IMPERIAL VALLEY COLLEGE
Industrial Technology Division
Automotive Department

Course Title:	**Automotive Air Conditioning AUT-210**
Semester:	**Spring 2013**
Class Schedule:	**Monday 8:30 – 10:30 am** **Tuesday 1:00 – 4:10 pm**
Location:	**Room 1100 Lec.** **Room 1102 Lab.**
Instructor:	**Ricardo Pradis**
Phone :	**(760) 355-6403**
Email:	**ricardo.pradis@imperial.edu**
Coordinator:	**Jose Lopez (760) 355-6362**
Secretary/Division:	**Frances Gomez (760) 355-6361**

Course Description:
This course is designed to impart knowledge and information needed by the student to enter and make progress in employment service industry. The use of charging station and systems will part of A/C course. Up on completion of this course the student will be prepared to take the Automotive Service Excellence (ASE) examination for air conditioning. On productive basis in the automotive air conditioning.

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-210 Automotive Air Conditioning will provide students with learning opportunities to improve in five of the Institutional Learning Outcomes: Communication Skills (SLO1), Critical Thinking (SLO2), Personal Responsibility (SLO3), Information Literacy (SLO4), and Global Awareness (SLO5).

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

- Describe the fundamentals of air conditioning
- List the major parts of air conditioning system and the purpose of each.
- Summarize the principles of air conditioning.
- Explain why R-134a is being used in the air conditioning systems of late-model vehicles.
- Explain how the heating system works.
- List the different types of air conditioning.
- State the basics of the electron theory of electricity.
- Describe the characteristics of series, parallel, and series-parallel circuits.
- Employ ohm's law in trouble shooting electrical circuits.
- Troubleshoot and air conditioning system.

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

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.

Course Instructional Schedule and Learning Activities

Week 1: Class Orientation, safety procedures, demonstrations, shop activities, and safety test.

Week 2: Automotive Air Conditioning History and Certifications
Lab. activity: HVAC system inspection

Week 3: Principles of Air Conditioning
Lab. activity: Install gauge set and check system pressures.

Week 4: Air Conditioning Tools, Equipment, and Measuring Systems
Lab. activity: Test condenser performance.

Week 5: Pressure and Temperature
Lab. activity: Check expansion device operation

Week 6: Refrigerants and Lubricants
Lab. activity: A/C system leak check

Week 7: Air Conditioning Components
Lab. activity: Evacuate and recharge an A/C system

Week 8: Compressors and Clutches
Lab activity: Bench check an A/C compressor and clutch coil.

Week 9: Mid-Term

Week 10: Automobile Heating Systems
Lab. activity: Check heater system and test heater core

Week 11: Basic Electricity
Lab. activity: Volt-ohmmeter usage and test A/C clutch circuit.

Week 12: Electrical Circuits
Lab. activity: Test HVAC blower circuit and cooling fan circuit.

Week 13: Meters and Testers
Lab. activity: Recharge an A/C system – manifold gauge set.

Week 14: Air Conditioner Controls
Lab. activity: Test vacuum mode door motor and system.

Week 15: Troubleshooting and Repair

Week 16: Final Exam

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.

Safety Requirements:

For every task perform in the Air Conditioning 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.

Instructor Office Hours:

Monday:	**10:30 – 11:30 am**
Wednesday:	**10:30 – 11:30 am** **5:30 – 6:30 pm**
Friday:	**10:30 am – 11:30 am**
By Appointment:	**Contact me at 760-355-6403 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.