

Imperial Valley College

Fall 2013

Automotive Techniques and Applications

AUT 070

3.0 units

18 Lecture 108 Lab

Instructor: Jose Perez

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Class begins: August 24, 2013

Ends: Dec. 7, 2013

Time: Sat. 8:00-9:00 am

Sat. 9:30-3:50 pm

TEXTBOOK

Modern Automotive Technology Book & Workbook

Author: James E. Duffy

Course Description

This course is designed for students that already completed classes in brakes, suspension, wheel alignment, and basic automotive electronics or students who are currently employed in the automotive field. This course consists of review of hands-on using worksheets related to diagnose brake repair, steering/suspension repair and four wheel alignment. In addition, the student will be using the latest diagnostic equipment and service techniques of the automotive field. May be taken for a maximum of 6 units. (Non-transferable non-degree applicable)

Student Learning Outcomes:

IVC as an institution has adopted five student learning outcomes (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

Fall Class Schedule 2013

August	19	Monday	First day of classes
	24	Saturday	First day of Saturday classes
September	2	Monday	Holiday (Labor Day)- Campus Closed
November	11	Monday	Holiday (Veterans Day)- Campus Closed
	28-30	Thurs.-Sat.	Holiday (Thanksgiving)- Campus Closed
December	2-7	Sat. - Fri.	Final Exams
	9-13	Mon.- Fri.	No Classes- Campus Open
	16-31	Mon.- Fri.	Winter Recess- Campus Closed

Assignment and activities consist of:

- Reviews
- Videos
- Laboratory Activities
- Service Manuals
- Hands-on each section

Grading System

There will be a mid-term and a final exam. Each will be worth 25% of your grade. Quizzes will make-up 25% of your grade. The last 25% of your grade will be on projects assigned as part of the lab section of the class.

<u>Percentage</u>	<u>Scores</u>	<u>Letter Grade</u>
25% Completed Assignments	90-100%	A
25% Quizzes	80-90%	B
25% Mid-term	70-79%	C
25% Final Exam	60-69%	D
	50-59%	F

Course Goals and 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 power brake systems and anti-lock operation
- D. Describe the proper steps and procedures of disc brake and drum brake overhaul.

Students with disabilities

Any student with a documented disability who may need educational accommodations should notify his/her instructor or the Disabled Student Program and Services (9DSPS) office as soon as possible. The 9DSPS is located in building 2117, Health Services Building, or may contact them at 760-355-6312. For first aid call the nurse at 760-337-0300.

Student Responsibilities

Each student is required to comply with the schedule established by IVC and the automotive program. Students should attend class each a day class is in session. If for any reason a student is absent she/he is responsible for making up any missed work. It is recommended that students call the office to inform the instructor if she/he is ill or bring a doctor's release note. Four tardies = one absence, four absences and you will be dropped from the class or given an incomplete (IC) for the course. It is also recommended for each student to bring classroom and shop manual along with pencil and paper.

Basic Rules and Shop Safety

1. No music allowed in the auto shop.
2. No smoking in the shop area.
3. No work should be redone without the instructor's permission.
4. No parking inside the shop during lecture time.
5. No tolerance for sexual harassment.
6. No long breaks (10 minutes per class hour).
7. Every student is required to wear safety glasses.
8. No helpers or visitors during lab activities.
9. The student cannot leave early without the instructor's permission.
10. No cell phones during class section.
11. Each student should clean the work area.

Activities

1. Engine Coolant Leak Diagnosis.
2. Engine Tune-Up Specifications.
3. Cylinder Exhaust Paper Test.
4. Troubleshooting with a Vacuum Gauge.
5. Engine Compression Test.
6. Cylinder Leakage Test.
7. Cylinder Balance Test.
8. Checking Ignition timing.
9. Electronic Ignition Diagnosis.
10. Engine Air Intake Inspection.
11. Smoke Test.
12. Fuel Injector Testing and Service.
13. Testing Relays (Activities).
14. Electronic Ignition Diagnosis (Spark Test).
15. Introduction to troubleshooting relay circuits.

Non-Discrimination/Sexual Harassment

All forms of harassment are contrary to basic standards of conduct between individuals and are prohibited by state and federal law, as well as this policy and will not be tolerated. The district is committed to providing an academic and work environment that respects and dignity of individuals and groups. The District shall be free of sexual harassment and all forms of sexual intimidation and exploitation. Emergency numbers 911 for First Aid ext. 6310/337-0300.

IMPERIAL VALLEY COLLEGE
INDUSTRIAL TECHNOLOGY DEPARTMENT

Automotive Technology Program
AUT 070 Automotive Techniques and Applications

The following Worksheets are required in order to successfully pass this course. If you have not yet completed or do not have your worksheets please let your instructor know.

No	Worksheets	Completed	Incomplete	Instructor Initials	Student Initials	Date
1	Wheel and tire Run out					
2	Brake pedal Height					
3	Identify / Interpret					
4	Bench Bleeding the Master cylinder					
5	Brake Hose and Line Inspection					
6	Manual Brake Bleeding					
7	Pressure Brake Bleeding					
8	Vacuum Brake Bleeding					
9	Gravity Brake Bleeding					
10	Drum Brake Problem Diagnosis					
11	Brake Drum Measurement					
12	Machining a Brake Drum					
13	Drum Brake Inspection					
14	Wheel Cylinder Inspection and Replacement					
15	Pre-Adjustment of Brake Shoes					
16	Disc Brake Caliper Assembly					
17	Disc Brake Caliper Overhaul					
18	Brake Rotor					

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INDUSTRIAL TECHNOLOGY DEPARTMENT**

Automotive Techniques and Applications
AUT 070

The following Worksheets are required in order to successfully pass this course. If you have not yet completed or do not have your worksheets please let your instructor know before finals week.

No	Worksheets	Completed	Incomplete	Instructor Initials	Student Initials	Date
1	Wheel and tire Run out					
2	Types of Tires					
3	Tire Rotation					
4	Tire Changing					
5	Off the Vehicle Wheel Dynamic Balance					
6	Wheel Bearings					
7	Front Wheel Bearing Replacement					
8	V-Joint Inspection /Replacement					
9	U-Joint Boot Replacement					
10	Dry Park Test (steering)					
11	CV Joint Boot Replacement					
12	Dry Park Test (steering)					
13	Steering Component ID					
14	Pre-Alignment Inspection					
15	Rack and Pinion R&R					
16	Tie-Rod end replacement					
17	Idle Arm Replacement					
18	Accessory Drive Belt Inspection					

Automotive Techniques and Applications 070
Bench Worksheets and vehicle worksheets

Bench Worksheets	Material Needed	Vehicle Worksheets
Activity I	Activity I	Activity I
AC and DC voltage current flow measurements.	Blue elect box	AC and DC voltage measurements
Resistor color code box	Multimeter testers	Divide Tests
Types of resistors measurements	Different types of resistors	DC current flow
Resistor circuits for: series parallel, and series parallel	On/Off switch	Ignition system test
Using Ohm's law to calculate and prove values of series, parallel	Circuit boards	Lamp circuit measurement
Multimeter interpretation	Jumper wires	Alternator and starter flow
Continuity and conductivity	Meter clamp 60A	Voltage Source
Lamp Circuit and Activity measurements	Battery load tester	Alternator voltage drop across the B+ side
Voltage drop across + and negative side	Battery temp gauge	Alternator across B-side
Voltage drop of load side	Test light	Voltage drop across the Alternator (load)
		Battery voltage level
		Cranking current flow
		Battery bounce-back test