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

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
HVAC103 – Hydronics

Created by: Stan Skowronek

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Canino School of Engineering Technology

Department: Mechanical & Energy Systems

Semester/Year: Fall 2023

A. **TITLE**: Hydronics

B. **COURSE NUMBER:** HVAC103

C. **CREDIT HOURS: 3 credit hour(s) per week for 15 weeks**

☒ One hour (50 minutes) of lecture per week -3
☐ Two to three hours of lab or clinical per week
☐ 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 fundamentals of hydronic distribution systems will be covered in this course. Students study basic heat transfer and the use of hydronics in residential and commercial settings.

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

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

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

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

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER*** *[If Applicable]*	***ISLO & SUBSETS***	
1.Explain the process of heat transfer		N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
2. Describe types of hydronic distribution systems		N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
3.Identify chimney types and proper application		N/A	3-Found Skills ISLO ISLO	QTR None Subsets Subsets
4. Introduction to the control and power circuits for hydronic systems		N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
		N/A	ISLO ISLO ISLO	Subsets Subsets Subsets Subsets
		N/A	ISLO ISLO ISLO	Subsets Subsets Subsets Subsets

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

*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:

Bracciano, A., Bracciano, D., Bracciano, G., Althouse, A. D., & Turnquist, C. H. (2019). Modern Refirgeration and Air Conditioning, 21st Edition. Goodheart-Willcox.

L. REFERENCES:

Cooper, William B., Raymond E. Lee, Raymond A. Quinlan, Martin W. Sirowatka, Warm Air Heating for Climate Control, 5th Edition, Prentice Hall, 2003

M. EQUIPMENT: None ☐ Needed: Technical enhanced classroom

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Exams, Quizzes, and Assignments

P. DETAILED COURSE OUTLINE:

I. Basic Theory of Heating Systems
A. Heat Transfer
i. Conduction,
ii. Convection,
iii. Radiation
B. Insulation
C. Change of State
i. Water
ii. Steam
iii. Ice
II. Hydronic systems
A. Pumps
B. Pipes sizing
C. Heat emitters
D. Accessories

IV. Chimney
A. Natural gas and propane
B. Fuel oil
C. Wood and coal
D. Direct venting
V. Troubleshooting
A. Customer interaction
B. Sequence of operation
C. Electrical circuits
D. Ladder diagrams

Q. <u>LABORATORY OUTLINE</u>: None ☒ Yes ☐