

I. CATALOG DESCRIPTION:

A. Department Information:

Division: Refrigeration and Air Conditioning
Department: Refrigeration and Air Conditioning
Course ID: REFRIG 066A-Z
Course Title: Controls 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 refrigeration pneumatic controls. 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. Debate basic control theory
- B. Assess air supply equipment, sensors, and controllers
- C. Recognize control devices, control dampers, and control valves
- D. Practice safety policies
- E. Apply new principles to installations
- F. Inspect pneumatic tubing installation
- G. Consider control system maintenance

IV. CONTENT:

- A. Basic Control Theory
 - 1. Air supply equipment
 - 2. Sensors
 - 3. Controllers
 - 4. Controlled devices
- B. Typical Component Applications
 - 1. Control dampers
 - 2. Control valves
 - 3. Safety
- C. Installation
 - 1. Pneumatic tubing installation
 - 2. Pneumatic air main sizing
- D. System Applications
 - 1. Control system maintenance
 - 2. Manufacturer's technical data
- E. Large Tonnage Chiller

V. METHODS OF INSTRUCTION:

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

- A. Lectures and discussions about control theory, component applications, pneumatic installation and maintenance.
- B. Lectures and discussions are complemented with handouts and show and tell demonstrations.
- C. Dynamics are accented with the use of pictures, charts 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. Describe three steps of a control maintenance method.
- B. What are the uses of a chiller?
- C. What must be known to size pneumatic 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 does pneumatic mean?
- b. Control dampers are used for what?

B. Frequency of evaluation will vary from instructor to instructor but may include:

- 1. Three written tests
- 2. One final exam

VIII. TYPICAL TEXT:

Refrigeration Service Engineers Society, RSES Controls, Refrigeration Service Engineers Society, Des Plaines, IL, 2002

IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None