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

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
HVAC105 – Forced Air Systems

Created by: Stan Skowronek

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Canino School of Engineering Technology

Department: Mechanical & Energy Systems

Semester/Year: Spring 2024

A. **TITLE**: Forced Air Systems

B. **COURSE NUMBER:** HVAC105

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:**

This course covers the procedures and materials required to install residential and light commercial forced air heating systems. Furnace installation, ductwork sizing, and duct fabrication is studied. Material takeoffs are performed utilizing building plans, and from field measurements.

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

HVAC103 Hydronics and HVAC 104 Hydronics Lab

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 components and functions in commercial and residential HVAC applications, relating them to building plans	PSLO 2	N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
2. Explain and perform the proper procedures used in installing components, field piping, and field wiring	PSLO 2	N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
3. Demonstrate procedures for starting up newly installed HVAC equipment	PLSO 5	N/A	5-Ind, Prof, Disc, Know Skills ISLO ISLO	None None Subsets Subsets
4. Demonstrate the evaluation of operating HVAC equipment	PLSO 2	N/A	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
5. Design an air distribution system with team members	PSLO 4	N/A	4-Soc Respons ISLO ISLO	T 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:

ACCA Manual D, NYS Mechanical Code, NFPA 31, NFPA 54 and NFPA 70.

M. EQUIPMENT: None ☐ Needed: Technical enhanced classroom

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Exams, Quizzes, Homework, and Participation

P. DETAILED COURSE OUTLINE:

1. Furnace sequence of operation, fuel use, electrical power, and controls
2. Sensible and latent heat equations for air
3. Blower types
4. Airflow measurement
5. Duct sizing and design guidelines
6. Duct fittings, accessories, grilles, registers, and diffusers
7. Duct fabrication, installation, insulation, and support
8. Balancing forced air systems
8. Evaluating forced air system performance

Q. LABORATORY OUTLINE: None ☒ Yes ☐