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 psychrometrics.
      - 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