Fluid and Energy Transfer Operations Laboratory

(Unit Operations Lab 1)

ECH 4224L

Face-to-face sections: 055G (Monday), 056A (Tuesday), 2449 (Wednesday), 3535 (Thursday)
Online section: OL14 (Wednesday)

- ***Class Periods:*** 2 - 5 (8:30 am – 12:35 pm)
- ***Location:*** Face-to-face sections: WERT 255
  Online section: https://ufl.zoom.us/j/97482083094?pwd=RGhqSzMxb0xWd2tDeERRUFZENy9idz09
  Passcode: 383554
- ***Academic Term:*** Spring 2021

Instructor:

Dr. Fernando Mérida

You can call me Prof./Dr. Mérida, or Fernando if you feel comfortable by doing it so. Remember that calling your instructors by their names must encompass the same level of professionalism and respect than using professional titles.

e-mail: fmerida@ufl.edu

Office: ChE Building, room # 217, Tel. (352) 294 7504

Zoom Office Hours: Tuesday, 2:00 – 4:00 pm
https://ufl.zoom.us/j/96787843135 *(No passcode required)*
< Edits to some dates and/or times might be posted on Canvas >

Course platform and meeting information:

This course is "HyFlex" with face-to-face (F2F) and one online sections for the ongoing term. The Link for online class meetings and office hours are provided below. For technical issues regarding the use of Zoom and/or Canvas please visit the help desk website or call 352-392-4357. Zoom meetings will require the use of audio and video. Please check the section Student Privacy regarding recorded materials.

Contacting Dr. Mérida:

- E-mail messages is the primary communication platform for this class. The secondary platform is Canvas messages. Make sure the subject line of your message has the label "ECH 4224L -Day- Question" ("day" refers to your day/section; you can use the first three letters of the day that corresponds to your section. Additionally, if you are in the online section you should add "online" after "Wed". You should expect a response within 48 hours (M-F) and within 72 hours (weekend).
- Office hours will be held only during dates and times indicated under "Instructor Information". Even though online office hours will be open to all students, priority will be given to students that have scheduled a time slot in advance.
- Announcements will be periodically posted on Canvas. All students must signed-up to receive Canvas announcement notifications during the term.

Peer-Tutors:

- Please use "peer-tutor" (or simply "tutor") for students that will assist you during experiments. Avoid the use of "TA" since this title refers to a graduate student in a completely different role.
- Please contact peer-tutors through the Canvas message or via e-mail (see Table 1). Modifications in the list below may be required and will be announced through Canvas if necessary.

Table 1. Peer-tutors for Unit Ops 1, Spring 2021

Day/Section	Name	e-mail
Mon	Indiera Ahmad	iahmad1@ufl.edu
	Joao Miguel Amador	jmiguel.amador@ufl.edu
Tue	Jennifer Taylor	jennifer.taylor1@ufl.edu
	Sherlyn Wee	sherlynwee@ufl.edu
Wed	Dirk Steyn	dsteyn@ufl.edu
	Chase Cleveland	chase.cleveland@ufl.edu
Wed (online)	Alex LoCurto	locurtoalex@ufl.edu
	Sherlyn Wee	sherlynwee@ufl.edu
Thu	Horace "Quint" Gordon	hgordon5@ufl.edu
	Dirk Steyn	dsteyn@ufl.edu

Additional point persons:

- Lab Engineer: Mr. Preston Towns, ptowns@che.ufl.edu
- Unit Ops 2 course instructor: Dr. LiLu Funkenbusch, lilu.funkenbusch@ufl.edu

Course Description

(2 credits) Experimental work in fundamentals of Unit Operations involving heat and momentum transfer.

Course Pre-Requisites

ECH 3101 (Process Thermodynamics), ECH 3203 (Fluid and Solid Operations), ECH 3223 (Energy Transfer Operations), ENC 3246 (Professional Communication for Engineers)

Course Co-Requisites

ECH 4714L (Safety and Experimental Evaluation)

Materials and Supply Fees: $100.00

Course Objectives

1. Reinforce classroom theory by the collection and use of data in practical experiments with all their inherent problems and limitations.
2. Gain proficiency in writing technical reports and/or oral presentations.
3. Gain experience in working in teams.
4. Create a sense of professional responsibility for the quality and integrity of engineering work.
5. Learn the importance of working under Safety guidelines thus promoting a safe environment for others.
6. Gain experience with bench-scale equipment and instrumentation and extend analysis and design concepts for equipment at a larger scale.
7. Learn and apply basic concepts of statistical analysis and Design of Experiments whenever is possible.

Professional Component (ABET):

This course is focused on experimental studies of heat and momentum transfer in the context of unit operations, using bench-scale experiments. Theoretical concepts learned in other courses are illustrated by experiments. Technical communications are emphasized.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	
3. An ability to communicate effectively with a range of audiences	High
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Low
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	High
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Medium

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Course websites

- ***Canvas website:*** ***http://elearning.ufl.edu/***
  Canvas will be used as the main repository of information and other resources for preparation of experiments, submission of reports, projects, and other assignments. It will also be used for posting of grades, announcements, and general information for the class.

- ***CATME***
  This software will be used for group formation and team evaluations.

Recommended Literature:

There is no required textbook for this class. The following titles are recommended to support fundamentals and theoretical background, physical constants, empirical correlations, and other concepts:

1. Geankoplis, C. J., *Transport Processes and Unit Operations* [On reserve in the Science Library].
2. Incropera, F. P. and D. P. DeWit, *Fundamentals of Heat and Mass Transfer* [On reserve in the Science Library]
3. Gerhart, Philip M., Gerhart, Andrew L., and Hochstein, John I, *Munson's Fluid Mechanics* [On reserve in the Science Library]
4. McCabe, W. L., J. C. Smith, and P. Harriet, *Unit Operations of Chemical Engineering* [On reserve in the Science Library]

Course overview

- The course consists of four experimental modules as described in course schedule table. Each module lasts for up to three weeks.
- Experiments for each module will be performed using experimental kits that will be provided to students by the course instructor at the beginning of semester. Additional materials required for experiments should be provided by students as indicated in the list of materials for each module (documents available in Canvas)

- Experiments will be carried out individually by students either in the classroom (F2F sections) or remotely (online section) with assistance offered by peer-tutors and course instructor. Students will be part of groups hence results from each group member will be processed, analyzed, and discussed in a group report at the end of the module.
- The class schedule is summarized in Table 2 and it will be accessible (and periodically updated if required) via Canvas website.
- **Regardless of individual contributions, each team member is responsible for understanding all elements of each experiment, including theory, experimental design, system configuration, experimental protocol, etc.**

Groups

Group formation will be performed via CATME's team building algorithms according to instructor-determined criteria, aiming to optimize the student team composition thus making groups more diverse, heterogenous, and having similar meeting times outside the class. Groups will be comprised of 4 members (5 members might be required in some cases, depending on class enrollment)

Group Roles

- Each group will have the following roles: Leader, Analyst, Recorder, and Planner. Description of roles along with practical examples will be provided in Canvas.
- Roles will rotate among members throughout the semester, and they will be democratically selected by members of the group.

Course schedule

Modules are summarized in Table 2 along with the schedule for the semester. Modifications to the schedule might be required depending on the progress of experiments which could be affected by performance of equipment/instrumentation, class cancellation due to atmospheric phenomena (e.g. hurricane season), or other reasons not listed in this document. Announcements will be posted in Canvas regarding any modification of the course schedule.

Table 2. Course schedule for ECH 4224L, Spring 2021

Module/Activity	General description	Schedule
Orientation	Initial orientation and class overview (no experiments; online)	Jan 11 - 15
Initial setup	Material kit identification, wiring, setting up connections, etc.	Jan 18 - 22
Fluid Flow **(FLU)**	Study of fluid flow in pipes and the inherent friction losses characterized by pressure drop.	Jan 25 - 29 Feb 1 - 5 Feb 8 - 12
Flow Characteristic Curves **(CUR)**	Investigation of pump, valve, and system curves in a flow system to determine operating points	Feb 15 - 19 Feb 22 - 26 Mar 1 - 5
MID-TERM BREAK		Mar 8 -12
Packed Bed Column **(BED)**	Investigation of flow of incompressible fluids through porous materials	Mar 15 - 19 Mar 22 - 26 Mar 29 – Apr 2
Heat Exchangers **(HEX)**	Study of thermal energy transfer in heat exchangers with various flow configurations	Apr 5 - 9 Apr 12 - 16 Apr 19 – 21*

** For Thu section, the final week of this module will be scheduled separately because the last day of classes is April 21st*

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

F2F Course Policy in Response to COVID-19

- Complete a screening questionnaire via ONE.UF, book a COVID-19 test with UF Health, and get tested before the first day of in-campus classes. Regular screening and testing will be required for students in F2F classes throughout the semester. You can access this information here.
- Students are required to wear approved face coverings at all times during classes and within buildings.
- Physical distancing must be kept at all times. Our class has a maximum capacity this semester to meet the appropriate physical distancing requirements established by UF. There will be moments during experiments when close proximity for very small time periods will be required to ensure physical safety, but they will be kept to a minimum.
- Sanitizing supplies (alcohol gel, wipes, paper towels, etc.) are available in the classroom and students are highly encouraged to bring a pocket size hand sanitizer with them.
- The classroom has two access doors. We will use one of them as a main entry and the second one as an exit. More instructions will be provided the first day of classes.
- **Upon entering the classroom, students must sanitize their hands keeping appropriate physical distancing. Then, each student will sanitize the table used for experiments using the available wipes in the classroom. This will be done at the beginning of each class.**
- **If you are experiencing COVID-19 symptoms or have been in close proximity to someone infected with the virus, please use the UF Health screening system immediately and follow the instructions on whether you are able to attend class (see below).**
- Excused absences due to COVID-19 will give students a reasonable amount of time to make up work outside the class. Depending on the student health situation, this will be possible because students will have their own kit materials. Students must coordinate with their team members in case that the ill member needs to work outside the classroom to make up for the work. Grades will not be affected as long as the student inform the course instructor and team members in a reasonable timeframe.

Additional Notes due to COVID-19

Attendance to online section is mandatory and it will be monitored via Zoom. Be sure to set your name in Zoom to the one listed in the roster to avoid confusion and being penalized for an absence. It will also be required to indicate your group number after your name by the time groups are assigned. An example would be *Daenerys Targaryen (Wed#3).* Just replace your name, the first three letters of your day/section, and the number of your group.

Attendance Policy, Class Expectations, Tardiness, and Make-Up Policy

COVID-19 is an obvious factor in the attendance policy, but arrangements can be made if you are ill. Please read the section corresponding to F2F Course Policy in response to COVID-19

- **Attendance is mandatory for all modules/activities summarized in Table 2**, and it includes both on-campus and online meetings.

- In case of foreseeing an absence due to justifiable reasons (e.g. excused absences) that can be planned in advance (i.e. job interview, medical appointments, etc.) the student must notify the course instructor with copy to the peer-tutor by the day before the missed class.
- Missed classes due to justifiable reasons must be made up outside the class time and the student will be responsible to coordinate with team members for the completion of group work. Due to COVID-19 restrictions and safety concerns, we are not able to accommodate make-up sessions this semester.
- In case of unexpected situations or emergencies, the student must notify the course instructor, peer-tutor of the ongoing module, and teammates no later than 10:00 am the day of the corresponding class. Students who do not notify the course instructor will receive a failing grade in the course.
    - Keep in mind that the course instructor will file a UMatter WeCare report in case the student does not notify the absence by 10 am, just to make sure that the student is safe.
- Unexcused absences or repeated tardiness patterns will result in class failure/grade reductions as follows:
    - An unexcused absence will result in failure of the course.
    - Tardiness: Students joining classes > 10 minutes after the class starting time will be penalized with 10% grade deductions on each assignment submitted for the ongoing module unless an emergency occurs. In case of an uncontrollable situation, the student must notify team members and course instructor as soon as possible. A second case of tardiness will result in a 10% overall grade reduction in the course, with additional 5% overall grade reductions for each subsequent case of tardiness.
- Excused absences must be consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx) and require appropriate documentation.

What should I do if someone I live with or have frequent contact with tests positive or starts showing symptoms? What should I do if I test positive or start showing symptoms?

-Prepared by Dr. LiLu Funkenbusch-

1. First and foremost, stay home. Do not come to the classroom and put others at risk.
2. File a report with UF Screen, Test, and Protect (STP). Arrange to get tested and/or plan to quarantine. This will change your status to "not cleared" to return to campus. **You may not come into the lab without at least one negative test result after your symptoms are gone or after the full 2-week quarantine period.** Either one of these should change your "not cleared" status back to "cleared". We cannot mandate testing, but you will not be allowed back into the building without "cleared" status.
3. Tell me and your group. You do not need to provide full details (and I legally cannot obligate you to share medical information) but let everyone who needs to know that you won't be in lab for at least one week. Hopefully, you either are not sick or have a mild/asymptomatic case and can still help your group with data analysis/report writing, but whatever the case, we will make it work.
4. Finally, make sure that you follow up with UF for the contact tracing / quarantine interview.

Following and enforcing these policies are all our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution, the revocation of lab/building access, and grade penalties, up to and including failing the course.

Evaluation of Grades

Table 3. Grade distribution

Assignment	% Final Grade
Pre-Lab Homework (4)	15%
Progress Report (4)	15%
Final Reports* (4)	60%
Special Assessments	5%
Participation & Team Evaluations**	5%
Final Grade	100%

* The grade of final reports (group assignments) will be adjusted for each group member based on individual contributions quantified via CATME Team Evaluations for each module. Equal contribution from all members in a team is ideal, but it is hard to attain. Take a 4-member team as an example. Everybody is expected to do 25% of the work, but it is hard to separate the work equally; thus, is acceptable if each team member does ~ 18 – 32% of the work. In that case, each team member will get the same grade in the final report. If one member does less than 18% of work, his/her grade will be reduced proportionally to the individual contribution. If one member does more than 32% of work, his/her grade will be increased proportionally to his/her individual contribution. Please note that this is an example, and percentages/correction factors may differ depending on the number of members in the team.

Participation grade will be based on the peer-tutor feedback and course instructor's observations. It will also include the submission of evaluations for peer-tutors, completion of team evaluations in CATME, and completion of module evaluations via Canvas. **Participation less than 2.5% will result in a failing course grade.

Grading Policy

Table 4. Grading policy

Percent	Grade	Grade points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

Important: Grades for assignments and class activities as described in

Assignment	% Final Grade
Pre-Lab Homework (4)	15%
Progress Report (4)	15%
Final Reports* (4)	60%

Special Assessments	5%
Participation & Team Evaluations**	5%
Final Grade	100%

Table 3 *will be posted in Canvas. However, the final grade will be computed outside Canvas to avoid incorrect weighing frequently observed in Canvas gradebooks.*

More information on UF grading policy may be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Safety

Students are expected to know and follow safe operating procedures of devices and materials used in experiments. The students are required to attend an orientation session at the beginning of the semester that will include general safety guidelines for experimental. **Failure to follow safety guidelines will lead to significant grade reductions.** Examples of safety violations are listed below (this list is not exhaustive).

Table 5. Examples of safety violations

Safety violation	Penalty
Leaving the lab without proper shutting down	Failing grade
Not handling/cleaning material spill properly	Letter grade reduction
Causing a major spill due to negligence	Letter grade reduction
Eating or drinking inside the classroom	Letter grade reduction

Use, care, and return of experimental kits:

- Each student is responsible for the good use of elements included in the experimental kit. Instructions will be clearly stated in lab manuals and other documents to avoid damage to kit components and enforced in classes. Unintentional damage or malfunctioning of kit components might occur so student must notify peer-tutors and course instructor if this happens.
- **Students must return some of the kit components at the end of the semester**. Instructions will be given on what are the specific components to be returned and the logistics for kit return.
- **Failure to return kit materials will result in a failing grade of the course**.

Homework, due dates, format, and policies:

Instructions to prepare all assignments will be available in the Canvas website. Due dates are specified below and students must check the course schedule available in the Canvas Home Page for specific dates during throughout the semester. Additional instructions will be given via announcements in Canvas or via e-mail.

- Pre-Lab Homework (PL): *Format: Typed, PDF or Word file; individual assignment submitted via Canvas.* Each student must prepare an assignment dealing with fundamentals/theory behind the experiment, potential experimental scenarios, Engineering assumptions, etc. Materials required for the preparation of PL are included but not restricted to lab manuals. Pre-lab homework may be discussed during the class time with peer-tutors and course instructor via questions to students. Students will not be allowed to start experiments if the assignment was not submitted. This assignment is due before the beginning of week 1 of each module, having until 11:59 pm the day before the class. No late submissions will be allowed.
- Progress Report (PR): *Format: Typed, PDF or Word file and Excel spreadsheet; group assignment submitted via Canvas.* Students must work on a short progress report summarizing the work done so far, preliminary results, and sample calculations. Specific details and guidelines will be available in Canvas. The sample

calculations portion can be handwritten using any of the apps available for taking notes in tables/laptops or by scanning the handwritten pages. All of the other sections must be typed. This assignment will be discussed with peer-tutors and/or course instructor during class, and it is due by 11:59 pm before week 2 of each module. Keep in mind that discussion of progress reports may require to check your electronic calculations thus submission of Excel file is of utmost importance. No late submissions will be allowed.

- Final Reports (FR): Format: *Typed, Word file along with updated Excel spreadsheet; group assignment submitted via Canvas*. All modules require the submission of a final report with results obtained by all the members in the group, presented in an organized, clear fashion so you must coordinate with team members in a timely manner. Please check the section Evaluation of Grades for an explanation on how final reports will be graded based on individual contributions of team members. No late submissions will be allowed. General details for report preparation and requirements for results to be presented in each specific module will be provided in Canvas. This assignment is due one week after experiments for the module have been finished (for example, if you are in the Wednesday section, your group will have until next Wednesday at 11:59 pm to submit the assignment)
- Special Assessments: *PDF file; individual assignment submitted via Canvas.* Assessments will be run to evaluate student understanding of class contents/syllabus and other specific topics (orientation meeting & safety, design of experiments, and report preparation). Specific deadlines for these assessments will be available in Canvas.
- Module Evaluations: *Canvas survey*. Each student will provide evaluation after completing a module (e.g., four module evaluations throughout the semester). These evaluations are due one week after experiments for the module have been finished. While these evaluations will not be graded, their completion will be considered towards participation grade.

Participation & Team Evaluations:

- Participation: students will be evaluated in an individual basis for participation in the class. Participation includes answers to questions, experimental skills, initiative, suggestions/ideas during experiments, etc. In addition, participation includes completion of the following evaluations: peer tutor and module evaluations (via Canvas) and team evaluations (via CATME). Elements affecting participation grade include tardiness, lack of preparation, disrespectful behavior, inappropriate use of kit components, and other not listed in thys document. Participation grade will be assigned based on observations made by peer-tutors and course instructor.

Additional details on schedule for experiments:

a) Before each class:

- Review the lab manual, especially sections such as Theory and System Configuration. This will be helpful for preparation of PL but also to understand the execution of experiments. Watch the available videos for each module. Links to these videos will be posted in Canvas.
- Coordinate with your team members to analyze results and to prepare the continuation of experiments in the same module (e.g. weeks 2 and 3)
- If necessary, meet with the instructor or the peer-tutor to discuss the ongoing experiment. Keep in mind that these meetings are NOT to tell students how to do calculation or interpret results.
- Check the list of materials in the lab manual, and make sure you have everything you need for experiments, including materials that were not provided in the kit.
- Online section: check video/audio settings for the device used to connect to Zoom. This will avoid/minimize delays or technical issues during classes.

b) During the experiment:

- Get acquainted with kit materials. If something it not entirely clear after watching the videos (if available) or reading the lab manual, ask your peer-tutor and/or course instructor.
- Learn proper start-up and shutdown procedures.
- Learn about limits of the system. If they are not clearly stated in the lab manual, ask your peer-tutor or course instructor.
- Experiment with the system under various conditions; coordinate with your team members.
- Perform basic checks of your data (e.g., mass and energy balances) during the experiment. Avoid a situation in which you collect data just to discover that it does not satisfy the mass or energy balance **after** you are out of the lab and writing your report. It is necessary to perform the basic checks **during** the lab and repeat an experiment, if necessary.
- Your preliminary analysis during discussion of Progress Reports will be reviewed by the peer-tutors and will contribute to your lab participation grade.
- Online section: use your camera to show your experimental setup whenever you have a question related to system configuration, measurements, or any other specific step included in SOPs. Keep your microphone muted whenever you don't need to talk. Try to minimize background noise as much as you can.

c) <u>After the experiment:</u>

- Coordinate with your team members for logistics to share, analyze, and process data. Groups will have different roles for each module, so make sure that you work on responsibilities associated to your role.
- Progress and Final Reports are group assignments thus tasks required for the preparation and completion of the report must be assigned evenly among the members of the group.

Guidelines for the Lab Reports

1. Detailed guidelines and grading rubrics will be posted in Canvas under "Files". Reports will be graded on both technical content and communication effectiveness.
2. Reports should be written using complete sentences, with correct spelling and grammar. All symbols should be defined on their first use. Clarity and brevity will be rewarded; sloppy thinking and writing will be penalized.
3. Do not copy theoretical derivations from a textbook or a website. Instead, clearly state assumptions behind a derivation, provide relevant derivation results, and cite your sources.
4. In addition to a report file, your submission should contain all supporting information, such as **spreadsheet files with your data** and files with computer codes (if applies). However, reports should be self-contained (e.g. one should be able to understand your work by reading your report without referring to supporting materials).

Guidelines for Experiments and Data Analysis

1. Check energy and material balances and fundamental laws.
2. Investigate effects of all control parameters on the experimental results.
3. Most of the experiments can be performed by studying the influence of various controllable factors. Make sure you choose an experimental design that is logical, feasible, and relevant.
4. Some experiments involve measurements that must be performed after reaching steady state.
5. Clearly identify and justify all assumptions in your calculations.
6. Whenever is possible, compare experimentally determined values with predicted or reference values (commonly called "theoretical" values)
7. Check reproducibility of your data. The current class platform will allow for comparison of results within (yourself) and between (you and your team members) experimenters at the same experimental conditions (replicates). This is an important component of final reports and will be graded accordingly.
8. Note that in order to perform statistical analysis and check for reproducibility, a**t least three runs under the same experimental conditions must be performed**. This will allow to obtain error estimates by computing standard deviations based on these runs.

9. Report any anomalous results and discuss their possible sources.
10. Use spreadsheets (e.g., Excel) to store your data. Spreadsheets must be organized and easy to follow. Calculations might be checked not only by group members but also by peer-tutors and course instructor.
11. Make sure that your objectives can be met with your operating conditions. It is easy to choose conditions that are outside of the performance limits of the apparatus or produce results with no measurable difference. Carefully study the limitations of the existing experimental apparatus as a part of the planning process. If you don't know this information, ask your peer-tutor or course instructor.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy, Online Course Recording, and Video/Image Sharing

- There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html
- The online section will require the use of audio and video for the purposes of conducting experiments remotely. Some portions of these classes might e audio visually recorded as a reference for students that were not able to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*:* https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.