

SYLLABUS

DIVISION: Business and Engineering Technology

REVISED: Summer 2013

CURRICULA IN WHICH COURSE IS TAUGHT: Air Conditioning and Refrigeration

COURSE NUMBER AND TITLE: AIR 156: Heating Systems III

CREDIT HOURS: 3 HOURS/WK **LEC:** 2 HOURS/WK **LAB:** 2 LEC/LAB **COMB:** 4

- I. CATALOG DESCRIPTION:** Introduces types of boilers, sizing boilers, sizing radiators and convectors, designing piping systems for steam, hot water and vacuum systems. Includes testing and servicing wet heat systems.
- II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:**
- Acquire an understanding of mathematical skills to solve pump problems, load requirements, and sizing of equipment.
 - Acquire an understanding to be able to design and construct a basic piping system.
 - Gain an understanding to diagnose and troubleshoot basic problems with a boiler system.
- III. REQUIRED BACKGROUND/PREREQUISITIES:**
- Air 154-155 or Approval
- IV. COURSE CONTENT:**
- Types of boilers
 - Sizing boilers
 - Piping design and layout
 - Service and maintenance
- V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE**

- **Communications**
 - 1.1 understand and interpret complex materials;
 - 1.3 use standard English;
 - 1.5 use listening skills; and
- **Critical Thinking**
 - 2.4 weigh evidence and decide if generalizations or conclusions based on the given data are warranted;
 - 2.5 determine whether certain conclusions or consequences are supported by the information provided; and
 - 2.6 use problem solving skills.
- **Quantitative Reasoning**
 - 6.1 use logical and mathematical reasoning within the context of various disciplines;
 - 6.2 interpret and use mathematical formulas;
 - 6.3 interpret mathematical models such as graphs, tables and schematics and draw inferences from them;
 - 6.4 use graphical, symbolic, and numerical methods to analyze, organize, and interpret data;

VI. LEARNER OUTCOMES

VII. EVALUATION

Types of Boilers <ul style="list-style-type: none">• Understanding the different types of boilers available• Identifying and labeling the parts of a boiler• Ability to understand the difference between each type of boiler	Evaluation method Lab exercises Written test
Sizing Boilers <ul style="list-style-type: none">• Understand the calculation method of sizing a boiler system• Identify which size of boiler to use according the load requirement• Ability to compute the size of boiler needed	Evaluation method Lab exercises Load Calculations Test
Piping Design and Layout <ul style="list-style-type: none">• Understanding the different types of piping, convectors, and radiators used• Ability to design and size a complete boiler system• Ability to install boiler piping	Evaluation method Lab exercises In class assignments Written test
Service and Maintenance <ul style="list-style-type: none">• Understand the operation of a boiler system to be able to properly service• Ability to troubleshoot electrical and fluid problems• Identifying possible problems that could occur with a boilers current condition	Evaluation method Lab exercises In class assignments Written test