# ILLINOIS VALLEY COMMUNITY COLLEGE

## COURSE OUTLINE

**DIVISION: Career and Technical Programs**

**COURSE: HVC 1220; Basic Refrigeration**

Date: Spring 2009

Credit Hours: 3

Prerequisite(s): Co-requisite ELE-1200

Delivery Method:

| | | |
|---|---|---|
| ☒ **Lecture** | **2 Contact Hours** | **(1 contact = 1 credit hour)** |
| ☐ **Seminar** | **0 Contact Hours** | **(1 contact = 1 credit hour)** |
| ☒ **Lab** | **2 Contact Hours** | **(2 contact = 1 credit hour)** |
| ☐ **Clinical** | **0 Contact Hours** | **(3 contact = 1 credit hour)** |
| ☐ **Online** | | |
| ☐ **Blended** | | |

Offered: ☒ **Fall** ☒ **Spring** ☐ **Summer**

IAI Equivalent –***Only for Transfer Courses***-go to *http://www.itransfer.org*:

**CATALOG DESCRIPTION:**
This course will introduce the basic concepts of refrigeration and air conditioning. Instruction will include laboratory activities of basic mechanical and physical refrigeration work.

## GENERAL EDUCATION GOALS ADDRESSED

*[See the last page of this form for more information.]*

**Upon completion of the course, the student will be able:**

[Choose those goals that apply to this course.]

☐ To apply analytical and problem solving skills to personal, social and professional issues and situations.
☐ To communicate orally and in writing, socially and interpersonally.
☐ To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
☐ To understand and use contemporary technology effectively and to understand its impact on the individual and society.
☐ To work and study effectively both individually and in collaboration with others.
☐ To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
☐ To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
☐ To appreciate the ongoing values of learning, self-improvement, and career planning.

## EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

*[Outcomes related to course specific goals.]*

**Upon completion of the course, the student will be able to:**

Outcome 1: explain the properties of heat and heat travel.

Assessment: On written quizzes and hands on experience, students will demonstrate knowledge of heat properties.

Outcome 2: demonstrate proper safe procedures and use of refrigeration tools.

Assessment: On written quiz and hands on experience, students will demonstrate knowledge of tools and equipment use.

Outcome 3: explain and demonstrate their ability to perform system evacuation.

Assessment: On written quiz and laboratory project, students will demonstrate proper evacuation procedures.

Outcome 4: demonstrate an understanding of the principles of recovering, recycling and reclaiming refrigerant.

Assessment: On written quizzes and hands on demonstration tests, students will demonstrate proper methods of recycling, recovering, and reclaiming refrigerant.

Outcome 5: explain and demonstrate the proper procedures for replacement and charging compressors.

Assessment: On written tests and hands on laboratory projects, students will demonstrate the proper procedures for replacement and charging compressors.

## COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Theory of Heat
2. Refrigeration Tools and Equipment
3. System Evacuation

4. Refrigerant Recycling
5. Refrigerant Recovery

**INSTRUCTIONAL METHODS:**
Lecture
Class discussion
Class demonstrations
Lab Assignments

**INSTRUCTIONAL MATERIALS:**

**STUDENT REQUIREMENTS AND METHODS OF EVALUATION:**
Daily class & lab attendance
Quizzes
Midterm & Comprehensive final
Hands-on Lab Projects

A= 100-90
B= 89-80
C= 79-70
D= 69-60
F= 50- 0

**TEXTBOOK:**
Refrigeration and Air Conditioning Technology by Johnson Whitman, 4th edition, International Thompson Publishing Company, 2000
Laboratory Manual by same author

**OTHER REFERENCES**
Industry Service Manuals
Manufacturers Literature and Service Manuals

Course Competency/Assessment Methods Matrix

| **HVC 1220; Basic Refrigeration** | **Assessment Options** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| For each competency/outcome place an "X" below the method of assessment to be used. | **Assessment of Student Learning** | Article Review | Case Studies | Group Projects | Lab Work | Oral Presentations | Pre-Post Tests | Quizzes | Written Exams | Artifact Self Reflection of Growth | Capstone Projects | Comprehensive Written Exit Exam | Course Embedded Questions | Multi-Media Projects | Observation | Writing Samples | Portfolio Evaluation | Real World Projects | Reflective Journals | Applied Application (skills) Test | Oral Exit Interviews | Accreditation Reviews/Reports | Advisory Council Feedback | Employer Surveys | Graduate Surveys | Internship/Practicum /Site Supervisor Evaluation | Licensing Exam | In Class Feedback | Simulation | Interview | Written Report | Assignment |
| Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below. | **Direct/ Indirect** | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | I | I | I | I | D | D | | | | | |
| Outcome 1: explain the properties of heat and heat travel. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outcome 2: demonstrate proper safe procedures and use of refrigeration tools. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outcome 3: explain and demonstrate their ability to perform system evacuation. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outcome 4: demonstrate an understanding of the principles of recovering, recycling and reclaiming refrigerant. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outcome 5: explain and demonstrate the proper procedures for replacement and charging compressors. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |