UTTyler ENGINEERING

Department of Mechanical Engineering
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Uttyler.edu/engineering

MENG 3211 – Thermal-Fluids Lab
Course Syllabus

Semester / Year	Spring 2026
Catalog Description	*Introduction to basic Thermal/Fluid sciences laboratory procedures and practices. Experimental topics to include fluid flow, heat exchanger basics, and basics of refrigeration. Student teams will design, analyze and document an experimental procedure. All procedures will result in a professional quality laboratory report. One hour of lecture and one three-hour lab per week.*
Prerequisites	MENG 3210, MENG 3401, and (MENG 3310 OR CENG 3310)
Section Number	MENG 3211.003, MENG 3211.007L/008L/009L
Instructor Name	Dr. Nelson Fumo
Contact Information	Office: RBN 3009; Email: nfumo@uttyler.edu
Class Type / Instruction Mode / Location	Lecture and Laboratory/Face-to-Face Lecture RBN 3038 and Lab RBN 1035
Class Time	MENG 3211.003: Mo 10:10AM - 11:00 AM MENG 3211.007L: Mo 2:00PM - 4:45PM MENG 3211.008L: We 2:00PM - 4:45PM MENG 3211.009L: Fr 10:00AM - 12:45PM
Office Hours	Tu/We/Th 11:00PM - 11:50AM or by appointment
No. of Credits	2 (1-hour lecture, 3-hour lab per week)
Required Textbook	No textbook is required but instead students must budget $50 for developing projects.
Optional References	Textbooks from prerequisite courses
Additional Rules and Requirements	**Grading:** Students are expected to provide complete and correct solutions to all assigned problems. Full credit will only be given for correct final answers that are supported by the proper procedure and reasoning. Partial credit may be awarded when the solution demonstrates a clear understanding of the problem and applies the correct procedure but contains a small mistake (such as an arithmetic or algebraic slip). Errors due to carelessness, omissions, or major misunderstandings of the concepts will significantly reduce or eliminate partial credit. **Professional standards for all coursework:** 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. **Use of cellular phones:** The use of cellular phones during lectures and labs is prohibited. If a student uses the cellular phone (call, text, internet), he/she will be asked to leave the

	classroom and penalties of missing the class will apply. It is highly recommended to keep your cellular phone off. **Artificial Intelligence:** 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	Quizzes and class participation: 25% Lab Assignments: 25% Individual student design lab project: 20% Group student design lab project: 20% Final exam: 10%
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: January 26 First drop for non-payment: February 4 Last date to withdraw from one or more 15-week courses: March 30 Other important dates: Refer to the class schedule. Academic Calendar 2025 - 2026
Attendance / Makeup policy / other rules	1. **Attendance:** • Attendance to lecture classes is mandatory because there will not be options for makeup of quizzes, but the lowest grade on quizzes will be dropped to compensate for university accepted excuses. For a second university accepted excuse, a mutual agreement with the instructor will be arranged. • Attendance to laboratory classes is mandatory. A student missing a laboratory activity will have a zero for the laboratory assignment (report or data analysis or other). 2. **Homework and quizzes:** Homework will not be graded, but it is required to take the corresponding quiz. Solutions to homework and quizzes will not be given. However, students can work on the right solution by checking their work with the instructor. 3. **Grade appeal**: Grades may be appealed by meeting with the instructor during office hours, but no later than one week after the grade has been posted. 4. **Assignments due date:** Unless otherwise stated, all lab assignments are due one week after being assigned. Assignments must be submitted at the beginning of the lab; otherwise, a penalty of 20 points will be applied. An additional penalty of 10 points will be applied if the materials are not stapled together. 5. **Questions:** Questions involving knowledge covered in class (lecture/laboratory) will be answered if the student proves that they have tried to come up with the answer. 6. **Communication Policy**: Students must contact me directly by email at nfumo@uttyler.edu. Please do not use Canvas messaging, as I do not monitor it for course communication and it does not allow proper threads of replies.

	7. **Syllabus Changes**: The instructor reserves the right to make changes to the syllabus. Any changes will take effect one week after they are announced.
Course Learning Objectives / ABET & PEOs Relation	By the end of this course, students will be able to: 1. Apply fluid mechanics concepts for analysis of basic fluid mechanics experiments. 2. Apply heat transfer concepts for analysis of basic heat exchangers configurations. 3. Apply thermal system concepts for analysis of refrigeration and heat pump cycles, and psychrometric processes. 4. Design, perform, and report results of a mechanical engineering experiment. 5. Write professional quality laboratory reports.
Tentative Topics / Course Plans	See class schedule below.
University Policies and Information	Link to University Policies and Information Link to Student Resources

MENG 3211 - Class Schedule

Day	Date		Lecture Activity
Mo	Jan	12	Course Introduction
Mo		19	Holiday - No Class
Mo		26	Uncertainty Analysis Review
Mo	Feb	2	Projects Assignment
Mo		9	Differential Pressure Flow Meters - Review & Quiz
Mo		16	Losses in Pipes - Review & Quiz
Mo		23	Impact of a Jet - Review & Quiz
Mo	Mar	2	Buoyancy - Review & Quiz
Mo		9	Spring Break - No Class
Mo		16	Effects of Altitude on Engineering Computations
Mo		23	Psychrometrics Introduction
Mo		30	Psychrometrics - Review & Quiz
Mo	Apr	6	Refrigeration and Heat Pump Cycles - Review & Quiz
Mo		13	Heat Exchangers - Review & Quiz
Mo		20	Review for Final Exam
University Schedule			Final Exam

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Day	Date		Laboratory Activity
Mo	Jan	12	Lab Introduction
We		14	
Fr		16	
Mo		19	No Lab Activity
We		21	
Fr		23	
Mo		26	MathCad for Uncertainty Analysis
We		28	
Fr		30	
Mo	Feb	2	Differential Pressure Flow Meters
We		4	
Fr		6	
Mo		9	Losses in Pipes
We		11	
Fr		13	
Mo		16	Impact of a Jet
We		18	
Fr		20	
Mo		23	Buoyancy (Individual Project Preparation)
We		25	
Fr		27	
Mo	Mar	2	Buoyancy (Individual Project Validation)
We		4	
Fr		6	
Mo		9	Spring Break - No Class
We		11	
Fr		13	
Mo		16	Student Design Lab Project (Mathematical Model)
We		18	
Fr		20	
Mo		23	Psychrometrics
We		25	
Fr		27	
Mo		30	Refrigeration and Heat Pump Cycles
We	Apr	1	
Fr		3	
Mo		6	Heat Exchangers
We		8	
Fr		10	
Mo		13	Validation of Student Design Lab Project
We		15	
Fr		17	
Mo		20	Presentations of Student Design Lab Project
We		22	
Fr		24	