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 050A-Z
Course Title:	Refrigeration and Air Conditioning I
Units:	3
Lecture:	3 Hours
Prerequisite:	None

B. Course and Schedule Description: This is the first term of a three-term national training course offered in conjunction with the Refrigeration Service Engineers Society and is a comprehensive study of the principles of refrigeration. 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. Evaluate the basic principles of refrigeration.
B. Compare different trade tools.
C. Describe pressure/temperature relationships.
D. Examine safety practices.
E. Distinguish between the different refrigerants.
F. Recognize different metering devices.
G. Assess the importance of public relations.

IV. CONTENT:

A. Basic Refrigeration
   1. Principles of refrigeration (physics)
   2. Trade tools
   3. Gas laws
   4. Pressure/temperature relationship
B. Refrigeration and Heat
   1. Refrigeration tables
   2. Heat flow methods
   3. Insulation
C. Refrigerants
   1. Refrigerant types
D. The Compression Refrigeration Cycle
   1. Compressors
   2. Evaporators
E. Refrigerant Metering Devices
   1. Expansion valves
   2. Cap tube
F. Contaminants
   1. Oil in refrigeration systems
   2. Desiccants and dryers
G. Evacuating a Refrigeration System
   1. Safe handling of refrigerants and cylinders
   2. Moisture and air
H. Preservation of Perishable Foods

I. Electricity
J. Safe Practices and Public Relations

V. METHODS OF INSTRUCTION:

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

A. Lectures and discussions about refrigeration principles, trade tools, pressure/temperature relationships, refrigerants, metering devices, and public relations.
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 form instructor to instructor but may include:

A. Explain the difference between the critical pressure of a refrigerant and its critical temperature.
B. What are the nine characteristics of a good refrigerant?
C. Draw a pictorial schematic of a closed refrigeration 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. Explain the basic principles of refrigeration.
      b. Explain pressure/temperature relationships.
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