Basic Course Information

Semester:	**Fall 2015**	Instructor Name:	**Ricardo Pradis**
Course Title & #:	**Engine Performance Tune-Up AUT-160**	Email:	**Ricardo.pradis@imperial.edu**
CRN #:	**10786**	Webpage (optional):	
Classroom:	**1100**	Office #:	**1100**
Class Dates:	**August 17 – December 11**	Office Hours:	**Monday to Thursday 7:00am-8:00am**
Class Days:	**Monday and Wedneday**	Office Phone #:	**(760) 355-6403**
Class Times:	**M-8:00-11:10am W-8:00-10:05am**	Emergency Contact:	**(760) 355-6361**
Units:	**3.0**		

Course Description

This course provides Operating Theory and hands-on experience in the Operation, Diagnosis and Repair of Automotive Fuel Systems with Carburetors, basic Throttle Body and Port Fuel Injection systems. Students will learn to use the Four-gas Analyzer, Engine Performance tests and Introduction to Computer Theory.

Student Learning Outcomes

1. Identify and interpret engine performance concern; determined necessary action.
2. Retrieve and record diagnostic trouble codes, OBD monitor status, and freeze and frame data; clear codes when applicable.
3. Diagnose emissions or driveability concerns without store diagnostic trouble codes; determined necessary action.

Course Objectives

1. Study and perform proper shop safety practice and learn proper handling of hazardous waste.
2. Study and learn all of the emissions that are produced by the automobile, they will learn which are harmful to the atmosphere. The student will learn which emission are useful in diagnosing the vehicles for proper operation. The student will study 4 and 5 gas analyzers.
3. Learn the different strokes of the engine and compression and vacuum theory. The student will perform vacuum and compressions test and learn how too much proper diagnosis from the readings they obtain. The student will learn how to figure engine size, compression ratio, and different engine designs.
4. Study and learn why automobile need a proper amount of air and fuel. They will also learn what happens if this ratio is not correct.
5. Study how fuel is stored and how it is moved from fuel tank to carburetion or injection system. Student will learn about Evaporative controls systems and how to test these systems and what happens if this ratio is not correct.
6. Study different types of fuel pumps and filtering systems. They will also study how to diagnose these pumps

and filters, and learn the necessary action to correct any problems found.
7. Learn how air filter systems work and how thermostatically controlled air systems work. The student will learn how the diagnose the systems and proper procedure for repairing each systems.
8. Study the theory and operation of intake and exhaust systems including catalytic converters. The student will learn proper diagnostic procedure for both systems and how to interpret the result from the diagnostic equipment.
9. Learn theory and operation of Mechanical and Electronic carburetor. They will learn to overhaul procedures & troubleshooting procedure with 4 and 5 analyzers.
10. Study theory of fuel injection. The student will study sensors and actuators and how to being diagnosing of each. The student will study both mechanical and electronic fuel

Textbooks & Other Resources or Links

Equipment and Supplies:
1. Textbook & Workbook: Modern Automotive Technology 8th 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 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:
Using an automotive tool catalog, develop a list of power tools needed to equip an automotive repair shop. Find prices and add up the cost.

Reading and Writing:
Research safety literature on power equipment used in an automotive repair facility.
a) Develop a bibliography of resources for safe use of power equipment.
b) Develop a list of safety rules for their use.

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 October 7. It will be a multiple choice test Bring your Scantron, and pencil.

•Final-Exam (60 points) will be given on December 9. 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
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

Attendance

- 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**: Describe your policies regarding classroom conduct. The below is suggested language and may be modified for your course.]*

Automotive Technology Classroom & Shop Policy

- 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 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.

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.
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.

Online Netiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the important of acknowledging and safeguarding intellectual property.

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.

- 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 plagiarizing 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 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 Student Services

Imperial Valley College offers various services in support of student success. The following are some of the services available for students. Please speak to your instructor about additional services which may be available.

- **Blackboard Support Site.** The Blackboard Support Site provides a variety of support channels available to students 24 hours per day.
- **Learning Services.** There are several learning labs on campus to assist students through the use of computers and tutors. Please consult your Campus Map for the Math Lab; Reading, Writing & Language Labs; and the Study Skills Center.
- **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)

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. Please contact them if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee.

- **Student Health Center**. A Student Health Nurse is available on campus. In addition, Pioneers Memorial Healthcare District and El Centro Regional Center provide basic health services for

students, such as first aid and care for minor illnesses. Contact the IVC Student Health Center at 760-355-6310 in Room 2109 for more information.

- **Mental Health Counseling Services**. Short-term individual, couples, family, and group therapy are provided to currently enrolled students. Contact the IVC Mental Health Counseling Services at 760-355-6196 in Room 2109 for more information.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC General Catalog.

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC Library Department provides numerous Information Literacy Tutorials to assist students in this endeavor.

Anticipated Class Schedule/Calendar

WEEK 1:
Class orientation. Class introduction. Safety orientation, Class activities, using textbook, Homework, safety test, chapter review questions and workbook.
For every task in the Engine Performance Tune-up class 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 disposals of chemicals/materials in accordance with local, state, and federal safety and environmental regulations.

For every chapter review questions and workbook must be completed

WEEK 2 & 3:

- Chapter 11: Engine Fundamentals
- Lab. Activity:
- Locate & interpret vehicle and major component identification numbers (VIN, vehicle identification levels, and calibration decals).
- Perform engine absolute manifold pressure test (vacuum).
- Perform power balance test.
- Perform cylinder compression test.

WEEK 4 & 5:

- Chapter 40: Fuel Tanks, Pumps, Lines, and Filters
- Lab. Activity:
- Test Mechanical Fuel Pumps
- Test Electrical Fuel pumps
- Change Fuel Filters
- Service Air Cleaners

WEEK 6:
- Chapter 39: Automotive Fuels
- 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 7:
- Chapter 49-50: Engine Lubrication
- Lab. Activity:
- Perform oil, filter change and a 27 point inspection**.**

WEEK 8:
- **MID-TERM**

WEEK 9:
- Chapter 48-49: Cooling System
- Lab. Activity:
- Verify engine operating temperature.
- Perform cooling system test; check coolant condition; inspect and test radiator pressure cap, coolant recovery tank and hoses**.**

WEEK 10:
- Chapter 23: Computer System Fundamentals
- Lab. Activity:
- Retrieve and record stored OBD 1 diagnostic trouble codes, clear codes.
- Retrieve and record stored OBD 11 diagnostic trouble codes, clear codes.

WEEK 11:
- Chapter 55: Engine Tune-Up
- Lab Activity:
- Fill out a repair order
- Maintenance check

WEEK 12 & 13:
- Chapter 31-33: Electrical Systems
- Lab. Activity:
- Inspect and test battery
- Inspect and test charging system.
- Inspect and test starting system.

WEEK 14:
- Chapter 34: Ignition System Fundamentals
- Lab. Activity:
- Inspect and test ignition primary system wiring and components.
- Inspect and test ignition secondary system wiring and components.

WEEK 15:
- Preparation for Final Exam

WEEK 16:
- **FINAL-EXAM**

*****Tentative, subject to change without prior notice*****