

Advanced Air Conditioning EML 6606 (August 25, 2025)
Class Numbers 25571, 25572, 25573, 25574, 25575
Sections 1FE2, 2FED, CAMP, WEBR, OVER
Class Periods: MWF, 8th period, 3:00-3:50pm (Watch Lectures Online)
Location: NEB0102, Academic Term: Fall 2025

Instructor:

Dr. S.A. Sherif

sasherif@ufl.edu

Office Hours: will be scheduled via Zoom from 3:00am-3:50pm MW.

Teaching Assistant/Peer Mentor/Supervised Teaching Student: None

Course Description

Air-conditioning system selection and system design; air-handling techniques including noise control, cleaning, and temperature and humidity control; modern technological development; load design; duct design; piping design; psychrometric analysis; air distribution system design; indoor air quality and thermal comfort considerations .

Course Pre-Requisites/Co-Requisites: EML 4600 or graduate standing or permission of instructor

Course Objectives

Students will be able to analyze and design all types of air conditioning systems including performing load calculations, psychrometric analysis, duct and piping design, and air-distribution system design. They will also be able to account for indoor air quality and thermal comfort issues.

Materials and Supply Fees: None

Required Textbooks and Software: *Heating, Ventilating, and Air Conditioning Analysis and Design*, 6th Edition, F. C. McQuiston, J. D. Parker and J. D. Spitler, John Wiley & Sons, Inc. New York, NY, August 2004, ISBN: 978-0-471-47015-1 or latest edition. **Plus Handouts**

Recommended Materials:

1. *ASHRAE 2021 Fundamentals*, the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1971 Tullie Circle, N.E., Atlanta, Georgia 30329
2. *ASHRAE 2023 HVAC Applications*, the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1971 Tullie Circle, N.E., Atlanta, Georgia 30329
3. *ASHRAE 2020 Systems and Equipment*, the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1971 Tullie Circle, N.E., Atlanta, Georgia 30329

Required Computer

Recommended Computer Specifications: <https://it.ufl.edu/get-help/student-computer-recommendations/>

HWCOE Computer Requirements: <https://www.eng.ufl.edu/students/advising/fall-semester-checklist/computer-requirements/>

Subjects

1. **Types of Air Conditioning Systems (Chapter 2)**
2. **Moist Air Properties and Conditioning Processes (Chapter 3 and notes)**
3. **Psychrometrics (Notes)**
4. **Heat Transmission in Building Structures (Chapter 5)**
5. **Solar Radiation (Chapter 6)**
6. **Space Heat Load (Chapter 7)**
EXAM 1 (Take Home) covering psychrometrics, solar radiation, space heat load
7. **The Cooling Load (Chapter 8)**
8. **Indoor Air Quality-Comfort and Health (Chapter 4)**
9. **Duct Design Methods (Chapter 12)**

10. Fan Selection (Chapter 12)
 11. Pump Selection and Piping Design (Chapter 10)
 12. Space Air Diffusion (Chapter 11)
- EXAM 2 (Take Home) comprehensive**

| Video Lecture No. | Topic | Chapter No. |
|--|---|--------------------|
| Lectures 1-15 | Moist Air Properties and Psychrometrics | Notes |
| Lectures 16-20 | Solar Radiation | Ch 6 |
| Lectures 21-24 | Space Heat Load | Ch 7 |
| Lecture 25 | Space Cooling Load | Ch 8 |
| Lectures 26-29 | IAQ and Thermal Comfort | Ch 4 |
| Lectures 30-33 | Duct Design | Ch 12 |
| Lecture 34 | Fan Selection | Ch 12 |
| Lectures 35-38 | Pump Selection and Piping Design | Ch 10 |
| Lectures 39-42 | Space Air Diffusion | Ch 11 |
| Exam 1 released end of October | Covering through Lectures 24 | Take Home |
| Exam 2 released end of November | Covering through Lectures 42 | Take Home |

Attendance Policy, Class Expectations

All lectures posted need to be viewed in a timely manner to remain current with HW assignments and exams. The course grade will be based on performance in two exams of equal weight and on submitting all HW assignments fully by the posted deadlines. There will also be a project to be announced in due course. Homework assignments will be collected but not graded. However, failure to submit a HW fully and by the posted deadline will result in having 3% of the course grade deducted per missed assignment. There will also be 50-minute quizzes. Failure to submit the quiz will result in a deduction of 2% of the course grade per quiz.

Evaluation of Grades

| | |
|----------------------|---|
| Exam 1 | 45% |
| Exam 2 | 45% |
| Project | 10% |
| Missed HW Assignment | 3% of the course grade deducted/missed HW |
| Missed quiz | 2% of the course grade deducted/missed quiz |

Grading Policy:

| Percent | Grade | Grade Points |
|----------------|--------------|---------------------|
| 92.0 - 100.0 | A | 4.00 |
| 88.0 - 92.00 | A- | 3.67 |
| 84.0 - 88.0 | B+ | 3.33 |
| 80.0 - 84.0 | B | 3.00 |
| 76.0 - 80.0 | B- | 2.67 |
| 72.0 - 76.0 | C+ | 2.33 |
| 68.0 - 72.0 | C | 2.00 |
| 64.0 - 68.0 | C- | 1.67 |
| 60.0 - 64.0 | D+ | 1.33 |
| 56.0 - 60.0 | D | 1.00 |
| 50.0 - 56.0 | D- | 0.67 |
| 0 - 50.0 | E | 0.00 |

Academic Policies & Resources

To support consistent and accessible communication of university-wide student resources, check out this link to academic policies and campus resources: <https://go.ufl.edu/syllabuspolicies>.

Commitment to a Positive Learning Environment

The Herbert Wertheim College of Engineering values varied perspectives and experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Coordinator
- HWC OE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu