San Bernardino Valley College
Curriculum Approved: February 4, 2002

I. CATALOG DESCRIPTION:

A. Department Information:

Division:	Refrigeration and Air Conditioning
Department:	Refrigeration and Air Conditioning
Course ID:	REFRIG 052A-Z
Course Title:	Refrigeration and Air Conditioning III
Units:	3
Lecture:	3 Hours
Prerequisite:	None

B. Course and Schedule Description: This is the third term of a three-term national training course offered in conjunction with the Refrigeration Service Engineers Society and is a comprehensive study of air conditioning. This course is designed to help certify journeymen-level refrigeration technicians and keep their knowledge current. Department Advisory: HVAC Refrigeration work experience.

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOMES FOR STUDENTS:

Upon completion of this course, students will be able to:

A. Distinguish the difference between refrigeration and air conditioning.
B. Describe thermostats, their installation, and use.
C. Compare the different air conditioning controls.
D. Assess the importance of the blowers and fans.
E. Rate an air distribution system.
F. Examine the troubleshooting principles of the A/C system.
G. Plan a compressor replacement and system evacuation.

IV. CONTENT:

A. Air Conditioning
   1. General
   2. Room air conditioners
   3. Air conditioning systems
   4. Low voltage thermostats
   5. Residential air conditioning
   6. Basic heat pump theory
B. Controls
   1. Introduction to controls
   2. Hydronics
   3. Blowers and fans
   4. Air filters
   5. Properties of air-psychometrics
C. Air Distribution
   1. Air distribution
   2. Heat transfer coils
   3. Troubleshooting
D. Environmental Control
   1. Economizer systems
   2. Troubleshooting
   3. Introduction to water source heat pumps
E. Compressor Replacement
   1. System evacuation

V. METHODS OF INSTRUCTION:

Methods of instruction will vary from instructor to instructor but may include:

A. Lectures and discussions about refrigeration and air conditioning, thermostats, controls, fans, air distribution, system evacuation and compressor replacement.
B. Lectures and discussions are complemented with handouts and instruction on different methods of analysis and troubleshooting.
C. Dynamics are accented with the use of graphs and videos.
D. Homework is assigned to promote expertise, vocabulary and writing skills.

VI. TYPICAL ASSIGNMENTS:

Typical assignments will vary from instructor to instructor but may include:

A. Explain the operation of a residential comfort cooling system.
B. Describe troubleshooting procedures related to residential air-conditioning systems.
C. List the necessary steps in evacuating a system, replacing a compressor, and adding oil to a sealed system.

VII. EVALUATION:

A. Methods of evaluation will vary from instructor to instructor but may include:
    1. Written tests
    2. Final exam
        Typical Questions:
        a. What happens to the moisture absorption properties of air as the temperature decreases?
        b. A pitot tube involves what three pressures?
B. Frequency of evaluation will vary from instructor to instructor but may include:
    1. Three (3) written tests
    2. One (1) final exam

VIII. TYPICAL TEXT:

Refrigeration Service Engineers Society, RSES Refrigeration and Air Conditioning, Refrigeration Service Engineers Society, Des Plaines, IL, 2002. (*The Refrigeration Service Engineers use their own book.*)

IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None