HVA 1221 – Heating Systems
Credit Type – **Proficiency**

Course Description and Learning Outcomes:

Introduction to the basic concepts of all heating systems found in light commercial applications for the experienced and inexperienced in HVAC. A comprehensive presentation of HVAC systems, including rooftop packaged systems, heat pumps, packaged low-pressure boiler systems, and packaged unitary heaters. Includes low-pressure hot water and steam generation, including the fundamentals of heat generation in water-based heating systems. Two classroom, two lab hours per week.

Combustion process - Explain the combustion process.

Water treatment - Describe the different types of water treatment and when and where they are used.

Application of various fuel sources - Describe the proper application and safe use of various fuel sources.

Fuel economizer - Describe the proper use of fuel economizers.

Sequence of operation in basic systems - Describe the sequence of operation in basic systems.

Types of boilers - Identify different types of boilers.

Radiant heating - Explain the concept of radiant heating.

Faculty Pathway Specialist(s) (Please include name, email and office hours**):**

De Dawson, dedawhtgclg@aol.com, 937-369-5460, Since De is an ACF, he has no office hours

Resources Needed to Offer Course (software, equipment, books [include ISBN and edition], etc. – please include any associated costs)**:**

Refrigeration and Air Conditioning Technology, 9th Ed.
ISBN: 978-0-3571-2227-3
Hardcopy is about $185. Other digital options exist at a much lower cost.

Requires an assembly of ducted furnaces, heat pumps, and boilers, the number of which is contingent upon the number of students one wishes to educate. Also requires basic hand tools, multi-meters, combustion analyzers, refrigerant gauge sets, again, contingent upon the number of students participating.

Costs for equipment are likely 10's of thousands.

NOTE: This equipment would allow teaching of 1201 as well.

What is the ideal format for course delivery – in person, online or blended? To what extent could this course be offered online if necessary?

There is significant hands-on, so this course must be presented Face-to-Face

How is the final grade for the course determined? (Please list all required assignments, assessments, etc.)

HW1 – Unit 31 Gas Heat Q1 thru 15
HW2 – Unit 31 Gas Heat Q16 thru 30
HW3 – Unit 31 Gas Heat Q31 thru 45
HW4 – Unit 31 Gas Heat Q46 thru 61
Test1 – Gas Heat and Parts ID
HW5 – Bring in drawing & pictures of venting system at home to use during Venting lecture
HW6 – Unit 30 Electric Heat Q1 thru 7
HW7 – Unit 30 Electric Heat Q8 thru 15
Test2 - Combustion Analysis, Unit 30, Venting Tables and Parts IDd
HW8 – Unit 43 Air Source Heat Pumps Q1 thru 17
HW9 – Unit 44 Geothermal Heat Pumps Q1 thru 18
HW10 – Unit 32 Oil Heat Q1 thru 34
HW11 - Unit 33 Hydronic Heat & Boilers Q1 thru 30
HW12 – Unit 34 & 35 IAQ, Comfort, Psychrometrics Q1 thru 22
Test3 - Units 32,33,34,35,43,44 and Parts ID

The above is based on the 8th edition of the book. This may change slightly once the 9th edition is adapted.

Homework	**20%**	
Labs	**20%**	
Quizzes	**10%**	**(these three quizzes are not indicated above)**
Attendance	**5%**	
Tests	**45%**	

Who is responsible for grading the required assignments and/or assessments? (faculty or instructor?)

The course instructor

What is the grading scale for the course?

90%-100%	**A**
80%-90%	**B**
70%-80%	**C**
60%-70%	**D**
<60%	**F**

Must students access the eLearn shell regularly to complete requirements?

No

Does the course require access to YouTube, Google Drive, etc.?

YouTube is optional, but not required

Additional course details or requirements important for instructors not covered above:

Most common (or popular) degrees this course is in?

HVAC Residential / Light Commercial Certificate
HVAC AAS Degree
Energy Technology Certificate
Energy Management Technology ATS