

MENG 4318 – Heating, Ventilation and Air Conditioning
Course Syllabus

Semester / Year	Fall 2026
Catalog Description	This course covers fundamentals of HVAC, including properties of moist air, psychometrics, psychrometry of air conditioning processes, vapor-compression refrigeration cycle, design conditions, and load calculations. Components, equipment, and common systems, as well as software for HVAC with emphasis in whole building energy simulation are introduced.
Prerequisites	“C” or better grade in MENG 3401 and MENG 3310 or equivalent.
Section Number	Tyler campus: MENG 4318.001 and HEC: MENG 4318.051
Instructor Name	Dr. Nelson Fumo
Contact Information	Office: RBN 3009, Email: nfumo@uttyler.edu
Class Type / Instruction Mode / Location	Tyler: Lecture/Face-to-Face/RBN 3038 HEC: Hybrid – Zoom Lectures and In-Classroom-Exams/HEC A217.
Class Time	Monday and Wednesday 6:30 PM to 7:50 PM
Office Hours	Mo, Tu, and Th 11:00 AM to 11:50 AM and by appointment, except on Fridays, which are reserved for the instructor’s research.
No. of Credits	3
Required Textbook	No textbook is required for this course.
Optional References	• Heating, Ventilating, and Air Conditioning: Analysis and Design, 7th Edition. Faye C. McQuiston, Jerald D. Parker, Jeffrey D. Spitler, Hessam Taherian. Wiley ISBN: 978-1-119-89416-2 • W. P. Jones, Air Conditioning Engineering, Fifth Edition, available of free download from the library (optional). • ASHRAE Handbooks with emphasis in the handbooks of Fundamentals and Systems and Equipment.
Additional Rules and Requirements	HEC Students Access to lectures: 1. HEC students must attend synchronous class sessions through Zoom using their laptops. Laptops must have a functioning camera. Students must turn on their cameras whenever requested by the instructor for attendance verification or other instructional purposes. 2. Attendance will be recorded at the end of each lecture by capturing a screenshot of the Zoom session attendees. Tyler and HEC Students Exams: 1. All exams will be administered in person in the classroom during the regularly scheduled class period. Students will complete and submit the exam through Canvas using their laptops. 2. HEC students MUST keep their cameras on and ensure they are clearly visible to the instructor for proctoring throughout the entire exam. 3. After submitting the exam, HEC students MUST remain in the classroom and connected to the Zoom session with their cameras on and clearly visible to the instructor until they are dismissed.

	4. The instructor is not responsible for internet connectivity, computer malfunctions, battery failure, software issues, or any other technical problems experienced by the student. Students are responsible for ensuring that their laptops are fully functional, adequately charged, and capable of accessing Canvas before the start of the exam. Technical issues experienced during an exam or quiz do not automatically entitle a student to additional time or a makeup assessment. Artificial Intelligence: - Students can use AI programs (ChatGPT, Copilot, etc.) in this course. If you utilize an AI tool to help create content for an assignment, you must acknowledge and cite the tool's contribution to your work. Professional Quality of Submitted Work - Since the mechanical engineering program is designed to prepare students for professional practice, all submitted work (e.g., homework, lab reports, projects, presentations) is expected to meet professional standards. Work that does not reflect professional quality may be subject to grade reductions, even if professionalism is not explicitly listed in the grading rubric.
Evaluation Method	Exam 1 25% Exam 2 25% Homework 25% Final exam 25%
Grading Policy / Scale	Letter grades, scale: A: 90 – 100; B: 80 – 89; C: 70 – 79; D: 60 – 69; F: < 60
Important Events / Dates	Census date: September 8 Drop for non-payment: September 16 Last date to withdraw from one or more 15-week courses: October 30 Academic Calendar 2026 - 2027
Attendance / Makeup policy / other rules	Attendance: Attendance is not mandatory but is strongly recommended. Students are responsible for all material covered during any class they miss. Class time will not be used to provide individual make-up instruction for missed lectures. Makeup exam: A makeup exam may be offered only for an excused absence. Excused absences include participation in university-sponsored activities and religious observances, in accordance with university policy. Other makeup exams will be considered only under extraordinary circumstances and at the instructor's sole discretion. Absences due to illness must be supported by documentation of evaluation or treatment from a licensed medical provider or recognized medical facility. Makeup exams may be scheduled at the end of the semester. Grade Appeal: Questions regarding the grading of an assignment or exam must be discussed with the instructor within one week of the grade being posted. After that period, the grade will be considered final unless required otherwise by university policy. Questions: Students are encouraged to seek assistance when needed. However, questions should reflect a genuine effort to solve the problem independently before requesting help.

	5. Communication Policy: Course-related communication must be sent directly to my university email (nfumo@uttyler.edu). Canvas messaging will not be used for course communication and may not receive a response. 6. Syllabus Changes: The instructor reserves the right to modify this syllabus as necessary. Any changes will be announced in class and/or through Canvas and will take effect as specified in the announcement. 7. Professional Responsibility: Students are responsible for monitoring their university email and Canvas announcements regularly. Information communicated through these official channels is considered received on the date it is posted or sent.
Course Learning Objectives / ABET & PEOs Relation	By the end of this course, students will be able to: 1. Apply psychrometric concepts to air conditioning processes. 2. Identify appropriate design conditions for a location and building. 3. Recognize the parameters affecting load calculations. 4. Describe critical parameters for computer models in HVAC.
Tentative Topics / Course Plans	Please refer to the next page for the class schedule and topics.
University Policies	https://www.uttyler.edu/offices/academic-affairs/faculty-resources/syllabus-information/



MENG 4318 HVAC Class Schedule

Lec	Day	Date	Topic	Assignment
1	Mo	24-Aug	Introduction	
2	We	26-Aug	Fundamental Concepts	
3	Mo	31-Aug	HVAC Industry	
4	We	2-Sep	HVAC System Design	
	Mo	7-Sep	Labor Day holiday: all offices closed; no classes held	
5	We	9-Sep	Vapor Compression Refrigeration Cycle	
6	Mo	14-Sep	Characteristics of Humid Air	
7	We	16-Sep	Psychrometrics and Psychrometric Chart	HW #1 L-7
8	Mo	21-Sep	Sensible Heating and Cooling	
9	We	23-Sep	Psychrometric Processes	MW #2&3 L-9
10	Mo	28-Sep	Psychrometric Processes Exercises	
11	We	30-Sep	Review for Exam 1	
12	Mo	5-Oct	Exam 1	
13	We	7-Oct	Occupant Comfort	HW #4 L-13
14	Mo	12-Oct	Design Conditions	HW #5 L-14
15	We	14-Oct	Load Calculations	
16	Mo	19-Oct	Load Calculations - BEopt Software	HW #6 L-16
17	We	21-Oct	Load Calculations - OpenStudio Software	HW #7 L-17
18	Mo	26-Oct	Water Distribution System	
19	We	28-Oct	Water Distribution System	
20	Mo	2-Nov	Air Distribution System	
21	We	4-Nov	Air Distribution System	
22	Mo	9-Nov	Economic Analysis	
23	We	11-Nov	Economic Analysis	HW #8 L-23
24	Mo	16-Nov	Review for Exam 2	
25	We	18-Nov	Exam 2	
	Mo	23-Nov	Thanksgiving - No class	
	We	25-Nov		
26	Mo	30-Nov	HVAC Application	
27	We	2-Dec	HVAC Application	
University Calendar			Final Exam - Comprehensive	