1. Course number and name
   ENGR 465: Principles of HVAC

2. Credits and contact hours
   3 credit hours; Three 50-min or two 1-hr, 15-min lectures per week.

3. Instructor’s or course coordinator’s name
   Instructor: Ed Cheng, Associate Professor
   Course coordinator: Ed Cheng, Associate Professor

4. Text book, title, author, and year
   a. other supplemental materials
      Supplemental documentation for Trance TRACE 700 software.

5. Specific course information
   a. brief description of the content of the course (catalog description)
      Air requirements in buildings, heating and cooling load calculation methods and computer software, heating and cooling equipment, flow in pipes and ducts, and clean room technology.
   b. prerequisites or co-requisites
      ENGR 303, ENGR 304.
   c. indicate whether a required, elective, or selected elective course in the program
      Elective for Mechanical Engineering.

6. Specific goals for the course
   a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.
      • The students will demonstrate that they have an understanding of the principles of operation of HVAC systems.
      • The students will demonstrate that they have the ability to calculate the heating and cooling loads for buildings.
      • The students will demonstrate that they have an understanding of the principles and application of psychrometries.
      • The students will demonstrate the ability to design a basic air distribution system. The
      • The students will demonstrate familiarity with basic issues of indoor air quality.
      • The students will demonstrate their ability to use a common commercial load calculation software to calculate the heating and cooling load of a building
      • The students will demonstrate their skill in written and oral communication by preparing a written report and by making a presentation about their design project.
b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
Course addresses ABET Student Outcome(s): a, c, e, g, h, j, k.

7. Brief list of topics to be covered
  • Air-Conditioning Systems
  • Moist Air Properties and Conditioning Processes
  • Comfort and Health – Indoor Environmental Quality
  • Heat Transmission in Building Structures
  • Solar Radiation
  • Space Heating Load
  • The Cooling Load
  • Energy Calculations