ME 418 - Engineering of Environmental Systems and Equipment
Course Policy (Tentative)

Fall 2025

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Course Objectives

1) To develop an understanding of the systems and equipment used to maintain conditions in engineered environments for humans, including for buildings, vehicles, transportation, etc.
2) To develop an understanding of the analysis associated with sizing and selecting equipment for application in engineering environments.
3) To develop an understanding of the issues and analysis involved in designing equipment for the marketplace associated with engineered environments.
4) To provide design experiences requiring interdisciplinary problem solving.

Pre-requisites and Co-requisites: ME200, ME300 (optional), ME309, and ME315

Class Website: https://www.purdue.edu/freeform/me418/

Course Readings

The textbook for this course is Principles of Heating Ventilation and Air Conditioning in Buildings by J.W. Mitchell and J.E. Braun (Wiley Inter-Science, 2012). Some supplemental material connected to the textbook will be available electronically from the course website. Readings should be completed prior to the dates that are listed in the syllabus. There also may be material presented in class and within handouts that students are responsible for that is not included within the textbook.

Computer Software

A non-linear equation solver with built-in thermodynamic properties will be used throughout this course for homework problems. This computer program, called Engineering Equation Solver (**EES**), is available on the computers in the ME department and through remote access on your personal computer.

Grading

The course grade will be based upon the following components and distribution.

Mid-Term Exam	-	30%
Homework	-	30%
Final Exam	-	40%

Exams:

There will be a mid-term and a final exam that will cover the basics of the material that has been presented in each section of the course and that will be representative of the assigned homework.

Homework:

There will be approximately 6-10 homework assignments throughout the semester. All homework will be submitted and graded using Gradescope (https://www.gradescope.com). Homework solutions should include a statement of the problem, a list of relevant assumptions, a clear and concise description of the approach followed, and a discussion of the results. Some of these problems will involve parametric studies of a component or system utilized in an engineered environment and will require the use of the **EES** software. In addition to the normal writeup (problem statement, assumptions, approach, discussion), output should be provided that includes a heading with your name, date, and the course number. In addition, all equations should be adequately documented within the listing.