MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
HVAC104 – Heating Systems Lab I

Created by: Stan Skowronek

Updated by: Paul Todd

Canino School of Engineering Technology

Department: Mechanical & Energy Systems

Semester/Year: Fall 2018
A. **TITLE**: Heatings Systems Lab I

B. **COURSE NUMBER**: HVAC104

C. **CREDIT HOURS**: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

   # Credit Hours: 2  
   # Lecture Hours: per week  
   # Lab Hours: (2) three-hour labs per week  
   Other: per week  

   Course Length: 15 Weeks

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 heating equipment are the emphasis of this course. Students study basic heat transfer and the application of different fuels used in the heating industry. 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:

<table>
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<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>Program Student Learning Outcome [PSLO]</th>
<th>GER [If Applicable]</th>
<th>ISLO &amp; SUBSETS</th>
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<tbody>
<tr>
<td>A. Select and operate basic service tools and equipment</td>
<td>N/A</td>
<td>3-Found Skills ISLO ISLO</td>
<td>QTR Subsets Subsets Subsets</td>
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<td>B. Perform joining techniques to complete tubing and pipe connections</td>
<td>N/A</td>
<td>3-Found Skills ISLO ISLO</td>
<td>QTR Subsets Subsets Subsets</td>
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<td>C. Install basic electrical controls and power for heating systems</td>
<td>N/A</td>
<td>3-Found Skills ISLO ISLO</td>
<td>QTR None Subsets Subsets</td>
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<td>D. Demonstrate the ability to measure temperature and pressure using appropriate devices</td>
<td>N/A</td>
<td>3-Found Skills ISLO ISLO</td>
<td>QTR Subsets Subsets Subsets</td>
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<td>F. Work with a diverse group, completing a common task</td>
<td>N/A</td>
<td>3-Found Skills ISLO ISLO</td>
<td>QTR Subsets Subsets Subsets</td>
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*Key:
- **ISLO** refers to Institutional Student Learning Outcomes.
- **GER** refers to General Education Requirements.
- **SUBSETS** refer to specific subsets within these requirements.*
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| 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:**

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. Insulation R value on pipes and ducts
2. Change of State of Water
3. Hydronic boiler installs
4. Furnaces installs
5. Chimney installs
6. Pump flow
7. Furnace pressure switch
8. Furnace extraction fan
9. Call of no heat
10. Clock Natural Gas meter
11. Temperature rise on furnace
12. Air flow in duct
13. Air flow balancing
14. Adjustment of gas valve