

NEW YORK CITY COLLEGE OF TECHNOLOGY
CITY UNIVERSITY OF NEW YORK

ENVIRONMENTAL CONTROL TECHNOLOGY DEPARTMENT

ENVC 1211 - HEATING SYSTEMS LABORATORY

Course Description:

A laboratory course in which students work on oil burners, gas burners, steam and hydronic boilers, draft and combustion efficiency testing, boiler and burner safety and operating controls, reading controls wiring diagrams, and wiring electrical control components. Individual reports are required for each laboratory exercise.

Prerequisite: ENVC 1111

3 lab hours, 1 credit

Corequisite: ENVC 1210

Text: Whitman, Johnson and Tomczyk, "Refrigeration and Air Conditioning Technology", Delmar Publishers, Inc.

- Week 1 - Basic Principles of Electricity for Heating Systems
- Week 2 - Wiring Diagrams
- Week 3 - Wiring Diagrams
- Week 4 - Low Voltage Control Circuitry
- Week 5 - Wiring of Oil-Fired Steam and Hydronic Heating Systems
- Week 6 - Oil Burner Combustion Efficiency Testing
- Week 7 - Oil Burner Disassembly, Inspection, Cleaning and Adjustment
- Week 8 - Oil Burner Installation and Testing
- Week 9 - Gas Burner Wiring for Hydronic Systems
- Week 10 - Gas Burner Combustion Efficiency Testing
- Week 11 - Oil and Gas-fired Steam and Hydronic Heating System Components
- Week 12 - Boiler Construction, Cleaning and Testing
- Week 13 - Multi-zone Hydronic Heating System Wiring
- Week 14 - Two-zone Hydronic Heating System Installation
- Week 15 - Final Exam

General Education Student Learning Outcomes

In this course, students will obtain the following General Education competencies:

1. Quantitative knowledge in Basic Math, algebra, and geometry/spatial relationships.
2. Scientific knowledge using scientific method of experimentation, observation, and/or recording / processing of data.
3. Reading skills from reading technical articles / manuals.
4. Reading skills from reading directions / procedural texts
5. Reading skills from reading diagrams
6. Writing communication skills incorporating information from sources
7. Writing communication skills in description
8. Writing communication skills in analysis
9. Writing communication skills in technical reporting
10. Writing communication skills in preparing field notes
11. Inquiry / research skills in problem solving, choosing applicable equations / principles, utilizing math applications, and accuracy
12. Inquiry / research skills in graphing and collaboration / teamwork.
13. Professional values in problem solving, analytical skill, decision-making, and critical judgment based on precedents
14. Professional values in Trouble-shooting.
15. Ethical values in environmental stewardship.

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