IMPERIAL VALLEY COLLEGE
Industrial Technology Division
Automotive Department

Course title:	**Engine Diagnosis & Repair AUT-170**
Instructor:	**Ricardo Pradis**
Telephone:	**(760) 355-6403**
E-mail:	**ricardo.pradis@imperial.edu**
Semester:	**Spring 2013**
Location:	**Room 1100 lecture**
	Room 1102 laboratory
Secretary:	**(760) 355-6361**
Coordinator:	**Mr. Lopez**
	(760) 355-6362

Class Meetings:

Wednesday 8:30 am to 10:30 am
Thursday 1:00 pm to 4:10 pm

Course Description:

This course provides advance operation and hands-on experience of electronic injection system and their sub-assemblies. Students will learn operation and repairs of sensors and actuators or injection systems. This class emphasizes diagnostic procedures and techniques using basic and sophisticated test equipment.

Institutional Student Learning Outcomes (ISLO)

Student learning outcomes are written statements that represent faculty and departmental learning goals for students. After successful completion of the program or degree at Imperial Valley College, students are expected to have measurable improvement in the following areas:

- ISLO 1: Communication Skills
- ISLO 2: Critical Thinking Skills
- ISLO 3: Personal Responsibility
- ISLO 4: Information Literacy
- ISLO 5: Global Awareness

AUT-170 Engine Diagnosis and Repair will provide students with learning opportunities to improve in four of the Institutional Learning Outcomes: Communication Skills (SLO1), Critical Thinking (SLO2), Personal Responsibility (SLO3), and Information Literacy (SLO4).

Course Objectives-Upon successful completion of this course the student will be able to:

- Prepare a 4 or 5 gas analyzer; inspect and prepare vehicle for test.
- Understand basic carburetion
- Check electrical circuits
- Name and describe a broad range of engine analyzer
- Recognized the tremendous effect of electronics on automotive advances
- Explain the stages of computer control system operation
- Explain the function of and operation of sensors and actuators
- List the various types of fuel injection systems
- Describe the three sub groups of an EFI system
- Explain how the different types of ignition systems operate

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 6. It will be a multiple choice test **Bring your Scantron, and pencil.**
    - **Final-Exam** (60 points) will be given on May 8. 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
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
C	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.

Student Responsibility:

1. Participate in class turn in all your completed assignments to the instructor.

2. Scantron answer sheets and #2 pencils will be used on test days. You may get this from the bookstore.

3. 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.

4. If you have any form of disability, please inform the instructor so that you can get the assistance you may need. Please contact DSPS office as soon as possible: 355-6312, 2100 Bldg. 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.

5. Please, no food, smoking, or visitors during class.

6. Anyone using a cell phone/pager or other communication device, or carrying a device that makes noise, during class will be ask to leave and will receive only partial points.

7. Students have the right to experience a positive learning environment; students who disrupt that environment can be asked to leave the class. Please refer to catalog for more information. 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.

8. It is the responsibility of the student to officially withdraw from the course through the Office of Admission and Records, if you stop actively participating in the course, it does not mean I will drop you, but I can drop you at my own discretion. You must officially drop the course yourself before the dead line or you will receive a grade on your official transcript.

Shop Rules and Regulations:

Every student must follow safety standards according to the automotive program safety procedures. ***All students must wear safety glasses and appropriate shoes at all times in the shop area.***

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

Course Instructional Schedule and Learning Activities:

WEEK 1:

- Class introduction and safety orientation.
- **For every lab. Activity 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, federal safety and environmental regulations.

WEEK 2:

- Introduction to emissions chapter 43.
- License & certification requirements
- Lab. Activity
- Prepare 4 or 5 gas analyzer; inspect and prepared vehicle for test, and obtain exhaust readings; interpret readings; and determined necessary action

WEEK 3:

- Basic Carburetion chapter 24
- Review Questions pg. 409
- Lab. Activity:
- Diagnose and test vehicles with carburetor-type fuel system; determined necessary action.

WEEK 3 & 4:

- Chapter 8 Fundamentals of Electricity
- Review Questions on page 109-110
- Quiz on chapter 8
- Lab. Activity:
- Check electrical circuits with a test light; determined necessary action.
- Locate shorts, grounds, opens and resistance problems in electrical/electronic circuits.

WEEK 5:

- Digital Multimeter (DMM), Testers, and Analyzers
- Lab. Activity:
- Obtain and interpret digital multimeter (DMM) readings
- Using a test light

WEEK 6 & 7:

- Chapter 17-18 Computer system fundamentals and service
- Review Questions pgs. 259-260
- Quiz on chapter 17-18
- Lab. Activity:
- Retrieve and record stored OBD 1 and OBD 11 diagnostic trouble codes; clear codes. Obtain and interpret scan tool data.
- Use wiring diagrams during diagnosis of electrical circuits.

WEEK 8:

- **MID-TERM**

WEEK 9 & 10:

- Chapter 22-23 Fuel Injection Systems
- Review Questions pgs. 369-370/393-394
- Quiz on chapter 22-23
- Lab. Activity:
- Inspect and test fuel pressure regulation system components of injection-type fuel systems; perform necessary action
- Inspect, test, and clean fuel injectors

WEEK 11 & 12:

- Chapter 43-44 Emission Controls
- Review Questions pg. 829-830/854-855
- Quiz on chapter 43-44
- Lab. Activity:
- Inspect, test, and diagnose emissions and driveability problems resulting from failure of various emission components

WEEK 13 & 14:

- Chapter 35 Ignition System Problems
- Review Questions pg. 625
- 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 15:

- Preparation for Final Exam

WEEK 16:

- **FINAL EXAM**

Instructor Office Hours:

Monday:	**10:30 am - 11:30 am**
Wednesday	**10:30 am – 11:30 am** **5:30 pm – 6:30 pm**
Friday:	**10:30 am – 11:30 am**
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.
The Student Health Fee allows the students to receive health services on campus an at various health centers in the community. For more information refer to the catalog.