

**MENG 3211 – Mechanical Engineering Lab II**  
Department of Mechanical Engineering, College of Engineering  
The University of Texas at Tyler  
Spring 2019 Semester – Sections 001, 001L, 002L

**Instructor**

Dr. Nelson Fumo  
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Office Hours: Tuesday, Wednesday, and Thursday 11:00 – 12:00 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; concurrent enrollment in or completion of MENG 3304 and MENG 3316.

Class Meeting: Lectures: Monday 11:15 – 12:15 am, Room RBN 3040  
Lab for 001L: Tuesday 2:00 – 4:45 pm, Room RBN 1035  
Lab for 002L: Thursday 2:00 – 4:45 pm, Room RBN 1035

Textbook: No textbook is required, but 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 theoretical coursework to formulate and implement basic experiments in Thermal/Fluid sciences.
2. Apply basic fluid mechanics concepts to laboratory equipment such as flow meters and pressure gauges.
3. Apply basic heat transfer concepts in a laboratory regarding basic heat exchanger configurations, and rate their advantages and disadvantages.
4. Apply basic thermal system concepts related to empirical refrigeration and heat pump cycles.
5. Design, perform, and report results of a mechanical engineering experiment.
6. Write clear and well documented 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 a report or data analysis must be submitted at the beginning of the following laboratory class. Instructions for the presentation of the report or data analysis 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, 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. For example, if the grade is given on a Wednesday, the student has the right to appeal by Tuesday at 5 pm.

### Attendance

Attendance to lecture classes is not mandatory, but strongly recommended since evaluation activities, such as quizzes, will be given every class with no option for makeup.

Attendance to laboratory classes is mandatory. A student missing a laboratory activity will have zero in the laboratory assignment (report or data analysis) and must work in a makeup assignment in order to avoid 10 points being dropped in the midterm or final exam.

### Changes to Syllabus and Course Schedule

I reserve the right to make changes to the syllabus or course schedule during the semester. Any change will be announced in class, and an updated version of the syllabus or course schedule will be posted to Blackboard.

### Student Behavior

- Academic dishonesty, in the form of cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity, will not be tolerated. Regulations about academic dishonesty are contained in *A Student Guide to Conduct and Discipline at UT Tyler*, which may be obtained from the Office of Student Affairs.
- The use of cellular phones during the class is prohibited (it is recommended to keep it off).

### **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 the question in a quiz is similar to a question in 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 has 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 attitude:**

A positive attitude/behavior is expected from the students in all classes (lectures and laboratories). Students disturbing directly or indirectly the class or other students will be asked to leave the classroom or laboratory with the consequences associated to an absence.

**Lab reports:**

Instructions on lab report format/style and grading rubric will be given separately, but they are part of the Syllabus.

**Changes to the syllabus**

The instructor can make changes to the syllabus along the semester and the changes will be effective one week after the students have been notified of the change.

### **University policies**

**UT Tyler Honor Code**

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

**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>

**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>

**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](http://www.uttyler.edu/tobacco-free)

**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. (For Fall, the Census Date is Sept. 12.) 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 (Sept. 12th) 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

**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.

**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 Cynthia Lowery, Assistant Director of Student Services/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.

**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.

**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.

### **Social Security and FERPA Statement**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

### **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.

### **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, 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 which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". 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 during a test or other assignment without authority;
- 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, 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.

### **UT Tyler Resources for Students**

- [UT Tyler Writing Center](mailto:writingcenter@uttyler.edu) (903.565.5995), writingcenter@uttyler.edu
- [UT Tyler Tutoring Center](mailto:tutoring@uttyler.edu) (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](mailto:903.566.7254) (903.566.7254)

## MENG 3211 - Class Schedule

Day	Date		Lecture Activity
Mon	Jan	14	Course Introduction
Mon		21	Holiday - No Class
Mon		28	Flow Meters
Mon	Feb	4	Flow through an Orifice
Mon		11	Losses in Pipes I
Mon		18	Losses in Pipes II
Mon		25	Impact of a Jet
Mon	Mar	4	Midterm Exam
Mon		11	Spring Break - No Class
Mon		18	Heat Exchangers
Mon		25	Heat Exchangers
Mon	Apr	1	Psychrometrics
Mon		8	Refrigeration and Heat Pump Cycles
Mon		15	Supplementary Topic
Mon		22	Review for final exam
Mon		30	Final Exam

Day	Date		Laboratory Activity
Tu	Jan	15	Lab Introduction
Th		17	
Tu		22	MathCad for Uncertainty Analysis
Th		24	
Tu		29	Flow meters
Th	Feb	31	
Tu		5	Flow through an orifice
Th		7	
Tu		12	Losses in Pipes I
Th		14	
Tu		19	Losses in Pipes II
Th		21	
Tu		26	Impact of a Jet
Th		28	
Tu	Mar	5	Student Design Lab Project
Th		7	
Tu		12	Spring Break - No Class
Th		14	
Tu		19	Heat Exchangers
Th		21	
Tu		26	Heat Exchangers
Th		28	
Tu	Apr	2	Student Design Lab Project
Th		4	
Tu		9	Refrigeration and Heat Pump Cycles
Th		11	
Tu		16	Validation of Project
Th		18	
Tu		23	Presentations of Student Design Lab Project
Th		25	