

SYLLABUS

DIVISION: Business and Engineering Technology

REVISED: Fall/ 2013

CURRICULA IN WHICH COURSE IS TAUGHT: Air Conditioning and Refrigeration

COURSE NUMBER AND TITLE: AIR 154 Heating Systems I **CREDIT HOURS:** 3
HOURS/WK LEC: 2 **HOURS/WK LAB:** 2 **LEC/LAB COMB:** 4

I. CATALOG DESCRIPTION: AIR 154 Heating Systems I (3 cr.)--Introduces types of fuels and their characteristics of combustion; types, components, and characteristics of burners and burner efficiency analyzers.

II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:

- Acquire an understanding of the combustion process
- Gain knowledge of each component on an oil furnace and how it operates
- Ability to troubleshoot and repair an oil furnace
- Ability to perform preventative maintenance on an oil fired system

III. REQUIRED BACKGROUND/PREREQUISITIES:

- None

IV. COURSE CONTENT:

- Combustion Process
- Oil Pumps
- Oil Burners
- Venting & Controls
- Service & Troubleshooting

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**

Combustion Process <ul style="list-style-type: none">• Understand the different types of fuel oil• Identify the btu rating for each type• Understand the properties of fuel oil and how to handle properly• Understand the combustion process	Evaluation method Lab exercises Written test
Oil Pumps <ul style="list-style-type: none">• Understand the operation of each type of oil pump• Identify the parts of an oil pump• Ability to diagnose and troubleshoot a non-operational pump• Ability to properly adjust and set pump pressure	Evaluation method Lab exercises In class assignments Written test
Oil Burners <ul style="list-style-type: none">• Identify the different parts of the oil burner• Understand how each part on the burner operates• Ability to troubleshoot electrically with a meter a faulty ignition system	Evaluation method Lab exercises Homework Assignments Written test
Venting & Controls <ul style="list-style-type: none">• Identify different types of venting systems• Understand the operation of each control on the furnace• Ability to troubleshoot electrically with a meter a faulty component• Ability to recognize problems that occur in a vent system	Evaluation method Lab exercises Homework Assignments Written test
Service and Troubleshooting <ul style="list-style-type: none">• Understand the correct service procedure of an oil burner• Identify problems that may occur with working parts of the appliance when performing maintenance• Ability to service and troubleshoot problems associated with oil fired appliances	Evaluation method Lab exercises In class assignments Written test