Imperial Valley College
Industrial Technology Division
ACR 101 Air Conditioning and Refrigeration System
Fall 2012

Instructor: Frank Miranda

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Office Hours	Monday	10:30 – 11:30 a.m.
	Tuesday	10:30 – 11:30 a.m.
	Friday	8:35 – 9:35 a.m.
	Available By Appointment	

Secretary/Division Office: 10

Division Coordinator: Jose Lopez 760- 355-6361 Fax: 760- 355-6552

Credits/Units: 2 Lecture Hours & 3 Lab Hours (3 Units)

CRN: 10364

Semester: Fall 2012: August 20, 2012 December 07, 2012

Breaks/Holidays- No Classes Held

Class:	Monday:	8:35 a.m.–10:25 a.m. Lecture
	Wednesday:	8:35 a.m.–11:45 a.m. Lab

Location: Room 1101

A. Course Description

This is a course of study in Heating, Ventilation, Air Conditioning, and Refrigeration trade. This course includes the study of the laws of thermodynamics, the refrigeration cycle, brazing of refrigerant lines, understanding the use of and maintenance of Heating, Ventilation, Air Conditioning, and Refrigeration equipment, applicable safety practices, and the proper use of refrigerants.

B. Course Objective

Upon completion of this course the student will:

a. Demonstrate knowledge and understanding the laws of thermodynamics (the study of heat).
b. Demonstrate knowledge and understanding of the refrigeration cycle.
c. Demonstrate knowledge and understanding of refrigerants, and how they are used.
d. Demonstrate and apply acceptable safety practices related to air conditioning and refrigeration.
e. Demonstrate and apply knowledge of tools and equipment related to the refrigeration and air conditioning industry.
f. Demonstrate knowledge and understanding of proper soldering, brazing, and welding techniques and safety practices.
g. Demonstrate knowledge and understanding of materials, equipment, and procedures leading to a qualified technician.

C. Course Instructional Schedule

Unit 1	Wk. 1	Theory
Unit 2	Wk. 2	Matter and Energy
Unit 3	Wk. 3	Refrigeration and Refrigerants
Unit 4	Wk. 4	General safety practices
Unit 5	Wk. 5	Tools and Piping
Unit 6	Wk. 6	Tubing and Piping
Unit 7	Wk. 7	System and Evacuation
	Wk. 8	**MID-TERM**
Unit 8	Wk. 9	Refrigerants, oil management, recovery, recycling and reclaiming
Unit 9	Wk. 10	System charging
Unit 10	Wk. 11	Calibrating Instruments
Unit 11	Wk. 12	Evaporators and the refrigeration systems
Unit 12	Wk. 13	Condensers
Unit 13	Wk. 14	Compressors
Unit 14	Wk. 15	Expansions devices
	Wk. 16	**FINAL**

D. Grading Criteria

a. Tardiness: 3 tardies equal 1 absence (I.V.C. Gen. Catalog pg. 29-30) 2008-2009
b. Absences: (I.V.C. Gen Catalog Pg. 29-30) 2008-2009

E. Exam and Grading Procedures:

There will be a mid-term and final exam. Each will be worth 25% of the student's final grade. The student will be evaluated on classroom participation and test each week on chapters that have been assigned and/ or covered in class. These classroom assignments will be worth 25% of the student's grade. The remaining 25% of the student's grade will be based on the student's performance in the lab section of the class. All homework and tests must be completed and delivered to the instructor.

3. Grading Systems	Percent of Overall Grade
A= 90%-100%	25% Completed Lab Assignments
B= 80%-89%	25% Completed Classroom Assignments
C=70%-79%	25% Midterm Exam
D=60%-69%	25% Final Exam
F= Less than 60%	

Review exam will be given each week on chapter being studied.

- Homework will be review questions at the end of every chapter.
- No extra credit will be assigned
- Homework will be collected weekly

Based on Attendance, Homework, Hands On, Test and Final Exam.

F. Students with Disabilities

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs & Services (DSP&S) office for assistance as soon as possible.

DSP&S
Room 2117
Health Sciences Building
(760) 355-6312

G. **Student Learning Outcome**

I.V.C. as an institution has adapted five Student Learning Outcome (SLO's). They are inter-connected with each other. They will be inherent throughout this course.

1. communication skills
2. crucial thinking skills
3. personal responsibilities
4. information literacy
5. global awareness

H. **Classroom Management Procedures**

The use of cell phones is prohibited during instruction time,
10 minute breaks allowed at professor discretion,
Tardiness and early departure is loss of credits.
Call-in if absence or tardy 2 hours before class time.
Please pick up after yourself before leaving room (trash cans in room and outside)
Safety rules and other procedures are found in the I.V.C. Gen. Cat. 2010-2011

I. **Harassment Statement**

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 and academic and work environment that respects the dignity of individuals and groups. The District shall be free of sexual harassment and all forms of sexual intimidation and exploitation.
The District seeks to foster an environment in which all employees and students feel free to report incidents of harassment without fear of retaliation or reprisal. Therefore, the District also strictly prohibits retaliation against any individual for filing a complaint of harassment or for participating in a harassment investigation. Such conduct is illegal and constitutes a violation of this policy.
(I.V.C. General Catalog 2010 – 2011)

J. **Resources, Library, Counseling, Parking, etc.**
Refer to the I.V.C. Gen. Cat. 2010 -2011

K. **Equipment and Supplies**

Textbook
Whitman, William, Johnson and Tomczyk John. "Refrigeration & Air Conditioning Technology." 7th Edition. Delmar Thomson Learning, ISBN: 1-4018-3765-4

a. Personal Protective Equipment
   2.1 Safety Glasses
   2.2 Leather Gloves
   2.3 Ear plugs
   2.4 Work footwear
   2.5 Proper shirt and pants