IMPERIAL VALLEY COLLEGE

Basic Course Information

Semester:	**Spring 2025**	Instructor Name:	**Ricardo Pradis**
Course Title & #:	**Automotive Electronics II AUT-150**	Email:	**Ricardo.pradis@imperial.edu**
CRN #:	**20916**	Webpage (optional):	
Classroom:	**1103**	Office #:	**1100 Building**
Class Dates:	**Feb. 10 – June 6**	Office Hours:	**7:30 – 8:00 am M-W**
Class Days:	**Monday and Wednesday**	Office Phone #:	**760-355-6403**
Class Times:	**8:00 – 9:25 am 9:35 – 11:00 am**	Emergency Contact:	**760-355-6361 (secretary)**
Units:	**4.00**	Class Format/Modality:	**Face-to-Face**

Course Description

Advanced troubleshooting course for Automotive Service technicians. This course is designed for technicians, or students, certified or not, who want to service the automotive electronic circuitry. The course provides a solid core of electronics based on microprocessor technology. Students will diagnosis the various systems that include engine computer control, transmission computer control, suspension, anti-lock brake systems, and various automotive instrumentations. Upon completing this course, the students will be prepared to take Automotive Service Excellence (ASE) examination in Electronics.

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

None

Student Learning Outcomes

1. Describe the action of basic electric circuits.
2. Compare voltage, current, and resistance.
3. Explain different kinds of automotive wiring.
4. Perform fundamental electrical tests.

Course Objectives

1. Identify the basic of electric current; voltage, current, resistance, conductors, insulators, and Ohm's Law.
2. Identify the use of the semiconductor devices (rectifiers, transistors, amplifiers) and the testing of digital circuits.
3. Identify analog and digital engine control systems; such as, scope patterns, pulse width, duty cycle and frequencies of various electronic components.
4. Identify instrumentation circuits; such as warning devices; accessory displays, automatic switches, and microcomputer circuits.

5. Identify the type of computers and the components that cover computer operations. (Sensor, central processing, input-output signals, and types of computer memories and actuators.)
6. Perform general diagnostic procedures to verify electronic problems; such as, open circuit, short circuit, and continuity. The student will perform many inspections, and testing the following circuits; engine computer, sensors, actuators, electronic transmission, anti-lock brakes, and instrumentation systems.
7. Be familiar with ASE examination requirements, and prepare to successfully pass exam.

Textbooks & Other Resources or Links

1. Textbook: Modern Automotive Technology ISBN: 978-1-64564-688-4
2. Personal Protective Equipment:
• Safety glasses
• Work footwear.
• Proper shirt and pants.

Course Requirements and Instructional Methods

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.

Out-of-class**:** Convert your Zip code or your telephone number into binary number form. Make a chart that shows how the decimal numbers were converted to binary.

Reading and Writing: Describe and sketch the procedures you would use to test a temperature sensor, throttle positioner sensor, and speed sensor for proper operation.

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 (60 points) will be given on April 2.
•Final-Exam (60 points) will be given on June 4.
•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).

Grading of Hands-on Assignments:
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

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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 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

- 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 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, no one who is not enrolled in the class may attend, including children.

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's 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 footwear, 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.
- Long hair must be kept in a ponytail or tucked away for safety.

Faculty and Staff:
All students are required to take directions from any faculty, any issues with direction should be brought up to your instructor, however all staff have the right to direct any student at any time. Please respect the staff's decisions.

Safety Requirements:
For every task performed in this course the following safety requirements must be strictly enforced: Comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

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.
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 projects approved 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 the 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 students' responsibility.

Other Course Information

Career possibilities in automotive industry;

Work-based learning (WBL) allows students to apply classroom content in professional settings while gaining real-world experiences. These opportunities will provide you with a deeper, more engaging and relevant learning environment. This semester, you will be working on workplace simulations through the entire course. Some examples of WBL assignments are job shadowing, informational interviews, and guest speakers.

Contact:
Office Phone: (760) 355-5721
Email: careerservicescenter@imperial.edu

Hours of Operation:
Monday - Friday; 8:00 a.m. to 5:00 pm

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Financial Aid

Your Grades Matter! In order to continue to receive financial aid, you must meet the Satisfactory Academic Progress (SAP) requirement. Makings SAP means that you are maintaining a 2.0 GPA, you have successfully completed 67% of your coursework, and you will graduate on time. If you do not maintain SAP, you may lose your financial aid. If you have questions, please contact financial aid at finaid@imperial.edu.

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 Feb 10-13	Syllabus & Introduction Ford Online Training Chapter 5 Shop Safety	 Pages 55-66
Week 2 Feb 18-20	Chapter 17 Electrical Principals Lab: Use of Multimeter	 Pages 193-202
Week 3 Feb 24-28	Chapter 18 Circuit Types and Ohms Law Lab: Use Multimeter to Calculate Ohms Law	 Pages 203-210
Week 4 March 3-7	Chapter 19 Electric & Electronic Components Lab: Inspect and Test Relays, Fuses and Components.	
Week 5 March 10-14	Chapter 21 Wiring Diagrams Lab: Use Wiring Diagrams, Wiring Repair.	Pages 237-261
Week 6-7 March 17-21 24-28	Chapter 23 Computer System Fundamentals Lab: Input, Processing, and Outputs Chapter 24 OBD Diagnostics and Scan Tools Lab: Use Scan Tools Sensor Operation Lab: Electronic Snap Circuits	Pages 279-294 Pages 294-307
Week 8 March 31-April 4	Mid-Term	**Exam**
Week 9 April 7-11 Week 10 April 14-18	Chapter 25 Computer System Service Lab: Inspect and Diagnose Sensors & Outputs, Sensor Operation, Electronic Snap Circuits.	Pages 308-322
Week 11 April 28- May 2	Chapter 22 Basic Electrical Test Lab: Inspect and Diagnose circuit problems	Pages 262-274
Week 12 May 5-9	Chapter 31 12V & HV Starting System Diagnosis and Repair Lab: Test, Inspect, and Diagnose Starting Systems	Pages 400-411
Week 13	Chapter 33 Charging Systems Diagnosis and Repair	Pages 422-432

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May 12-16	Lab. Test, Inspect and Diagnose Charging Systems	
Week 14 May 19-23	Chapter 36: Lights, Instrumentation, Wipers and Horns Operation and Service. Lab: Test body computer control and instrumentation.	Pages 460-484
Week 15 May 27-30	Chapter 37: Sound Systems and Power Accessories. Lab: Diagnose, Test, replace sound systems and accessories	Pages 485-503
Week 16 June 2-6	FINAL-EXAM	TEST

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