

## Master Syllabus

### HVA 2251 - Primary HVAC Equipment Operation & Selection

**Division:** Science, Mathematics and Engineering

**Department:** HVAC-R Engineering Technology

**Credit Hour Total:** 3.0

**Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

**Prerequisite(s):** HVA 1221AND HVA 1301AND HVA 1351AND EET 1139

**Date Revised:** January 2015

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#### Course Description:

Student will learn how to do refrigeration cycle analysis, how to select condensers, evaporators, compressors, boilers, chillers and cooling towers from a manufacturer's catalog for a specific application, how to apply manufacturer's literature to the troubleshooting process and proper installation and equipment room piping practices. Two lecture, two lab hours per week.

#### General Education Outcomes:

- ❑ Written Communication Competency
- ❑ Critical Thinking/Problem Solving Competency
- ❑ Computer Literacy Competency
- ❑ Information Literacy Competency
- ❑ Values/Citizenship/Community Competency

#### Course Outcomes:

##### Piping installation and arrangement

Be able to properly layout and size refrigerant piping for proper operation of system. Also be able to properly layout piping, including proper control valve locations, for proper operation of boilers, chillers, and cooling towers. Be able to describe the various methods of unitization for staged equipment.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% correct score on exams

##### Equipment and component selection

Using catalog data supplied by a manufacturer, select refrigeration equipment, chillers, boilers, and cooling towers suitable for use in a defined application.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% correct score on exams

##### Equipment performance

Using software, hand calculations, manufacturer's data, or any combination of the three, be able to determine the performance characteristics of primary HVAC equipment when applied in a defined situation.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% correct score on exams.

##### Mechanical room layout

Be able to apply code requirements and manufacturer's suggestions for a properly laid out and equipped mechanical room for purpose of proper service, maintenance and safety practices.

**Assessment Method:** Locally developed exams

**Performance Criteria:**

70% correct score on exams

#### Outline:

Refrigerant, oils, contaminants

Refrigerant Cycle Analysis

Chiller selection, operation, and maintenance

Boiler selection, operation, and maintenance

Cooling Tower selection, operation, and maintenance

Equipment Room Piping Practices

Code Requirements for Mechanical Room Layout