Course: HVAC118 Load Calculations and Ductwork Design

Department: HVAC

Course Description: This course teaches the students about heat gains, losses and the factors which are used in determining the amount of BTU's to be added or removed to satisfy the desired temperatures. Students learn how to calculate the proper cooling and heating loads. They also learn about the process which must be taken prior to any installation of HVAC equipment. Students learn how to plot the enthalpy on the psychometric chart and proper use of the chart when determining heat and air properties in the given space. Students become familiar with the supply, return air and make up air used in ductwork.

Prerequisites: HVAC111 Basic Electricity, HVAC113 Introduction to HVAC/R, or instructor waiver.

COURSE OUTCOMES	SAMPLE OUTCOMES ACTIVITIES	SAMPLE ASSESSMENT TOOLS
Upon successful completion of this course students are able to:	To achieve these outcomes students may engage in the following activities:	Student learning may be assessed by:
1. Use the psychometric chart in determining the properties of air IT, WC, TS	• Repetitive use of the psychometric chart in class/lab • Plotting the properties of air on the psychometric chart	• Assigned text readings • Class and lab workshops • Tests and quizzes
2. Completely understand the movement of heat IT, IL, WC	• Textbook and on-line readings • Video presentations • Classroom discussions • Laboratory demonstrations	• Tests & Quizzes • In-class conversations • Laboratory evaluations
3. Create an accurate heat load calculation IT, WC, OC	• Textbook and on-line readings • ASHRAE Heat Load Worksheets • Video presentations • Classroom demonstrations	• Tests, quizzes • Homework assignments • Classroom discussions • Laboratory work
4. Understand the correlations between BTU's and tons of cooling	• Textbook and on-line readings	• Tests, quizzes

IT, IL, WC, TS, OC	• Classroom presentations • Laboratory demonstrations • Class and Laboratory discussions	• Written assignments • Homework assignments • Laboratory assignments
5. Determine the correct duct size to supply heat/ cooling to individual room IT, IL, WC, TS, OC	• Textbook readings • On-line demonstration • Video presentations • Classroom discussions • CAD duct layouts	• Tests, quizzes • Mechanical drawings • Homework assignments
6. Understand friction loss and air movement in ducts IT, IL, WC	• Textbook reading • Video presentations • On-line working assignments • ASHRAE duct standards	• Test, quizzes • Written assignments • Laboratory work
7. Have the ability to install ductwork properly IT, IL, TS	• Textbook readings • Video presentations • Building observations	• Tests quizzes • Written assignments • Laboratory applied tasks
8. Realize the career fields this course opens for employment IT, IL, WC, OC	• Textbook readings • Video presentations • Classroom collaborative learning • Classroom discussions	• Test quizzes • Homework assignments

This course includes the following core competencies: Information Literacy (IL), Information Technology (IT), Technical Skills (TS), Written Communication (WC)