MENG 3310 – Fluid Mechanics
Course Syllabus

Semester / Year	Fall 2024
Catalog Description	Basic concepts of a fluid, and the fundamentals and applications of ideal and real fluid flow. Topics include fluid statics, conservation principles, the Bernoulli equation, fluid flow in pipes, open channel flow, and fluid flow measurement devices. Three hours of lecture per week.
Prerequisites	C or better grade in ENGR 2302 and MATH 3305, and MATH 2415 as a co-requisite.
Section Number	MENG 3310.001
Instructor Name	Dr. Nelson Fumo
Contact Information	Office: RBN 3009, Email: nfumo@uttyler.edu, Phone: (903) 565-5588
Class Type / Instruction Mode / Location	Lecture/Face-to-Face/RBN 3038
Class Time	Tu and Th 8:00 AM to 9:20 AM
Office Hours	Mo, Tu, and We 2:00 PM to 3:00 PM and by appointment
No. of Credits	3
Required Textbook	Munson, Young and Okiishi's Fundamentals of Fluid Mechanics, 8th Edition, Wiley, 2016. Binder Ready Version (looseleaf); ISBN: 9781119080701. Other presentation: Munson, Young and Okiishi's Fundamentals of Fluid Mechanics, 8e Binder Ready Version with WileyPLUS Card Set; ISBN: 9781119231714.
Optional References	Schaum's Outline of Fluid Mechanics, M. Potter and Wiggert, McGraw-Hill, 2008. Student Solutions Manual and Study Guide, Fundamentals of Fluid Mechanics, 7th, Munson et al, Wiley, 2013.
Additional Rules and Requirements	• There will not be homework, but proposed problems will be given for all topics to be evaluated in exams. Students may be asked to show the work/solution of proposed problems to revise/appeal exams. • AI tools are allowed to support students' learning and productivity, provided that their use aligns with academic integrity standards. When required, students must disclose their use of AI.
Evaluation Method	Exam 1 20% Exam 2 20% Exam 3 20% Exam 4 20% Final exam 10% Ratlif Relays 10%
Grading Policy / Scale	Letter grades, scale: A: 90 – 100; B: 80 – 89; C: 70 – 79; D: 60 – 69; F: < 60
Important Events / Dates	Census date: September 9 Second drop for non-payment: September 18 Last date to withdraw from one or more 15-week courses: November 4 2023 Career Success Conference: Thursday, October 24

Attendance / Makeup policy / other rules	1. Attendance at every lecture is strongly encouraged but not mandatory. 2. Grades can be appealed by meeting the instructor during office hours, but no later than a week after the grade has been given. 3. An opportunity to make up a missed exam may be available to students with an excused absence. Excused absences include absences for university-sponsored events and for religious observances (see the University policy link above for the procedures to follow). Other makeups are granted only in extreme cases and at the discretion of the instructor. Excused absence due to illness will require evidence of treatment by medical personnel at a medical facility. <u>Makeup exams may be scheduled for the end of the semester</u>. 4. Questions outside the classroom will be answered if the student proves that he/she has tried to come up with the solution/answer. 5. The instructor reserves the right to change this syllabus partially or fully at any point in time. Sufficient time and notice will be provided to the class before the activation of the changes, but it should not be more than a week.
Course Learning Objectives / ABET & PEOs Relation	By the end of this course, students will be able to: 1. Apply concepts of fluid statics. 2. Apply principles of conservation of mass, momentum, and energy in engineering problems. 3. Use Bernoulli's Equation for the calculation of flow parameters. 4. Calculate and use minor and major head losses in pipe flows. 5. Apply basic boundary layer theory to external flows.
Tentative Topics / Course Plans	• Pressure and manometry, • Forces on Surfaces and buoyancy, • Bernoulli Equation, • Conservation on mass, • Linear momentum, • Energy equation, • Losses in pipes, • Drag force. See class schedule in next page
University Policies	https://www.uttyler.edu/offices/academic-affairs/files/syllabus-information.pdf

MENG 3310 Fluid Mechanics Class Schedule

Lec	Day	Date	Topic	Reading
1	Tu	27-Aug	Introduction	1.1 - 1.9
2	Th	29-Aug	Pressure and Manometry	2.1 - 2.7
3	Tu	3-Sep	Work on related problems	
4	Th	5-Sep	Forces on Surfaces	2.8 - 2.10
	Tu	10-Sep	Buoyancy, Flotation, Stability	2.11
5	Th	12-Sep	Work on related problems	
6	Tu	17-Sep	Exam 1 - Chapter 1 and 2	
7	Th	19-Sep	Elementary Fluid Dynamics - Bernoulli Equation	3.1 - 3.5
8	Tu	24-Sep		3.6 - 3.7
9	Th	26-Sep	Velocity/Acceleration Fields & Reynolds Transport Theorem	4.1 - 4.4
10	Tu	1-Oct	Conservation of mass (Int)	5.1
11	Th	3-Oct	Work on related problems	
12	Tu	8-Oct	Exam 2 - Chapter 3 and 4 and Section 5.1	
13	Th	10-Oct	Linear Momentum (Int)	5.2.1 - 5.2.2
14	Tu	15-Oct	The Energy Equation	5.3.1 - 5.3.4
15	Th	17-Oct	Viscous Flow	6.8 - 6.9
	Sa	19-Oct	COE Ratliff Relays	
16	Tu	22-Oct	Exam 3 - Chapter 5 and 6	
	Th	24-Oct	2022 Career Success Conference (CSC) from 8:00 AM to 3:30 PM	
17	Tu	29-Oct	Dimensional analysis, similitude, and modeling	7.1 - 7.3
18	Th	31-Oct		7.4 - 7.8
19	Tu	5-Nov	Viscous Flow in Pipes	8.1 - 8.2
20	Th	7-Nov	Losses in Pipes	8.4
21	Tu	12-Nov	Losses in Pipes	8.5
22	Th	14-Nov	Work on related problems	
23	Tu	19-Nov	Exam 4 - Chapter 7 and 8	
24	Th	21-Nov	External Flow and Boundary Layers	9.1 - 9.2
	Tu	26-Nov	Thanksgiving - No class	8.6
	Th	28-Nov		9.2 - 9.3
25	Tu	3-Dec	Drag	9.2 - 9.3
26	Th	5-Dec	Work on related problems	
		9-Dec	Study Day	
University Calendar			Final Exam - Comprehensive	