

**ENGT 3213, 10318, Thermal Fluids Lab
Spring 2021**

Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

This course meets face-to-face **Warriors Hall (WH) 413** and Online Via Webex (meeting links in the WebEx Meeting tab in Canvas) Go to Canvas click on the WebEx Meeting tab under announcements and select the meeting from January 19 – May 13 **on Tuesday and Thursday** from **0900 am – 12:00 pm** in 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. Claudia Beck

Office: Founders Hall 408 D

Phone: 254-519-5775

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

Office Hours

Dr. Beck

By appointment via email.

Student-instructor interaction

You are strongly encouraged and expected to communicate with the instructor! If you get stuck on a concept or homework problem, don't wait until office hours! Send me an email with a screenshot or photo of the problem you are having difficulty with and we can solve the problem sooner. I will reply to any email within 24 hours (but probably a lot sooner). If you need more help, send me an email and schedule a Webex session. But make sure you are communicating with me!

WARRIOR SHIELD

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

Warrior Shield is an emergency notification service that gives Texas A&M University-Central Texas the ability to communicate health and safety emergency information quickly via email, text message, and social media. All students are automatically enrolled in Warrior Shield through their myCT email account.

Connect to Warrior Shield by [911Cellular](https://portal.publicsafetycloud.net/Account/Login) [<https://portal.publicsafetycloud.net/Account/Login>] to change where you receive your alerts or to opt out. By staying enrolled in Warrior Shield, university officials can quickly pass on safety-related information, regardless of your location.

COVID-19 SAFETY MEASURES

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University-Central Texas has adopted policies and practices to minimize virus transmission. All members of the university community are expected to adhere to these measures to ensure their own safety and the safety of others. Students must observe the following practices while participating in face-to-face courses, course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.) and co-curricular programs:

- Self-monitoring—Students should follow CDC recommendations for self-monitoring. Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction. Students required to quarantine must participate in courses and course-related activities remotely and must not attend face-to-face course activities. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.
- Face Coverings— Face coverings must be worn inside of buildings and within 50 feet of building entrances on the A&M-Central Texas Campus. This includes lobbies, restrooms, hallways, elevators, classrooms, laboratories, conference rooms, break rooms, non-private office spaces, and other shared spaces. Face coverings are also required in outdoor spaces where physical distancing is not maintained. The university will evaluate exceptions to this requirement on a case by case basis. Students can request an exception through the Office of Access and Inclusion in Student Affairs.

If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the Office of Student Conduct. Additionally, the faculty member may choose to teach that day's class remotely for all students.

- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in the course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- The university will notify students in the event that the COVID-19 situation necessitates changes to the course schedule or modality.

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.

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.

COURSE REQUIREMENTS

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

Laboratory Reports (15 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 (10 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 (10 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** (15 weighted pts) and a **Comprehensive Final Exam** (15 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	20	20
Midterm Exams	15	15
Final Exam	15	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

Late Work

Late work will not be excepted 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.

Missed exams

If you cannot make an exam session, you **must** schedule an alternative period beforehand. Missed exams should be taken before the scheduled time, but must be taken within a week of the actual exam.

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.

Plagiarism/Cheating

Any student found to be cheating and/or having plagiarized will receive an immediate failing grade and be referred to the office of student conduct. More info below under academic integrity.

COURSE OUTLINE AND CALENDAR

Complete Course Calendar

Week	Dates	Exp. No.	Lab Topics	Project
1	Jan 19-21	1	Fluid Properties	
2	Jan 26-28	2	Static and Moving Fluids	
3	Feb 2-4	3	Friction Pipes	
4	Feb 9-11	4	Energy Balance in Pipes	
5	Feb 16-18	5	Pumps	
6	Feb 23-25		Project 1	
7	Mar 2-4		Project 1	
8	Mar 9-11		Midterm Exam	Project 1 Due
9	Mar 16-18		Spring Break	
10	Mar 23-25	6	Radial Heat Conduction	
11	Mar 30- 1	7	Thermal Conductivity	
12	Apr 6-8	8	Linear Heat Conduction Experiment	
13	Apr13-15	9	Concentric Tube and Heat exchanger	
14	Apr 20-22	10	HVAC	
15	Apr 27-29		Project 2	
16	May 4-6		Project 2	
17	May 11-13		Final Exam	Project 2 Due

The following dates will not meet for laboratory: None

Important University Dates

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

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

Computer access will be needed to complete homework and projects. It is preferable that each student has a laptop, but not required. Use of a graphing calculator will be permissible on exams.

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.

Other Technology Support

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

Email: helpdesk@tamu.edu

Phone: (254) 519-5466

[Web Chat](http://hdc.tamu.edu): [<http://hdc.tamu.edu>]

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

UNIVERSITY RESOURCES, PROCEDURES, AND GUIDELINES

Drop Policy

If you discover that you need to drop this class, you must complete a [Drop Request Form](https://www.tamuct.edu/registrar/docs/Drop_Request_Form.pdf) [https://www.tamuct.edu/registrar/docs/Drop_Request_Form.pdf].

Professors 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, signed and returned. Once you return the signed 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.

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. Academic integrity is defined as a commitment to honesty, trust, fairness, respect, and responsibility. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. Academic misconduct is any act that improperly affects a true and honest evaluation of a student’s academic performance and includes, but is not limited to, working with others in an unauthorized manner, cheating on an examination or other academic work,

plagiarism and improper citation of sources, using another student's work, collusion, and the abuse of resource materials. All academic misconduct concerns will be referred to the university's Office of Student Conduct. Ignorance of the university's standards and expectations is never an excuse to act with a lack of integrity. 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 report](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0),
[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

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 Office of Access 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]

Important information for Pregnant and/or Parenting Students

Texas A&M University-Central Texas supports students who are pregnant 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/index.html) [https://www.tamuct.edu/student-affairs/index.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 on-campus and online. Subjects tutored on campus include Accounting, Advanced Math, Biology, Finance, Statistics, Mathematics, and Study Skills. Tutors are available at the Tutoring Center in Warrior Hall, Suite 111. Tutor.com tutoring **will not offer writing support** beginning August 1, 2019, but will continue to offer other tutoring support.

If you have a question regarding tutor schedules, need to schedule a tutoring session, are interested in becoming a tutor, or have any other question, contact Academic Support Programs at (254) 501-5836, visit the Office of Student Success at 212F Warrior Hall, or by emailing studentsuccess@tamuct.edu .

Chat live with a 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. Access Tutor.com through Canvas.

University Writing Center

Located in Warrior Hall 416, the University Writing Center (UWC) at Texas A&M University–Central Texas (TAMUCT) is a free workspace open to all TAMUCT students from 10:00 a.m.-5:00 p.m. Monday thru Thursday with satellite hours in the University Library Monday thru Thursday from 6:00-9:00 p.m. This semester, the UWC is also offering online only hours from 12:00-3:00 p.m. on Saturdays.

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 visiting the UWC during normal operating hours (both half-hour and hour sessions are available) or by making an appointment via [WOnline](https://tamuct.mywconline.com/) [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 and/or need any assistance with scheduling.

University Library

The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 250,000 eBooks and 82,000 journals, in addition to the 85,000 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 on Skype or in-person at the library. 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](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index].

OPTIONAL 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 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/departments/compliance/titleix.php) [https://www.tamuct.edu/departments/compliance/titleix.php].

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, who are exhibiting concerning behaviors, or individuals causing a significant disruption

to our community, 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/student-affairs/bat.html>]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5800.

OTHER POLICIES

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.

Copyright. 2021 by Claudia Beck at Texas A&M University-Central Texas, College of Arts and Sciences; 1001 Leadership Place, Killeen, TX 76549; 254-510-5414;
cbeck@tamuct.edu

Project 1 Rubric

Category	Excellent (A) 95%	Good (B) 85%	Fair (C) 75%	Poor (D) 65%	Fail (F) 0%	Score
Title (5%)	Clearly describes the content of the current lab exercise. Uses descriptive words that are associated with the lab.	Describes the content but the usage of descriptive words is not appropriate	The content is not clearly described. Fair use of descriptive words	No title. Poor description or poor use of descriptive words.	No submission/No effort exhibited	
Introduction & Objectives (15%)	Clear background information based on a thorough literature search. Uses proper “in text” citations. Includes a rationale for the study along with a hypothesis.	Contains background information but is not complete. The hypothesis is partially stated.	Background information is not complete and lacks proper “in text” citations. The hypothesis is not clearly stated.	Very little or no background information. No “in text” citations. Unrelated introduction	No submission/No effort exhibited	
Materials and Methods (15%)	Contains a complete list of the experimental procedures. Steps taken during the lab are easy to follow in a paragraph form. The section is organized in a way that the reader understands the logical flow of the lab. Proper use of third person and past tense.	One or more relevant pieces of information are missing. The section is not very well organized. Use of first person or improper use of verb tense appears in part of the text.	Misses several components of the experimental procedures. There is a lack of organization and there is not proper use of grammar standards.	Procedural steps are incorrect, illogical, unrelated or plagiarized.	No submission/No effort exhibited	
Results (20%)	Key results are presented in an orderly and logical sequence using both text and illustrative materials (Tables and Figures). All the relevant information obtained in the experiment is included. All calculations are provided in a logical manner using proper units	One or more key results are missing. Figures and tables are present but contain minor errors.	Misses several key results. Figures lack proper identification in the Y and X axis. Tables have missing titles. The text doesn’t follow the sequence of the tables and/or figures.	Major results are not included. Figures and tables are poorly constructed or not present.	No submission/No effort exhibited	

Discussion and Conclusion (15%)	Proper interpretation of results. Summarizes data used to draw conclusion Discusses applications or real-life situations. Addresses hypothesis and cites sources of errors Connects the conclusion with the introduction by way of the stated hypothesis and literature cited.	Interpretation of results is presented. However, there is a disconnection between the discussion and the testable hypothesis identified in the introduction.	Misses the interpretation of key results. There is little connection between the discussion and the introduction.	Very poor interpretation of the results. No connection between discussion and introduction. Evidence of plagiarism.	No submission/No effort exhibited	
Literature Cited (5%)	Provides a complete list of the “in text” references provide in the text of the paper. Uses a correct style (i.e. APA, MLA) for citations.	Most but not all “in text” references are provided. Some inconsistency in the style used is evident.	Misses several references or doesn’t adhere to the correct style.	Most references are not included and/or the style used is incorrect.	No submission/No effort exhibited	
Report format and quality (10%)	Lab report submitted as directed, and on time. Directions were followed, questions (if any) were answered correctly.	Minor errors in format or procedures were encountered.	Directions were not explicitly followed.	Directions were not followed.	No submission/No effort exhibited	
Class Presentation (15%)	Language use and delivery (6%) Effectively uses eye contact. Speaks clearly, effectively and confidently using suitable volume and pace. Fully engages the audience. Selects rich and varied words for context and uses correct grammar.	Maintains eye contact. Speaks clearly and uses suitable volume and pace. Takes steps to engage the audience. Dresses appropriately. Selects words appropriate for context and uses correct grammar.	Some eye contact, but not maintained. Speaks clearly and unclearly in different portions. Occasionally engages audience. Dresses inappropriately. Selects words inappropriate for context; uses incorrect grammar.	Poor eye contact. Not audible and uses unsuitable pace. No audience engagement. Uses incorrect words or grammar	No submission/No effort exhibited	

	<p>Visual Aids Simple and focused (2%)</p> <p>Appropriate and relevant to topic (2%)</p> <p>Neatness and quality (2%)</p> <p>Organization and Preparation (3%) Introduces the topic clearly and creatively. Maintains clear focus on the topic. Effectively includes smooth transitions to connect key points. Ends with logical, effective and relevant conclusion.</p>	<p>Simple but not focused</p> <p>Some material not relevant</p> <p>Quality not appropriate</p> <p>Introduces the topic clearly. Maintains focus on the topic. Include transitions to connect key points. Ends with coherent conclusion based on evidence.</p>	<p>Aids are poorly prepared and not used appropriately</p> <p>Most of the information not relevant to the topic</p> <p>Most of the slides were of poor quality</p> <p>Introduces the topic. Somewhat maintains focus on the topic. Includes some transitions to connect key points. Ends with a conclusion based on evidence.</p>	<p>Aids were not used and was difficult to read and follow</p> <p>No appropriate or relevant information</p> <p>All slides were of very poor quality No</p> <p>Does not clearly introduce or focus on the topic. Points rarely connect. No conclusion.</p>		
--	--	---	---	--	--	--

Project 2 Rubric

Category	Excellent (A) 95%	Good (B) 85%	Fair (C) 75%	Poor (D) 65%	Fail (F) 0%	Score
Title (5%)	Clearly describes the content of the lab experiment. Uses descriptive words that are associated with the experiment.	Describes the content but the usage of descriptive words is not appropriate	The content is not clearly described. Fair use of descriptive words	No title. Poor description or poor use of descriptive words.	No submission/No effort exhibited	
Abstract (10%)	Clear summary of the experiment, including the following components: identifies the objective(s) of the project, includes a brief description of experimental methods, major findings and a brief conclusion(s).	The summary is clear but misses one or two components such as the methods used or major results from the experiment.	Misses several components and the summary doesn't reflect the entire experiment.	Misses several major components. Unrelated or plagiarized components.	No submission/No effort exhibited	
Introduction & Objectives (15%)	Clear background information based on a thorough literature search. Uses proper "in text" citations. Includes a rationale for the study along with a hypothesis.	Contains background information but is not complete. The hypothesis is partially stated.	Background information is not complete and lacks proper "in text" citations. The hypothesis is not clearly stated.	Very little or no background information. No "in text" citations. Unrelated or plagiarized introduction	No submission/No effort exhibited	
Materials and Methods (15%)	Contains a complete list of the experimental procedures. Including: the experimental design used, variables measured, number of samples collected, and statistical procedures. The section is organized in a way that the reader understands the logical flow of the experiment. Steps taken during the lab are easy to follow in a paragraph form. The section is organized in a way that the reader understands the logical flow of the lab. Proper use of third person and past tense.	One or more relevant pieces of information are missing. The section is not very well organized. Use of first person or improper use of verb tense appears in part of the text.	Misses several components of the experimental procedures. There is a lack of organization and there is not proper use of grammar standards.	Procedural steps are incorrect, illogical, unrelated or plagiarized.	No submission/No effort exhibited	

Results (20%)	Key expected results are presented in an orderly and logical sequence using both text and illustrative materials (Tables and Figures). All the relevant information obtained in the experiment is included. All calculations are provided in a logical manner using proper units	One or more key results are missing. Figures and tables are present but contain minor errors.	Misses several key results. Figures lack proper identification in the Y and X axis. Tables have missing titles. The text doesn't follow the sequence of the tables and/or figures.	Major results are not included. Figures and tables are poorly constructed or not present.	No submission/No effort exhibited	
Discussion and Conclusion (15%)	Proper interpretation of results. Summarizes data used to draw conclusion. Discusses applications or real-life situations. Addresses hypothesis and cites sources of errors Connects the conclusion with the introduction by way of the stated hypothesis and literature cited. Reflects on the next step(s) to be performed in light of the results of the current investigation.	Interpretation of results is presented. However, there is a disconnection between the discussion and the testable hypothesis identified in the introduction.	Misses the interpretation of key results. There is little connection between the discussion and the introduction.	Very poor interpretation of the results. No connection between discussion and introduction.	No submission/No effort exhibited	
Literature Cited (5%)	Provides a complete list of the "in text" references provide in the text of the paper. Uses a correct style (i.e. APA, MLA) for citations.	Most but not all "in text" references are provided. Some inconsistency in the style used is evident.	Misses several references or doesn't adhere to the correct style.	Most references are not included and/or the style used is incorrect.	No submission/No effort exhibited	
Report format and quality (10%)	Lab submitted as directed, and on time. Directions were followed, questions were answered correctly.	Minor errors in format or procedures were encountered.	Directions were not explicitly followed.	Directions were not followed.	No submission/No effort exhibited	

<p>Class Presentation (15%)</p>	<p>Language use and delivery (6%) Effectively uses eye contact. Speaks clearly, effectively and confidently using suitable volume and pace. Fully engages the audience. Selects rich and varied words for context and uses correct grammar.</p>	<p>Maintains eye contact. Speaks clearly and uses suitable volume and pace. Takes steps to engage the audience. Dresses appropriately. Selects words appropriate for context and uses correct grammar.</p>	<p>Some eye contact, but not maintained. Speaks clearly and unclearly in different portions. Occasionally engages audience. Dresses inappropriately. Selects words inappropriate for context; uses incorrect grammar.</p>	<p>Poor eye contact. Not audible and uses unsuitable pace. No audience engagement. Uses incorrect words or grammar</p>	<p>No submission/No effort exhibited</p>
	<p>Visual Aids Simple and focused (2%)</p>	<p>Simple but not focused</p>	<p>Aids are poorly prepared and not used appropriately</p>	<p>Aids were not used and was difficult to read and follow</p>	
	<p>Appropriate and relevant to topic (2%)</p>	<p>Some material not relevant</p>	<p>Most of the information not relevant to the topic</p>	<p>No appropriate or relevant information</p>	
	<p>Neatness and quality (2%)</p>	<p>Quality not appropriate</p>	<p>Most of the slides were of poor quality</p>	<p>All slides were of very poor quality No</p>	
	<p>Organization and Preparation (3%) Introduces the topic clearly and creatively. Maintains clear focus on the topic. Effectively includes smooth transitions to connect key points. Ends with logical, effective and relevant conclusion.</p>	<p>Introduces the topic clearly. Maintains focus on the topic. Include transitions to connect key points. Ends with coherent conclusion based on evidence.</p>	<p>Introduces the topic. Somewhat maintains focus on the topic. Includes some transitions to connect key points. Ends with a conclusion based on evidence.</p>	<p>Does not clearly introduce or focus on the topic. Points rarely connect. No conclusion.</p>	