



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Heating, Ventilating, and Air Conditioning

MECHENG 5541

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

Analysis of components and systems for heating, ventilating and air-conditioning.

Prerequisites and Co-requisites:

Prereq: 4510 (510), or Grad standing in MechEng.

Course Goals / Objectives:

- Overview of building environment
 - Psychrometric principles. Students are to learn the terminology and use of the psychrometric chart, as well analyze fundamental processes for moist air by hand calculations and by use of computer software EES
 - Learn to analyze HVAC systems for single and multiple zones
 - Learn the theory of heat exchangers as they apply to heating and cooling coils in HVAC systems as well as chillers
 - Learn the theory of direct contact heat transfer and methods to calculate the size of cooling towers
 - Study and learn to calculate heat transfer from buildings during the winter heating season
 - Study and learn to calculate heat transfer to buildings during summer by direct radiation from the sun. Hour by hour analysis will be carried out to obtain the maximum cooling load for peak summer days
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Course Topics:

- Introduction
 - Psychrometric principles and analysis of systems for heating, ventilating and air conditioning
 - Heat exchangers for heating and cooling of conditioned air
 - Chiller design and refrigeration
 - Analysis of direct contact heat transfer with application to humidifiers and cooling towers
 - Load calculations for winter and building heat transfer
 - Summer cooling load and hour by hour analysis
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Designation:

Elective