Basic Course Information

Semester	Fall 2014	Instructor's Name	Jose Lopez
Course Title & #	AUT 150	Email	Jose.lopez@imperial.edu
CRN #	10808	Webpage (optional)	
Room	1102-1103	Office	Part-Timers: Room 809
Class Dates	Aug 18, 2014- Dec 10, 2014	Office Hours	n/a for part-time faculty
Class Days/ Times	W-8:35a.m-11:50a.m T-R-10:05a.m-11:35	Office Phone #	(760)355-6361
Units	4 Units	Who Students Should Contact If Emergency Or Other Absence	Instructor: (760)355-6362

Course Description

This course is designed for technicians or students, certified or not, who want to service the automotive electronic circuity. The course provides a solid core of electronics based on microprocessor technology. Students will diagnose the various systems that include: engine computer control, transmission computer control, suspension antilock brake system, and automotive instrumentation. Upon completing this course, students will be prepared to take the Automotive Service Excellence ASE examinations.

Student Learning Outcomes

IVC as an institution has adopted five student-learning outcome (SLO'S). They are interconnected with each other. They will be inherent throughout this course.

1. Communication
2. Skills
3. Critical Thinking Skills
4. Information Literacy
5. Global Awareness

Course Objectives

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

A. Comply with all safety shop procedures associated with stands, air tools, hydraulic jacks, and car lifts.
B. Have a thorough understanding of the brake system and its components
C. Describe the power brake systems and anti-lock operation
D. Describe the proper steps and procedures of disc brake and drum brake overhaul

Textbooks & Other Resources or Links

Modern Automotive Technology Books and Workbook

Author: James E. Duffy

Course Requirements and Instructional Methods

Lectures, textbook/workbook, assignments, worksheets, video guide, internet information, live demonstrations, quizzes, mid-term and final tests

. Out of class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

Required Information—discretionary language
This section is where faculty would list their grading practices and grading scale, including point values and totals. Consider adding final grade calculation, rubrics, late assignments, and other grading practices.

Attendance

Required language

- 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.

Classroom Etiquette

Required Information --Discretionary language
This is where an instructor explains his/her policy on these matters. Here is some suggested language:

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor. **Consider:** specifics for your class/program
- 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.
- 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.

Academic Honesty

Required Language

- 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 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: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Additional Help – Discretionary Section and Language

The instructor can add the information pertinent to his or her class here. Some suggested language:

- Blackboard support center: http://bbcrm.edusupportcenter.com/ics/support/default.asp?deptID=8543
- Learning Labs: There are several 'labs' on campus to assist you through the use of computers, tutors, or a combination. Please consult your college map for the Math Lab, Reading & Writing Lab, and Study Skills Center (library). Please speak to the instructor about labs unique to your specific program.
- Library Services: There is more to our library than just books. You have access to tutors in the Study Skills Center, study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Required Language: 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 760-355-6313, if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Required Language: 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.

Student Rights and Responsibilities

Required Language: Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities, please refer to the IVC General Catalog available online at http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762

Information Literacy

Required Language: Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/

Anticipated Class Schedule / Calendar

Required Information –Discretionary Language and Formatting: The instructor will provide a tentative, provisional overview of the readings, assignments, tests, or other activities for the duration of the course. The faculty may find a table format useful for this purpose.

Pages/ Due Dates/Tests

Class Schedule

Weeks	Objectives	Lec/Lab	Homework/Exams
1 2	**Course orientation, Review Main points of course** ASE preparations ASE assimilation with components Providing with hands-on all electrical/electronic rules and laws Equipment, testers, meter and other sources Class bench circuits Vehicle activity Learning styles	**Components:** ASE videos and preparations Types of testers Circuit bags Worksheets Use workbook to review chapter 2 Automotive Careers and ASE Certification pages 15-18	Textbook: do ASE review Questions Chapter 2 page 32
3 Part 1 Activity 1 4	**Review Basic Electrical/Electronics** AC and DC current flow, voltage and resistance measurements Ohm's Law Calculations and formulas for series, parallel and serie-parallel circuits Multimeter interpretations Types of resistors and valves Resistor circuits and measurements Circuit laws and measurements	**Components:** Videos on electrical/electronic measurements Use elect/elect blue boxes for hands on learning Use elect/elect blue boxes for hands on learning Use Ohm's Law worksheet for circuit activities Use your work workbook and review chapter 8 pages 37-40	ASE Booklet Student/Instructor activity with live demonstration
5 Part 2 Activity 2 6	**Vehicle Electrical/ Electronic Troubleshooting** **Short CUT** Voltage drop measurements techniques B+ applied B- Voltage drop of the load side Battery troubleshooting Battery drain parasitic draw Battery cranking voltage test Battery load test (battery temp) Battery cranking electronic current test Battery recharge Electron Current test (positive/ground side)	**Components:** Videos of voltage drop Use a mock up (alt/starter battery) Explain in detail voltage drop, voltage load Show live components Battery load tester interpretations Battery cables Multimeter ranges Ground and regulators	ASE preparation booklets

	Battery voltage bounce back test Test on section	Workbook activity on batteries: Chapter 29 pages 155-158	
7 Part 1 Activity 2 8	**Vehicle Electrical/Electronic Starter and Alternator Troubleshooting Short CUT** Cranking current test Starter draw overview Cranking voltage test Voltage drop of the voltage side Voltage drop of the ground side Voltage drop across Soleniod and Relay circuit Charging circuit Overview of the charging system inside and outside of generator	**Components:** Types of starters, solenoids, relays neutral switch Illustrations for voltage drop Multimeter applications Types of alternators Alternator components Alternator circuits Ammeters and connectors	Workbook Activity: Chapter 31 Starting System Testing and Repair pages 163-170 Chapters 33 Alternators pages 177-182
9 10 Part 2 Activity 2 11 12	Circuit (Review) Charging voltage and current flow Types of charging systems Voltage drop on B+ and B- Measuring battery recharge electron current and voltage Alternator ripple voltage test (AC) Alternator scope patterns **Circuit fault overview** Open high or low resistance circuit Short to ground short voltage Closed circuit faults Short to power short component Testing conductors, connections, and contacts Voltage drop and excessive resistance How circuit connections affect voltage drop Relay number or letters identification Relay problems and solenoids Electronic components and semiconductors	Lab scope Videos related **Component's:** Video or power point Use blue box to simulate circuit faults Relay and solenoids To identify components Electrical motors	ASE preparation use computer software
Part 2	**Computer, Sensors and Actuators** Complete reviews Inputs processing and output	**Components:** Videos and worksheets Live sensors	Textbook homework: Chapter 18&19

13 14	Sensors: coolant, sensor, t.p.s sensor, MAP sensor, O sensor, air temperature sensor, and computer switches Actuators : relays, solenoids, coil switches and motors	Switches, relays and solenoids Workbook Activity: Computer system Chapter 18&19 pages 83-88 & 89-94	ASE questions pg. 380-381 & 296-297
15 16	**Circuit diagrams** Computer and sensors Relay solenoids Charging circuits Starter circuits Light circuit Accessories circuit Door, seat, window, circuit Preparations for ASE $ Final exam		