

MENG 3211 – Mechanical Engineering Lab II
Department of Mechanical Engineering, College of Engineering
The University of Texas at Tyler
Spring 2022 Semester – Sections 001, 001L, 002L

Instructor

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Office Hours: Tu 4 – 5 pm, We 2 – 3 pm, and Th 9 – 10 am, or by appointment.

Course Details

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.

Credit hours: 2 (1 hour lecture and 3 hours laboratory per week).

Prerequisites: MENG 3210, MENG 3401, MENG/CENG 3310, and co-requisite EENG 3308.

Class Meeting: Lectures: Monday 2:00 – 2:55 pm, Room RBS 1031
Lab for 001L: Tuesday 8:00 – 10:45 pm, Room RBN 1035
Lab for 002L: Thursday 2:00 – 4:45 pm, Room RBN 1035

Textbook: No textbook is required. E-book by Dr. Rafe Biswas will be used in some chapters, and the books used in MENG 3210 and MENG 3310 are suggested.

Additional material: handouts, operating manuals, and material posted on CANVAS.

Expected Learning Outcomes

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.
3. Apply thermal system concepts for analysis of refrigeration and heat pump cycles, and psychrometrics processes.
4. Design, perform, and report results of a mechanical engineering experiment.
5. Write professional quality laboratory reports.

Evaluation activities

- Exams: there will be two exams during the semester, the Mid-Term Exam and the Final Exam. The final exam will be comprehensive.
- Lab Assignments: for each laboratory activity, the given assignment must be submitted at the beginning of the following laboratory class. Instructions for the presentation of the assignment (report or data analysis or other) will be given separately.

- Quizzes: quizzes will be applied according with the topics covered in lectures and lab activities. Homework related to a quiz may be assigned one week before the quiz. When homework is assigned, it must be 100% completed and turned in with the quiz. If the homework is not turned in or is incomplete, the quiz grade will be zero.
- Student Design Lab Project: students will work in a design lab project of a topic assigned by the instructor. Students must plan the experiment, build the experimental setup, conduct the experiment, obtain data, validate the results, submit a report, and present the project to the class. Although the project will be completed in groups, the grade will be individual based on contributions.

Grading

Mid-Term Exam	20%	<u>Scale:</u> A	90 – 100
Final Exam	20%	B	80 – 89
Lab Assignments	20%	C	70 – 79
Quizzes and Class Participation	20%	D	60 – 69
Student Design Lab Project	20%	F	< 60

Grade Appeal: grades can be appealed by meeting the instructor during office hours, but no later than a week after the grade has been given.

Attendance

Attendance to lecture classes is not mandatory but is strongly recommended. No options for makeup. 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) and must work in a makeup assignment to avoid 10 points being dropped in the midterm or final exam.

Additional Class/Instructor Policies

Quiz Not Taken:

There are no make-up quizzes. However, the lowest grade under “Quizzes and Class Participation” will be dropped to compute the average.

Homework

Homework will not be graded, but it is required to take the quiz. Students are advised that if a question in a quiz is similar to a question in the homework, maximum partial credit will be 50 points. However, if the quiz is the same as the homework, no partial credit will be given.

Pop Quizzes:

To ensure that the students review any material given by the instructor prior the laboratory, pop quizzes can be applied.

Assignments Due Date:

Unless otherwise stated, all assignments are due one week after been assigned.

Homework/Quiz/Report 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.

Homework/Quiz Solutions:

Solution to homework and quizzes will not be given. However, students can work on the right solution by checking their work with the instructor.

Student Behavior and Attitude:

- The use of cellular phones during the class is prohibited (it is recommended to keep it off).
- A positive attitude/behavior is expected from the students in all classes (lectures and laboratories). Students directly or indirectly disturbing the class or other students will be asked to leave the classroom or laboratory with the consequences associated to an absence.

Lab Reports:

The “Technical Report Writing Guide for Students in Mechanical Engineering” found on CANVAS is part of the Syllabus.

Modifications:

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.

University, College, and Department Policies:**1. Modifications**

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.

2. Academic Honesty and Academic Misconduct

The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).

3. Student Standards of Academic Conduct

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, or material which has been submitted within a different course without explicit approval of the instructor, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. “Cheating” includes, but is not limited to:

- copying from another student’s test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials, or devices and instruments allowing access to materials, which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes” as well as cell phones, to name a few. The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student or person during a test or other assignment without explicit authorization;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, or removing material from the exam location, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;

- falsifying research data, laboratory reports, and/or other academic work offered for credit;
 - taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
 - misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.
- ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.
 - iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
 - iv. All written work that is submitted will be subject to review by plagiarism software.
 - v. Penalty for any related infractions will be decided at the discretion of the instructor including, but not limited to, granting of a failing grade in part or the course or in the entire course.

4. Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

5. COVID Guidance

- a. *Information for Classrooms and Laboratories:* Students are expected to wear face masks covering their nose and mouth in public settings (including classrooms and laboratories). Students who are feeling ill or experiencing symptoms such as sneezing, coughing, digestive issues (e.g., nausea, diarrhea), or a higher than normal temperature should stay at home and are encouraged to use the [UT Tyler COVID-19 Information and Procedures](#) website to review protocols, check symptoms, and report possible exposure. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, call (903) 566-7079, or email saroffice@uttyler.edu.
- b. *Recording of Class Sessions:* Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

6. Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

7. UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support.

For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

8. Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester’s Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office

of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a “W” grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

9. State-Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

10. Withdrawing from Class

Students you are allowed to [withdraw](#) (drop) from this course through the University's [Withdrawal Portal](#). Texas law prohibits students who began college for the first time in Fall 2007 or after that from dropping more than six courses during their entire undergraduate career. This includes courses dropped at other 2-year or 4-year Texas public colleges and universities. Make sure to consider the impact withdrawing from this class has on your academic progress as well as the financial implications. We encourage you to consult your advisor(s) and financial aid for additional guidance. CAUTION #1: Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#). CAUTION #2: All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms.

11. Final Exam Policy

Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the dean of the appropriate college may authorize an exception to the schedule after consultation with the faculty member involved. Faculty members are required to maintain student final examination papers for a minimum of three months following the examination date.

12. Incomplete Grade Policy

If a student, because of extenuating circumstances, cannot complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in lieu of a grade only when all of the following conditions are met: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all course work or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor; and (c) the student presents these reasons prior to the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average for a student.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to complete all work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has not been assigned within one year, then the Incomplete will be changed to an F or to NC if the course was initially taken under the CR/NC grading basis.

13. Grade Appeal Policy

UT Tyler's Grade Appeal policy requires the completion of a Grade Appeal form for this action to take place. The grade appeal begins with the instructor of your course. If you disagree with the instructor's decision, you may then move your appeal to the department chair/school director for that course. If you are still dissatisfied with the decision of the chair/director, you may move the appeal to the Dean of the College offering that course, who has the final decision. Grade appeals must be initiated within sixty (60) days from the date of receiving the final course grade. The Grade Appeal form is found in the [Registrar's Form Library](#).

14. Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA), and the ADA Amendments Act (ADAAA), The University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with the Assistant Director of Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150, or call 903.566.7079.”

15. Military Affiliated Students

UT Tyler honors the service and sacrifices of our military affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. Campus resources for military affiliated students are in the [Military and Veterans Success Center \(MVSC\)](#). The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.

16. Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

17. Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

18. FERPA

UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [University Policy 5.2.3](#). The course instructor will follow all requirements in protecting your confidential information.

19. Emergency Exits and Evacuation

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

20. UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

MENG 3211 - Class Schedule

Day	Date	Lecture Activity
Mo	Jan 10	Course Introduction
Mo	17	Holiday - No Class
Mo	24	Flow Meters
Mo	31	Flow through an Orifice
Mo	Feb 7	Losses in Pipes I
Mo	14	Losses in Pipes II
Mo	21	Midterm Exam
Mo	28	Impact of a Jet
Mo	Mar 7	Spring Break - No Class
Mo	14	Psychrometrics
Mo	21	Refrigeration and Heat Pump Cycles
Mo	28	Heat Exchangers
Mo	Apr 4	Hydronic Systems
Mo	11	Effects of Altitude on Engineering Computations
Mo	18	Review for final exam
		<u>Final Exam</u>

Day	Date	Laboratory Activity
Tu	Jan 11	Lab Introduction
Th	13	
Tu	18	MathCad for Uncertainty Analysis
Th	20	
Tu	25	Student Design Lab Project
Th	27	
Tu	Feb 1	Flow meters and Flow through an orifice
Th	3	
Tu	8	Student Design Lab Project
Th	10	
Tu	15	Losses in Pipes (minor and major losses)
Th	17	
Tu	22	Student Design Lab Project
Th	24	
Tu	Mar 1	Impact of a Jet
Th	3	
Tu	8	Spring Break - No Class
Th	10	
Tu	15	Student Design Lab Project
Th	17	
Tu	22	Refrigeration and Heat Pump Cycles
Th	24	
Tu	29	Student Design Lab Project
Th	31	
Tu	Apr 5	Heat Exchangers
Th	7	
Tu	12	Validation of Student Design Lab Project
Th	14	
Tu	19	Presentations of Student Design Lab Project
Th	21	