

EML4930 – Special Topics
Energy & Fluids Engineering – Egypt Virtual Exchange

Last Updated 8/21/2024

*EML4930 is an experimental course. Modifications to this syllabus may be required during the semester.
Any changes to the syllabus will be posted on the course website and announced in class.*

Academic Term: Fall 2024

Class Periods: Tuesdays P4-5 & Thursdays P4

Instructor:

Matthew J. Traum, Ph.D.

Email: mtraum@ufl.edu

Office Phone: 352-294-6897

Office Hours: Thursdays P5

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
(Office hours posted on Canvas)

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Course Description

Design and realization of a mechanical engineering system, component, or process subject to appropriate standards and constraints. Team Project. Credits: 3

Course Pre-Requisites / Co-Requisites

Prerequisite: Instructor Permission

Materials and Supply Fees

None

Course Objectives

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to communicate effectively with a range of audiences
3. 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
4. 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
5. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Medium
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	Medium
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	

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

Required Computer

Students must have their own computer whose specifications meet or exceed the capabilities required by the College (<https://www.eng.ufl.edu/students/resources/computer-requirements/>) and MAE Department (<https://mae.ufl.edu/academics/prospective/undergraduate/computer-requirements/>).

Required Textbooks and Software

1. [Multimedia Engineering Fluid Mechanics](#), C. C. Ngo and K. C. Gramol, University of Oklahoma Engineering Media Lab, 2019.
Free OER Access: <http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=fl>

Recommended Materials:

1. [Introduction to Error Analysis, the Study of Uncertainties in Physical Measurements](#), 2nd Edition, J. R. Taylor, University Science Books, Sausalito, CA, 1997.

Attendance Policy, Class Expectations, and Make-Up Policy

It is important to attend class regularly. If you miss a class, you are responsible for acquiring notes or other resources covered. The teaching team will endeavor to make all course materials available through the Learning Management System. However, some experiences cannot be replicated asynchronously. Students are held responsible for knowledge of all scheduling and policy announcements made in class. Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>) and require appropriate documentation and advance communication with the instructor.

Policies on Sources of Truth, Communication Platforms, Essay Writing AI's, Lab Use Priority, & Assignment Grade Disputes:

1. Online platforms, notably GroupMe, provide venues for course discussion that exclude the instructor and EML4930 Teaching Team. Discussion platforms beyond UF-sanctioned Learning Management Systems will not be monitored or curated by the instructor. Thus, information propagated through these platforms can be incorrect. It is each student's responsibility to verify information obtained from these external discussion services with reputable reference sources or UF-affiliated subject matter experts. Erroneous information obtained from external discussion platforms used in EML4930 will be marked incorrect on graded assignments and assessments.

2. All course communication must occur through a UF-sanctioned MS Teams channel established for the group in the course. These channels will be monitored. If the Teaching Team deems that team communication is not occurring through MS Teams, a single written warning will be given. After the warning, students still not communicating through MS Teams will fail the course.

3. The EML4930 MS Teams General Channel is shared by the whole class and the teaching Team for information propagation. Individuals who post comments or files not relevant to EML4930 in the General Channel will be penalized one letter grade for each infraction.

4. Unauthorized use of ChatGPT or similar AI's is prohibited in EML4930 and is defined as cheating by the UF Honor Code, section (a)2, https://regulations.ufl.edu/wp-content/uploads/2021/12/4-040_2021-12-06.pdf :

“(a) Cheating. A Student shall not use or attempt to use unauthorized materials or resources in any academic activity for academic advantage or benefit. Cheating includes but is not limited to:

2. Using any materials or resources, through any medium, which the Faculty has not given express permission to use and that may confer an academic benefit to the Student.”

Material suspected of being AI-generated will be vetted through a detection algorithm. If this tool deems the material to be AI-generated, a 0 will be given on the suspected assignment.

5. EML4930 students receive priority access to and use of the MAE-C-010 design lab space from 10:40am to 12:35pm Tuesdays and Thursdays. Outside these hours, other users including EML4501/4502 students and UF MAE Design Teams have priority use of the space.

6. If an individual or group has an assignment grading dispute, the issue must first be addressed with the Teaching Team member who did the grading. If individuals/groups can show where grading errors occurred, Teaching Team members will correct grades accordingly. Only after communication with a Teaching Team member fails to resolve a grading dispute may the individual/group bring the dispute to an instructor.

Laboratory Safety:

EML4930 is a laboratory course. To ensure safety of all participants appropriate attire, personal protective equipment (PPE), and behavior are always required in the lab. Failure to follow lab safety rules will result in students' immediate removal from the lab and forfeiture of course points at the instructor's discretion.

1. Lab Attire

- No open-toed shoes are permitted in the lab.
- No shorts are permitted in the lab.

2. PPE

- Sanitizing supplies are available in the lab to wipe down desks prior to sitting and at the end of class if needed.
- Eye protection is required in the laboratory for proximity to hands-on activities.

3. Behavior

- Disruptive or destructive behavior will not be tolerated.
- No food or drink is allowed in the machine shop, 3D print farm, or metrology areas of the lab.
- Food & drink are allowed at work desks, in conference rooms, at the coffee bar / kitchen area

4. Emergencies

- Inform Teaching Team members immediately of injury or exposure.

Evaluation of Grades

This course is graded. Grades are earned based on the following individual and group deliverables. Further descriptions will be given when assignments and assessments are announced in class. Additional resources supporting these assignments will be posted on the course Learning Management System as needed.

Assignment	Points	Percent
Virtual Exchange		
Video Self-Introduction	4	1.0
Fluids in Daily Life Participation	6	1.5
Exploration of World Hydroelectric Dams	14	3.5
Collaborative VE Written Lab Report (English)	50	12.5
Collaborative VE Written Lab Report (Arabic)	50	12.5
Collaborative VE Video Lab Report (English)	50	12.5
Collaborative VE Video Lab Report (Arabic)	50	12.5
Photos & Screen Captures	12	3.0
Lab Briefs		
Written Lab Brief (Individual)	25	6.3
Written Lab Brief (Group)	25	6.3
Video Lab Brief (Individual)	25	6.3
Video Lab Brief (Group)	25	6.3
Individual Assignments		
Resume Assignments	12	3.0
Informed Consent	2	0.5
Pre/Post Surveys	10	2.5
SI Post Survey	10	2.5
Class Participation & Initiative	30	7.5
Total	400	100

Any changes in evaluation of grades will be posted on the CANVAS page & MS Teams site and announced in class.

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
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More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Grade Definitions

A : Student demonstrated course mastery in all regards and with distinction.

A- : Student performed outstandingly in all regards and is exceptional.

B+ : Student performed with excellence in the course.

B : Student showed high command of course content.

B- : Student has done a commendable job with course content.

C+ : Student demonstrated ample grasp of course content.

C : Student demonstrated adequate grasp of course content.

C- : Student demonstrated fair grasp of course content.

D+ : Student met fair course expectations.

D : Student attained below average expectations.

D- : Student met minimal expectations to pass.

E : Student failed to meet minimal expectations to pass.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/> . It is important for students to share their accommodation letter with their instructor and discuss their access needs, 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.ua.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.ua.ufl.edu/public-results/> .

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not

limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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/process/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 varied perspectives and lived experiences within our community and is committed to supporting the University’s core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

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
- HWC OE Human Resources, (352) 392-0904, student-support-hr@eng.ufl.edu
- Dr. Pamela Dickrell, Associate Dean of Student Affairs, (352) 392-2177, pld@ufl.edu
- Dr. 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

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> .

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: <https://counseling.ufl.edu> , and (352) 392-1575; and the University Police Department: (352) 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, (352) 392-1161.

University Police Department at (352) 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/> .

Academic Resources

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

Career Connections Center, Reitz Union, (352) 392-1601. Career assistance and counseling;
<https://career.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, (352) 392-2010 or (352) 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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/> ;
<https://care.dso.ufl.edu> .

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/> ; <https://distance.ufl.edu/state-authorization-status/#student-complaint> .

“Nature always tends to act in the simplest way.”

--D. Bernoulli

Week #	Date	Day	Synchronous Content	Assignment Due
1	22-Aug	R	Couse Introduction	
2	27-Aug	T	No Class - Attend Dr. Traum's Seminar for Extra Credit	
	29-Aug	R	Technical Lecture: Experimental Uncertainty, Siphons	<ul style="list-style-type: none"> • Resume Informed Consent • International Office Survey Informed Consent • Entry Resume + AI Score
3	3-Sep	T	Lab A: Experimental Uncertainty & the Pythagoras Cup Siphon	
	5-Sep	R	Results Discussion Technical Lecture: Fluid Viscosity	• International Office Pre-Survey
4	10-Sep	T	Lab B: Fluid Viscosity Measurement	
	12-Sep	R	Results Discussion Technical Lecture: Drag & External Flow Over a Sphere	• Written Lab Brief (Group)
5	17-Sep	T	Lab C: Drag & External Flow Over a Sphere	
	19-Sep	R	Results Discussion	• Written Lab Brief (Individual)
6	24-Sep	T	No Class UF Career Showcase Week	
	26-Sep	R		
7	1-Oct	T	Flex Day	
	3-Oct	R	Outlining VE expectations & deliverables Class time to complete informed consent forms & fill entry surveys	<ul style="list-style-type: none"> • SI Survey Informed Consent • Video Self-Introduction • Video Lab Brief (Group)
8	8-Oct	T	<u>Virtual Exchange</u> Synchronous Icebreaker: Class Discussion of Fluids in Daily Egyptian & US Life Introduction to the VE Technical Lecture on Similarity & Nondimensionalization	• Fluids In Daily Life Participation
	10-Oct	R	<u>Virtual Exchange</u> Synchronous Lab 01: Similarity & Nondimensionalization	• Photo / Screen Capture 1
9	15-Oct	T	<u>Virtual Exchange</u> Synchronous Lab 02: Hydrostatic Standpipe	
	17-Oct	R	<u>Virtual Exchange</u> Padlet Exploration of the World's Hydroelectric Dams	<ul style="list-style-type: none"> • Photo / Screen Capture 2 • Hydroelectric Dam Padlet
10	22-Oct	T	<u>Virtual Exchange</u> Synchronous Lab 03: Pump Curve	
	24-Oct	R	<u>Virtual Exchange</u> Class Time to Discuss Results & Work on Joint Lab Report	• Photo / Screen Capture 3
11	29-Oct	T	<u>Virtual Exchange</u> Synchronous Lab 04: Torricelli Fountain	
	31-Oct	R	<u>Virtual Exchange</u> Class Time to Discuss Results & Work on Joint Lab Report & Video	<ul style="list-style-type: none"> • Photo / Screen Capture 4 • Collaborative VE Written Lab Report (English)
12	5-Nov	T	<u>Virtual Exchange</u> Synchronous Lab 05: Jet Flow Visualization	
	7-Nov	R	<u>Virtual Exchange</u> Class Time to Discuss Results & Work on Joint Video	<ul style="list-style-type: none"> • Photo / Screen Capture 5 • Collaborative VE Written Lab Report (Arabic)
13	12-Nov	T	<u>Virtual Exchange</u> Synchronous Lab 06: Pipe Flow - Major & Minor Losses	
	14-Nov	R	<u>Virtual Exchange</u> Student Debrief Discussion Class Time to Fill Exit Surveys	<ul style="list-style-type: none"> • International Office Post-Survey • SI Post-Survey • Photo / Screen Capture 6 • Collaborative VE Video Lab Report (Arabic)
14	19-Nov	T	Technical Lecture: Unsteady Bernoulli's Equation	
	21-Nov	R	Lab D: Bernoulli Drain	• Collaborative VE Video Lab Report (English)
15	26-Nov	T	No Class Thanksgiving Break	
	28-Nov	R		
16	3-Dec	T	Results Discussion Lab Cleanup	<ul style="list-style-type: none"> • Exit Resume + AI Score • Video Lab Brief (Individual)
	5-Dec	R	No Class Reading Days	
17	10-Dec	T	No Class Finals Week	
	12-Dec	R		