Butler Community College
Economic Development and Corporate Services

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# COURSE OUTLINE
# Radiant Heating Design Software

## Course Description
CLVG 111. Radiant Heating Design Software. 3 hours credit. This course will enable the student to calculate residential heat loss with the assistance of heating design software. The student will enter building envelope components for individual rooms. The student will then gain an understanding of the various radiant systems and components available for radiant installations. The student will size the radiant system based on the completed heat loss. The student will calculate pipe spacing, circuit lengths, water temperatures, flow rates, and required materials.

## Course Relevance
Radiant heating design software will allow companies to complete accurate radiant heating designs quickly and efficiently. Radiant heating offers builders and homeowners a comfortable and energy efficient way to heat their home. This course is ideal for the student who recognizes the need to diversify and wants to offer different heating systems to clients.

## Required Materials
Radiant wizard 3 software (3.8) Calgary, Alberta, Canada: Avenir Software Inc.

Viega North America. (2008). *Radiant workbook.* Nashua, NJ: Viega North America.

## Learning Outcomes
The intention is for the student to be able to:
1. Use heating design software to calculate residential heat loss.
2. Describe radiant heating system options.
3. Design a radiant heating system to include tube spacing, water temperatures, flow rates, and total number of circuits.
4. Use heating design software to calculate the required materials for the radiant heating system designed.

## Course Content
I. Skills/Competencies – Actions that are essential to achieve the course outcomes:
   A. Understand heating load components
   B. Understand components of a radiant heating system
   C. Use heating design software
   D. Calculate the radiant panel output
   E. Calculate required materials in a radiant heating system

**Learning Units**

I. Heating load components
   A. Design conditions
   B. Fenestration heating load
   C. Opaque panel heating load
   D. Radiant floor
   E. Infiltration

II. Radiant heating system options
   A. Wet systems
   B. Dry systems
   C. Tubing
   D. Fasteners
   E. Manifolds

III. Radiant panel output
   A. Panel output
   B. Surface temperatures
   C. Floor coverings
   D. Tube spacing
   E. Water temperatures
   F. Circuit lengths
   G. Flow rates
   H. Pressure drop

IV. Material list
   A. Pipe
   B. Fasteners
   C. Manifolds
   D. Mixing option
   E. Controls

**Learning Activities**

Learning activities will be assigned to assist the student to achieve the intended learning outcomes through lecture, self-assessments, instructor-led class discussion, group activities, case studies, skill practice, and other activities at the discretion of the instructor.

**Grade Determination**

The student will be graded on the completion of learning activities and assessment tasks. Grade determinants may include the following: daily work, student presentations, class participation, skills improvement plan, and other methods of evaluation employed at the discretion of the instructor.