

**STATE UNIVERSITY OF NEW YORK  
COLLEGE OF TECHNOLOGY  
CANTON, NEW YORK**



**MASTER SYLLABUS**

**COURSE NUMBER – COURSE NAME  
HVAC104 – Hydronics Lab**

**Created by: Stan Skowronek**

**Updated by: Paul Todd**

**Canino School of Engineering Technology**

**Department: Mechanical & Energy Systems**

**Semester/Year: Fall 2023**

A. **TITLE:** Hydronics Lab

B. **COURSE NUMBER:** HVAC104

C. **CREDIT HOURS:** 2 credit hour(s) per week for 15 weeks

- One hour (50 minutes) of lecture per week  
 Two to three hours of lab or clinical per week -2  
 Two hours of recitation per week  
 40 hours of internship

D. **WRITING INTENSIVE COURSE:** Yes  No

E. **GER CATEGORY:** None:  Yes: GER  
*If course satisfies more than one: GER*

F. **SEMESTER(S) OFFERED:** Fall  Spring  Fall & Spring

G. **COURSE DESCRIPTION:**

The fundamental construction methods for hydronic distribution systems will be covered in this course. Students will understand how to install and evaluate hydronic system performance in residential and commercial settings. Safe use of hand and power tools is stressed in laboratory work.

H. **PRE-REQUISITES:** None  Yes  If yes, list below:

HVAC103

**CO-REQUISITES:** None  Yes  If yes, list below:

HVAC103

**I. STUDENT LEARNING OUTCOMES: (see key below)**

By the end of this course, the student will be able to:

<b><u>Course Student Learning Outcome</u></b> <b><u>[SLO]</u></b>	<b><u>Program Student Learning Outcome</u></b> <b><u>[PSLO]</u></b>	<b><u>GER</u></b> <i>[If Applicable]</i>	<b><u>ISLO &amp; SUBSETS</u></b>	
1. Select and operate basic service tools and equipment		N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
2. Perform joining techniques to complete tubing and pipe connections		N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
3. Install basic electrical controls and power for hdryonic systems		N/A	3-Found Skills ISLO ISLO	QTR None Subsets Subsets
4. Demonstrate the ability to measure, document, and communicate system performance	PSLO 2	N/A	1-Comm Skills 3-Found Skills ISLO	QTR Subsets Subsets Subsets
5. Work with a diverse group, completing a common task	PSLO 4	N/A	4-Soc Respons ISLO ISLO	QTR Subsets Subsets Subsets
		N/A	ISLO ISLO ISLO	T Subsets Subsets Subsets

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<b>KEY</b>	<b><u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u></b>
<b>ISLO #</b>	<b>ISLO &amp; Subsets</b>
<b>1</b>	<b>Communication Skills</b> Oral [O], Written [W]
<b>2</b>	<b>Critical Thinking</b> <i>Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</i>
<b>3</b>	<b>Foundational Skills</b> <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
<b>4</b>	<b>Social Responsibility</b> <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
<b>5</b>	<b>Industry, Professional, Discipline Specific Knowledge and Skills</b>

\*Include program objectives if applicable. Please consult with Program Coordinator

J. **APPLIED LEARNING COMPONENT:** Yes  No

If YES, select one or more of the following categories:

- Classroom/Lab
- Internship
- Clinical Placement
- Practicum
- Service Learning
- Community Service

- Civic Engagement
- Creative Works/Senior Project
- Research
- Entrepreneurship  
(program, class, project)

**K. TEXTS:**

Lab Manual

**L. REFERENCES:**

N/A

**M. EQUIPMENT: None  Needed: NN101 and NS139 and HVAC Tool list**

**N. GRADING METHOD: A-F**

**O. SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Lab reports and participation

**P. DETAILED COURSE OUTLINE:**

**Q. LABORATORY OUTLINE: None  Yes**

1. Pipe, fitting, and valve identification
2. Methods of pipe installation, support, and insulating
3. Hydronic boiler installation methods
4. Heat emitter installation
5. Chimney and venting installation
6. Hydraulic separation and pressure measurement
7. Boiler electrical power installation
8. Hydronic system filling and purging
9. Measuring fuel consumption
10. Hydronic system evaluation