IMPERIAL VALLEY COLLEGE

LEARNING FOR SUCCESS

AUTOMOTIVE TECHNOLOGY

AUT-150

AUTOMOTIVE ELECTRONICS II

COURSE SYLLABUS

INSTRUCTOR: RICARDO PRADIS

SPRING 2014

IMPERIAL VALLEY COLLEGE
Industrial Technology Division
Automotive Department

Course title:	**AUT-150 Automotive Electronics II**
	CRN 20807
Instructor:	**Ricardo Pradis**
Telephone:	**(760) 355-6403**
E-mail:	**ricardo.pradis@imperial.edu**
Semester:	**Spring 2014**
Location:	**Room 1100 lecture**
	Room 1102 laboratory
Secretary:	**(760) 355-6361**
Coordinator:	**Mr. Lopez**
	(760) 355-6362

Class Meeting:
Monday 1:00 – 4:10 pm
Tuesday 1:00 – 2:30 pm
Thursday 1:00 – 2:30 pm

All students are to report to class on time defined as class schedule. Any students who arrive 15 minutes after class start time will be marked absent. You are required to report to the instructor if you will be late or must leave early or you will be mark absent for that day.

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 sold 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.

Upon successful completion of this course, the student will be able to:

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.

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.

Grading Criteria:

1. Attendance: First day of class, regular attendance, and withdrawal after exceeding the number of class hours per week.
2. Tardiness: Three times equals one absent.
3. Student Conduct: Upon entry into IVC constitutes the student's acceptance of the standards of student conduct and the regulations publish by the college.
4. Each student is responsible for making up schoolwork missed because of absences.
5. 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

6. Very important:
    - **Mid-Term** (60 points) will be given on March 13. It will be a multiple choice test **Bring your Scantron, and pencil.**
    - **Final-Exam** (60 points) will be given on May 14. It will be a multiple choice test **Bring your Scantron and pencil.**
    - 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 engage 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
	Generally focused and contain some development of ideas,	

B	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

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.

Academic Honesty

- Plagiarism is to take and present 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 correctly 'cite a source', 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, or assisting others in using materials, which are prohibited or inappropriate in the context of the academic assignment in question. Anyone caught cheating 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 School 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
    use of a commercial term paper

Automotive Technology
Classroom & Shop Policy

Classroom:

No Eating during lectures (coffee or drinks allowed). Respect your fellow student's space and property. Be on time so as to not disturb others during lectures. If you miss a class you are responsible to make up all work. Bring required material to every class session. Computers are to be used only for school related projects or assignments. No cell phones will be used during class, this include "**Texting**" all phones must be set to silent/vibrate and if you must take a call please leave the classroom quietly. No stereo's or music allowed in the classroom or lab area. If you are having trouble with the course and/or personal problems, communicate with the instructor as soon as possible so as to get the help needed. Students have the right to experience a positive learning environment; 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. Swearing, negative remarks and discriminatory statements will not be tolerated. If someone says anything to you that makes you feel uncomfortable or that you feel is inappropriate contact your instructor immediately. Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

Special Needs:

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6312 if you feel you need to be evaluated for educational accommodations. I have made every effort to ensure that this course is accessible to all students, including students with disabilities. If you encounter any problem during this course, please contact me immediately.

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.
- Long hair must be kept in a ponytail or tucked away for safety**.**

Faculty and Staff

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

Safety Requirements:
For every task perform in Automotive Electronics course the following safety requirements must be strictly enforce:
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.

Equipment and Supplies:

1. Textbook & Workbook: Modern Automotive Technology 7th Edition James E. Duffy
2. Pen and pencils.
3. Standard writing paper.
4. Personal Protective Equipment:
    - Safety glasses,
    - Work footwear,
    - Proper shirt and pants

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.
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.

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.

Course Instructional Schedule and Learning Activities:

Week 1: Class Introduction.
Class Orientation
Safety Orientation
Class Activities
Using Textbook, Homework
Exams and Lab Activities

Week 2-3: Chapter 1 & 8: The Automobile & Fundamentals of electricity
Review Questions pgs. 20,109, 110.
Workbook chapter 8
Quiz chapters 1 & 8
Lab. Activity: Identify and interpret electrical/electronic system concern
Research applicable vehicle and service information, such as electrical/electronic system operation
Locate and interpret vehicle and major components identification numbers

Week 4: Chapter 28-29: Batteries and Battery Service
Review Questions pgs. 496-497
Workbook chapter 29
Lab. Activity: Perform battery state-of-charge, perform battery capacity test, maintain or restore electronic memory functions, perform battery charge. Demonstrate the proper use of a digital multimeter (DMM)

Week 5: Chapter 30-31: Starting System Fundamentals and Service
Review questions pgs. 510 – 511
Workbook chapter 31
Lab. Activity: Perform starter current draw test, perform starter circuit voltage drop test, inspect and test starter relays and solenoids, remove and install starter, inspect and test switches, connectors, and wires of a starter control circuit.

Week 6: Chapter 32-33: Charging System Fundamentals and Service
Review Questions pg. 546
Workbook chapter 33
Lab. Activity: Perform charging system output test, diagnose charging system, inspect, adjust, or replace alternator drive belts, pulleys, and tensioners.

Week 7-8-9-10: Chapter 17- 19 Computer Systems
Review Questions pgs. 259 - 260
Workbook chapter 19
MID-TERM
Lab. Activity: Retrieve and record stored OBD 1 and OBD 11 diagnostic trouble codes; clear codes. Obtain and interpret scan tool use & data. Use wiring diagrams during

diagnose of electrical circuits, engine computer control, transmission computer control, suspension, anti-lock brake systems.

Week 11-12-: Chapter 34- 35 Ignition Systems
Review questions pgs. 592 – 593
Workbook chapter 35
Lab. Activity: Inspect and test ignition primary circuit wiring and components; perform necessary action
Inspect and test ignition secondary circuit wiring and components; perform necessary action

Week 13-14-15: Chapter 36-37: Accessories Diagnosis and Repair
Review Questions pgs. 663-664
Workbook chapter 37
Preparation for final exam
Lab. Activity: Remove and reinstall door panel, diagnose body electronic systems circuits using a scan-tool, diagnose basic sound system, power window, power lock system, aim headlights, lights, wiper, and horn systems.

Week 16: FINAL EXAM

Instructor Office Hours:

Monday:	**12:00 – 1:00 pm**
Tuesday:	**5:30 – 6:30 pm**
Wednesday:	**5:30 – 6:30 pm**
Friday:	**2:30 – 3:30 pm**
By Appointment:	**Contact me at 355-6403 or ricardo.pradis@imperial.edu**

In Case of Emergency:

If you have a life-threatening illness or injury that requires an ambulance, call 911immediately Emergency costs are not covered by Student Health Services.

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see http://www.imperial.edu/students/student-health-center/. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310