scan tool data.
2. Access and use service information to perform step-by-step diagnosis.
3. Inspect and test ignition primary and secondary circuit wiring and solid-state components; perform necessary action.

Course Objectives

1. Learn the proper safety practices of tools and equipment; learn hazardous waste policies and procedures and learn about the air bag systems.
2. Learn about equipment used to obtain proper repair procedures using a service bulletins, computer system manuals, as well as the proper tools for each diagnosis.



3. Learn about the meters used for testing electrical circuits; learn the proper procedure for testing batteries, starters, alternators, voltage drops, and electrical drains.
4. Learn and diagnose problems with engines such as oil leaks, engine noises, overheating, compression, and vacuum problems; will also learn the proper diagnostic procedure along with the use of the proper equipment and tools.
5. Learn how to diagnose the 'no-start condition' caused by ignition systems; test and replace different components of an ignition system in the primary and secondary circuits with the aid of diagnostic equipment.
6. Learn to diagnose fuel problems that cause the 'no start condition' and drivability; will also learn the procedure for testing components for fuel systems.
7. Learn the proper methods of testing for problems in intake and exhaust systems; will learn to use a vacuum gauge, back pressure gauge, four gas analyzer, and be able to take temperature readings for the system.
8. Learn how to use four and five gas analyzers to perform emission control diagnosis; will learn how to diagnose different component in an emission system along with the use of different types of diagnostic equipment.
9. Learn how to pull up engine codes and perform scan tool operation using an engine computer, will also learn how to test engine control sensors.
10. Learn to perform a fuel pressure test, clean and replace injectors, diagnose idle problems, and learn how to perform a leakage test on a fuel injection system.
11. Learn to perform the necessary test to repair electronic carburetor controls.
12. Learn how to diagnose the 'no-start condition' on distributor type ignition systems; learn to replace a distributor, set and check timing, and describe how the timing affects the vehicle operation.
13. Learn how to diagnose the 'no-start condition' on electronic-equipped engines; learn how to replace and adjust cam and crank sensors.
14. Learn how an OBD II System works; learn how to diagnose the system using a scan tool, and learn the associated terminology of an OBD II System

Textbooks & Other Resources or Links

Textbook: G-W Modern Automotive Technology 10th Edition ISBN: 978-1-64564-688-4

Course Requirements and Instructional Methods

Method of Instruction:

Methods of instructions may include, but are not limited to, the following: lectures, textbook worksheets, hands-on worksheets, internet readings, large and small group discussions, audiovisual aids, and demonstrations.

ASSIGNMENTS:

Reading and Writing:

Write a report comparing the emissions produced by a late model automobile engine to the higher emissions produced by two-stroke engines used in weed eaters, snow throwers, watercraft, etc. Discuss what can be done to reduce the emissions produced by these engines.



Out-of-class:

Monitor the pollution levels for your area (or a major metropolitan area) for one week and write a report. Note the relationship of pollution to the day's temperature and weather.

Course Grading Based on Course Objectives

Grading Criteria:

1. Grading system:

- A=90%-100% of points= Excellent
- B=80%-89% of points= Good
- C*=70%-79% of points= Satisfactory
- D= 60%-69% of points= Pass, less than satisfactory
- F= Less than 60% of points= Failing

2. Very important:

- **Mid-Term** will be given on Oct 8.
- **Final-Exam** will be given on Dec 3.
- There are no make-up exams unless you have a very good reason and make arrangements with the instructor before the exam.
- Final grades can be raised or lowered based on your preparation and participation in class. It benefits you to be engaged and participative.

Grades:

	Points
Book worksheets, quizzes.	140
Lab activity, hands-on worksheets.	240
Mid-term	60
Final-exam	60
Total points	500

Course Grade:

The course grade is based on total points accumulated during the semester. There is a total of 500 points available. Grades are determined by dividing the total points you earn by the total points available to get your percentage. (Total points may vary if I change the assignments in a particular week).

The most common problem students experience is not being detailed enough in their answers and not spending the right amount of time in the repair procedures. Always be as specific as you can and use examples from your readings. Make sure to answer all parts of the questions. Points will be deducted for inadequate responses. Feedback will be given after each assignment and, hopefully, you will improve as you proceed with the course. The following grading rubric is used when grading assignments.

	Grading Rubric for Hands-on Assignment	Points
A	Focused and clearly organized. Contains critical thinking and content analysis. Convincing evidence is provided to support conclusions. Ideas are clearly communicated. Clearly meets or exceeds assignments requirements.	18-20
B	Generally focused and contain some development of ideas, may be simplistic or repetitive. Evidence is provided which supports conclusions. Meet assignments requirements.	16-17
C	May be somewhat unfocused, underdeveloped, or rumbling. But does have some coherence. Some evidence is provided which support conclusions. Meets minimum assignment requirements.	14-15
D	Unfocused, underdeveloped. Minimal evidence is used to support conclusion. Does not respond appropriately to the assignment.	12-13
F	Minimal effort by the student. Unfocused, underdeveloped. Evidence is not used to support conclusion. Block overall understanding. Does not meet assignment requirements.	0-11

Academic Honesty (Artificial Intelligence -AI)

IVC values critical thinking and communication skills and considers academic integrity essential to learning. Using AI tools as a replacement for your own thinking, writing, or quantitative reasoning goes against both our mission and academic honesty policy and will be considered academic dishonesty, or plagiarism unless you have been instructed to do so by your instructor. In case of any uncertainty regarding the ethical use of AI tools, students are encouraged to reach out to their instructors for clarification.

Accessibility Statement

Imperial Valley College is committed to providing an accessible learning experience for all students, regardless of course modality. Every effort has been made to ensure that this course complies with all state and federal accessibility regulations, including Section 508 of the Rehabilitation Act, the Americans with Disabilities Act (ADA), and Title 5 of the California Code of Regulations. However, if you encounter any content that is not accessible, please contact your



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instructor or the area dean for assistance. If you have specific accommodations through **DSPS**, contact them for additional assistance.

We are here to support you and ensure that you have equal access to all course materials.

Course Policies

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

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.

- 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.

Automotive Technology Classroom & Shop Policy

Shop/ Lab Area

- 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 responsibility (students not wearing safety glasses will be ask to leave the class for that day no exceptions).
- Clean up your area and any other lose debris or trash.
- Wear all required safety protection and comply with posted signs.
- No shorts or open toe foot wear, always be prepared to go into the lab area.
- Comply with tool check out policy and return tools clean.
- Do not perform any work on any vehicle outside the assigned task without permission from your instructor.

Parking:

No student parking by the building, the only exception is on lab time if your vehicle is a project (instructor approved). Speed limit must be kept at or under 5MPH, no loud music. A parking permit is required at all times.

Projects:



All projects are to be taken with the student's unless otherwise approve by the instructor.

All approve projects must be removed from campus prior to finals.

All projects must have a written work order (R/O).

Shop Maintenance:

All work will cease 20 minutes prior to end of class.

All work areas must be cleaned.

Tools must be cleaned and returned to the tool room.

Any broken or missing tools must be reported immediately. Tools are student's responsibility.

Other Course Information

Work-based Learning

Career possibilities in the automotive industry:

Work-based learning (WBL) allows student to apply classroom content in professional settings while gaining real-work experiences. These opportunities will provide you with a deeper, more engaging and relevant learning environment. Some examples of WBL assignments are job shadowing, informational interviews, and guest speakers. In this course, you will be working on workplace simulations and will be using Ford Service Training online program. It is intended to provide students with simple knowledge (basic) to complex skills (advance) training

Contact:

Office Phone: (760) 355-5721

Email: careerservicescenter@imperial.edu

Hours of Operation:

Monday - Friday; 8:00 a.m. to 5:00 p.m.

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 Aug- 11-15	Syllabus & Introduction (Ford Service Training) Chapter 5 Auto Shop Safety, safety test.	Pages 55-66
Week 2 Aug- 11-22	Chapter 7 Service information and work orders Lab: Retrieve service information. (pro-on-demand)	Pages 78-86
Week 3 Aug-25-29	Chapter 17 Electrical principles Lab: Define voltage, current, and resistance.	Pages 193-202
Week 4 Sep-2-5	Chapter 21 Wiring diagrams Lab: Retrieve and read wiring diagrams. (pro-on-demand)	Pages 237-261
Week 5 Sep- 8-12	Chapter 23 Computer system fundamentals Lab: Retrieve and understand data stream and trouble codes.	Pages 279-294
Week 6 Sep 15-19	Chapter 24 On-board diagnostics & scan tools Lab: Retrieve input information and read data stream.	Pages 294-307
Week 7 Sep- 22-24	Chapter 25 Computer system service Lab: Retrieve output information and wiring diagrams	Pages 308-322
Week 8 Sep- 29-Oct 3	Chapter 39 Automotive fuels, combustion efficiency Lab: Inspect fuel system	Pages 517-528
Week 9 Oct- 6-10	MID-TERM	EXAM
Week 10 Oct 13-17	Chapter 42 Gasoline injection diagnosis and repair Lab: Fuel System Test, Fuel Injector Problems	Pages 567-589
Week 11 Oct-20-24	Chapter 34 Ignition system technology Lab: Identify and inspect ignition systems.	Pages 433-445
Week 12 Oct-27-31	Chapter 35 Ignition system diagnosis and repair Lab: Scanning Ignition System Problems, Spark Plugs, Ignition Timing, Coil Pack, Ignition Switch, Control Module, and Ignition System Sensors Service.	Pages 446-459
Week 13 Nov-3-7	Chapter 51 Emission control systems Lab: Inspect emission components, state emissions testing programs	Pages 707-724
Week 14 Nov- 11-14	Chapter 52 Emission control system testing, service and repair Lab: Computer Control Emission system Service, Reset Emission Maintenance Reminders, Use Exhaust Gas Analyzer	Pages 725-742
Week 15 Nov 17-21	Chapter 53 Engine performance and drivability Lab: Diagnose typical causes of engine mechanical, fuel, and electrical problems	Pages 743-755
Week 16 Dec-1-5	Final-Exam	EXAM

Subject to change without prior notice



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