

ENGT 3213, 10449, Thermal Fluids Lab

Spring 2023

Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

This Face-to-Face course meets

from January 17 – May 12

on **Tuesday and Thursday** from **9:00 am – 12:00 pm** in

Warriors Hall (WH) 413

with supplemental materials made available online through the A&M-Central Texas Canvas Learning Management System [<https://tamuct.instructure.com/>]

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Taylor Harvey

Office: Heritage Hall 302L

Phone: 254-519-5414

Email: tharvey@tamuct.edu (prefer direct email)

Office Hours

By appointment. Just email me and we can set something up! Available both in person and virtually.

Student-instructor interaction

You are strongly encouraged to communicate with me. If you get stuck on a concept or homework problem, contact me sooner rather than later. Send me an email that includes screenshot or photo of the problem and I can provide guidance. I will reply to any email within 48 hours during the work week or on Monday after a weekend (but probably a lot sooner in both cases). If you need more help, send me an email and schedule a virtual or in-person meeting.

Emergency Warning System for Texas A&M University-Central Texas

SAFEZONE. SafeZone provides a public safety application that gives you the ability to call for help with the push of a button. It also provides Texas A&M University-Central Texas the ability to communicate emergency information quickly via push notifications, email, and text messages. All students automatically receive email and text messages via their myCT accounts.

Downloading SafeZone allows access to push notifications and enables you to connect directly for help through the app.

You can download SafeZone from the app store and use your myCT credentials to log in. If you would like more information, you can visit the [SafeZone](http://www.safezoneapp.com) website [www.safezoneapp.com].

To register SafeZone on your phone, please follow these 3 easy steps:

1. Download the SafeZone App from your phone store using the link below:
 - o [iPhone/iPad](https://apps.apple.com/app/safezone/id533054756): [<https://apps.apple.com/app/safezone/id533054756>]
 - o [Android Phone / Tablet](https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp) [<https://play.google.com/store/apps/details?id=com.criticalarc.safezoneapp>]
2. Launch the app and enter your myCT email address (e.g. {name}@tamuct.edu)
3. Complete your profile and accept the terms of service

For updates on COVID information, please monitor the University [website](https://www.tamuct.edu/covid19/) [<https://www.tamuct.edu/covid19/>]. In the event of a campus closing, this course will move 100% online.

COURSE INFORMATION

Course Overview and description

This course introduces students to practical applications of fluid properties, fluid statics, fluid dynamics, and kinematics. Conservation of energy and momentum as well as incompressible laminar and turbulent flow are also utilized in experiments.

Course Objective or Goal

Student Learning Outcomes

1. Select and apply sensors and measurement techniques appropriately in thermodynamics and fluid mechanics measurements
2. Present, analyze, and interpret correctly the results of experimental measurements
3. Communicate the results of experimental measurements clearly and concisely in written and oral reports
4. Apply experimental results to improve a thermodynamic or fluid dynamic process

Required Reading and Textbook(s)

Text materials from ENGT 3311 and ENGT3312 may be utilized.

Students will be required to have the following safety equipment:

- Safety Glasses
- Lab Coat (available from the TAMU-CT bookstore) or apron

COURSE REQUIREMENTS

The course will involve lab reports, projects, and exams.

This is a laboratory class. **Safety is a priority.** Laboratory safety training will be conducted during the first laboratory session during the semester. A safety quiz will be required on Canvas. You will also have to acknowledge the training on a signed agreement form. Students who do not complete the training, safety quiz, and student agreement will not be allowed access to the lab and will not pass the course.

Laboratory Reports (50 weighted pts in total) will be due each week on at the start of class on Tuesday for the previous week's lab. Two formats will be used for lab reports. Half the labs will be reported on an assigned handout form. The other half of labs will be reported via lab reports. Lab reports will be graded on the following rubric. (SLO 1-4)

Laboratory Report Grading Rubric - 100 points total possible

Introduction (20 points)

Background (5 pts): Is context provided for the study?

Hypothesis (5 pts): Is the hypothesis stated clearly, and is it well-justified?

Predictions (5 pts): Are explicit predictions made that follow from the hypothesis?

Results (50 points)

Graphs, charts, tables (20 pts): Are all relevant figures included? Are figures and axes labeled appropriately? Do they only contain appropriate information? Are the tables redundant with the figures?

Description in text (10 pts): Does the text adequately describe the results of the study?

Statistics (10 pts): Are the appropriate statistics included for this study? (e.g., mean, standard deviation, test statistic, p-value)

Handout (10 pts): Is the lab handout (if applicable) attached and appropriately filled out.

Discussion (30 points)

Are the results related back to the hypothesis and predictions? (10 pts)

Is the general significance of the study discussed? (5 pts)

Independent thought (5 pts): Did the student contribute ideas besides those discussed in lab?

Analysis of results questions (10 pts)

Potential Deductions

Grammar, Organization, and Mechanics (up to 20 pts)

Conciseness (up to 10 pts)

Two large scale **Projects** will be conducted during the semester (SLO 1-4)

Project 1 In-depth Laboratory Report (15 weighted pts);

Students will select one of the experiments from the first 5 weeks of class and expand on the initial lab and write an in-depth lab report. The final project deliverables will be full lab report and a presentation. The project will be graded up to 100 pts and then scaled to the 10 pts weight. Grading will be according to the rubric at the end of the syllabus.

Project 2 Laboratory Design (15 weighted pts)

Students will select one of the equipment areas and design a new lab. The final project deliverables will be new lab experiment and a presentation. The project will be graded out of 100 pts and then scaled to the 10 pts weight. Grading will be according to the rubric at the end of the syllabus.

Reports for both projects can utilize any scientific journal style guide, but must be formatted and referenced.

A **Midterm Exam** (10 weighted pts) and a **Comprehensive Final Exam** (10 weighted pts) will be given during the semester. (SLO 1-4)

Grading Criteria Rubric and Conversion

Activity	Points	% of Final Grade
Laboratory Reports	50	50
Projects	30	20
Midterm Exam	10	15
Final Exam	10	15

Course Grades will be assigned by the following scale based on weighted grade percentage

Grade	Weighted Grade (%)
A	≥ 90.00
B	80.00 - 89.99
C	70.00 - 79.99
D	60.00 - 69.99
F	< 60.00

Posting of Grades

All turned in work will be graded within 2 weeks and results posted on Canvas.

Grading Policies

Attendance

Students should attend and **be on time** for all class activities.

Late Work

Late work without penalty will not be accepted without **prior** approval. You must plan your time well in order to turn things in on time. If there are extenuating circumstances, an individual extension may be granted after speaking with the instructor. Emergencies will be accommodated.

Late work will have a 10% deduction for each calendar day the activity is turned in late (90% maximum score for a project turned in 1 day late, 80% for 2 days late, etc.), but no submissions will be accepted greater than 5 days late. Scores for late projects will be determined using this formula:

'Grade Recorded' = 'Grade Earned if not late' * 'maximum percent based on days late'.

Missed exams

Exams will be administered either in the classroom, on Canvas, during a Webex session, or self-administered. Proctorio, a remote proctoring program integrated into Canvas, may be used during exams (more information given below). Exams will be administered at a specific time or during a designated time period. Exam timing and instructions will be communicated during lecture and on Canvas.

If you cannot make an exam session/period, you **must** schedule an alternative time period beforehand. Extenuating circumstances will be considered after speaking with the instructor. Emergencies will be accommodated. All exams must be taken within 1 week of the original exam period.

Plagiarism

It is the responsibility of the student to understand plagiarism and avoid it completely. Contact me if you have any questions about what constitutes plagiarism. Any assignment deemed to be plagiarized by the instructor will receive a zero, even if the plagiarism is the result of a misunderstanding or ignorance. A second plagiarism offense will lead to a failing grade in the course.

Appeals

If the student wishes to appeal a grade, they must do so within 1 week of receiving the graded paper. Students should save all their work to ensure that no clerical errors are made in grade reporting.

Publisher Homework

If a publisher homework management system is used, any aid provided by the publisher on the assignments is given as a supplementary resource. The number of attempts and penalty is set by class policy and is not dependent on the publisher resources available or the form that they take. I am available to answer questions if you want to preserve your attempts or avoid any penalties.

COURSE OUTLINE AND CALENDAR

Course Calendar

A tentative schedule is shown below. Modifications to this schedule may be made at the discretion of the instructor.

Week	Exp. No.	Lab Topics	Project
1	1	Safety & Fluid Properties	
2	2	Static and Moving Fluids	
3	3	Friction Pipes	
4	4	Energy Balance in Pipes	
5	5	Pumps	
6		Project 1	
7		Project 1	
8		Midterm Exam	Project 1 Due
9		Spring Break	
10	6	Radial Heat Conduction	
11	7	Thermal Conductivity	
12	8	Linear Heat Conduction Experiment	
13	9	Concentric Tube and Heat exchanger	
14	10	HVAC	
15		Project 2	
16		Project 2	
17		Final Exam	Project 2 Due

Important University Dates

See the academic calendar: <https://www.tamuct.edu/registrar/academic-calendar.html>

TECHNOLOGY REQUIREMENTS AND SUPPORT

Computer access will be needed to complete homework and projects.

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. **We strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.**

Logon to A&M-Central Texas Canvas [<https://tamuct.instructure.com/>] or access Canvas through the TAMUCT Online link in myCT [<https://tamuct.onecampus.com/>]. You will log in through our Microsoft portal.

Username: Your MyCT email address. Password: Your MyCT password

Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select "Chat with Canvas Support," submit a support request through "Report a Problem," or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact your instructor.

Online Proctored Testing

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

Other Technology Support

For log-in problems, students should contact Help Desk Central, 24 hours a day, 7 days a week

Email: helpdesk@tamuedu

Phone: (254) 519-5466

[Web Chat](http://hdc.tamuedu): [http://hdc.tamuedu]

Please let the support technician know you are an A&M-Central Texas student.

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Academic Accommodations

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Warrior Center for Student Success, Equity and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations, please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information, please visit our [Access & Inclusion](https://tamuct.instructure.com/courses/717) Canvas page (log-in required) [https://tamuct.instructure.com/courses/717]

Academic Integrity

Texas A&M University-Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. All academic misconduct concerns will be referred to the Office of Student Conduct. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more [information regarding the student conduct process](https://www.tamuct.edu/student-affairs/student-conduct.html), [https://www.tamuct.edu/student-affairs/student-conduct.html].

If you know of potential honor violations by other students, you may [submit a referral](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0), [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

Drop Policy

If you discover that you need to drop this class, you must complete the [Drop Request](#) Dynamic Form through Warrior Web.

[https://federation.ngwebsolutions.com/sp/startSSO.ping?PartnerId=https://eis-prod.ec.tamuct.edu:443/samlso&SpSessionAuthnAdapterId=tamuctDF&TargetResource=https%3a%2f%2fdynamicforms.ngwebsolutions.com%2fsubmit%2fstart%2f53b0502-4f36-be43-f02a4202f612].

Faculty cannot drop students; this is always the responsibility of the student. The Registrar's Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Registrar's Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar's Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant, experiencing pregnancy-related conditions, and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more information, please visit [Student Affairs](https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html) [https://www.tamuct.edu/student-affairs/pregnant-and-parenting-students.html]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these [requirements and guidelines](http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf) online, please visit the website [http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender—including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

Tutoring

Tutoring is available to all A&M-Central Texas students, both virtually and in-person. Student success coaching is available online upon request.

If you have a question, are interested in becoming a tutor, or in need of success coaching contact the Warrior Center for Student Success, Equity and Inclusion at (254) 501-5836, visit the Warrior Center at 212 Warrior Hall, or by emailing WarriorCenter@tamuct.edu.

To schedule tutoring sessions and view tutor availability, please visit [Tutor Matching Services](https://tutormatchingservice.com/TAMUCT) [https://tutormatchingservice.com/TAMUCT] or visit the Tutoring Center in 111 Warrior Hall.

Chat live with a remote tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

University Library & Archives

The University Library & Archives provides many services in support of research across campus and at a distance. We offer over 350 electronic databases containing approximately 631,525 eBooks and 75,149 journals, in addition to the 97,443 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place virtually through WebEx, Microsoft Teams or in-person at the library. [Schedule an appointment here](#)

[<https://tamuct.libcal.com/appointments>]. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our [Library website](#)

[<https://tamuct.libguides.com/index>]

University Writing Center

University Writing Center: Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University–Central Texas (A&M–Central Texas) is a free service open to all A&M–Central Texas students. The hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday in Warrior Hall 416 (with online tutoring available every hour as well) with satellite hours available online only Monday thru Thursday from 6:00-9:00 p.m. and Saturday 12:00-3:00 p.m.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. In addition, students may work independently in the UWC by checking out a laptop that runs the Microsoft Office suite and connects to WIFI, or by consulting our resources on writing, including all of the relevant style guides. Whether you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via [WCOnline](#) [<https://tamuct.mywconline.com/>]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC, need any assistance with scheduling, or would like to schedule a recurring appointment with your favorite tutor.

OTHER POLICY STATEMENTS

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Wellness and Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the [Title IX webpage](#) [<https://www.tamuct.edu/compliance/titleix.html>].

Behavioral Intervention

Texas A&M University–Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, please make a referral to the Behavioral Intervention Team. Referring your concern shows you care. You can complete the [referral](#) online

[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2].

Anonymous referrals are accepted. Please see the [Behavioral Intervention Team](#) website for more information [<https://www.tamuct.edu/bit>]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5805.

Copyright Notice

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.

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