Department of Mechanical Engineering
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Uttyler.edu/engineering

MENG 5318 – Heating, Ventilation and Air Conditioning
Course Syllabus

Semester / Year	Fall 2024
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	Graduate standing, and MENG 3401 and MENG 3310 or equivalent.
Section Number	Tyler campus: MENG 5318.051 and HEC: MENG 5318.050
Instructor Name	Dr. Nelson Fumo
Contact Information	Office: RBN 3009, Email: nfumo@uttyler.edu, Phone: (903) 565-5588
Class Type / Instruction Mode / Location	Hybrid: Tyler RBN 2010 and HEC 0A217
Class Time	Thursday 5:00 PM to 7:45 PM
Office Hours	Mo, Tu, and We 2:00 PM to 3:00 PM and by appointment
No. of Credits	3
Required Textbook	No textbook is required for this course.
Optional References	• 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. • ASHRAE Handbooks
Additional Rules and Requirements	• Zoom lectures will be authorized by the instructor based on the needs of the student, but all exams will be conducted in person in the classroom. In extreme circumstances, and with the instructor's approval, a remote exam may be arranged if the student provides an appropriate setup, including a camera, that is satisfactory to the instructor for proctoring the exam via Zoom. • AI tools are allowed to support students' learning and productivity, provided that their use aligns with academic integrity standards. When required, students must disclose their use of AI.
Evaluation Method	Exam 1 20% Exam 2 20% Quizzes and assignments 20% Project 20% Final exam 20%
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 9 Second drop for non-payment: September 18 Last date to withdraw from one or more 15-week courses: November 4 2023 Career Success Conference: Thursday, October 24

Attendance / Makeup policy / other rules	1. Attendance at every lecture is strongly encouraged but not mandatory. 2. There will not be makeup for quizzes, but the lower grade of quizzes will be dropped. 3. Grades can be appealed by meeting the instructor during office hours, but no later than a week after the grade has been given. 4. An opportunity to make up a missed exam may be available to students with an excused absence. Excused absences include absences for university-sponsored events and for religious observances (see the University policy link above for the procedures to follow). Other makeups are granted only in extreme cases and at the discretion of the instructor. Excused absence due to illness will require evidence of treatment by medical personnel at a medical facility. Makeup exams may be scheduled for the end of the semester. 5. Questions outside the classroom will be answered if the student proves that he/she has tried to come up with the solution/answer. 6. The instructor reserves the right to change this syllabus partially or fully at any point in time. Sufficient time and notice will be provided to the class before the activation of the changes, but it should not be more than a week.
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 condition 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	See class schedule in next page
University Policies	https://www.uttyler.edu/offices/academic-affairs/files/syllabus-information.pdf

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MENG 5318 HVAC Class Schedule

Lec	Day	Date	Topic	Reading Activity
1	Th	29-Aug	Course Introduction and basic principles	First Law of Thermodynamics, Vapor Compression System
2	Th	5-Sep	Characteristics of Humid Air	
3	Th	12-Sep	Psychrometric Processes	Tables and Psychrometric Charts
4	Th	19-Sep	Psychrometric Processes	
5	Th	26-Sep	Vapor Compression Refrigeration cycle	Refrigeration Cycle and Refrigerant Properties
6	Th	3-Oct	Psychrometric Processes	
7	Th	10-Oct	Exam 1	
8	Th	17-Oct	Occupant Comfort and Design Conditions	Thermal Comfort tool
9	Th	24-Oct	Load Calculations	BEopt
10	Th	31-Oct	Water Distribution System	Losses in pipes (friction and fittings)
11	Th	7-Nov	Air Distribution System	
12	Th	14-Nov	Economic Analysis	Discount Rates
13	Th	21-Nov	Exam 2	
	Th	28-Nov	Holiday - Thanksgiving	
14	Th	5-Dec	Components and Equipment	
University Schedule			Final Exam - Comprehensive	