ME 310 // Fall // 2025

Prof. Ke Tang

This tentative schedule will be continually updated throughout the semester.

Fall 2025

Date	Weekday	Topic	Reading	HW Problem	HW
8/25	M	1.1 Introduction and Big Idea	1.1		
8/27	W	1.2 Dimensions and Viscosity	1.2-1.6	1.2.13, 1.2.26, 1.A	
8/29	F	1.3 Viscosity and Surface Tension	1.6, 1.9	1.6.21 1.6.34	
9/1	M	Labor Day			
9/3	W	1.4 Surface Tension	1.9	1.9.3, 1.B	HW1
9/5	F	2.1 Fluid Statics Introduction, Pressure Equation, and Manometry	2.1-2.3, 2.5-2.6	2.6.6, 2.6.14, 2.8.7, 2.A	
9/8	M	2.2 Hydrostatic Force on Plane Surfaces	2.8		HW2
9/10	W	2.3 Hydrostatic Force on Plane and Curved Surfaces	2.8, 2.10	2.8.16, 2.B, 2.8.21	
9/12	F	2.4 Hydrostatic Force on Curved Surfaces and Buoyancy	2.10, 2.11	2.10.17, 2.C	
9/15	M	2.5 Buoyancy and Rigid Body Acceleration	2.12	2.11.11, 2.12.9, 2.D, 2.E	HW3
9/17	W	3.1 Newton's 2nd Law in Elementary Fluid Dynamics	3.1-3.4		
9/19	F	3.2 Elementary Fluid Dynamics Analysis with Newton's 2nd Law	3.1-3.4	3.2.8, 3.3.3, 3.3.5	
9/22	M	3.3 Stagnation Pressure Problems (Bernoulli Equation)	3.5	3.5.9, 3.5.13	HW4
9/24	W	3.4 Free Jet and Siphon (Bernoulli Equation)	3.6	3.6.13, 3.6.19, 3.6.28, 3.6.83, 3.A	
9/26	F	4.1 Fluid Kinematics, Material Derivative, and RTT	4.1-4.4	4.A	
9/29	M	5.1 Finite CV Analysis Equations	5.1, 5.2.1	5.1.26, 5.A	HW5
10/1	W	5.2 Finite CV Analysis with Linear Momentum Equation	5.2.2	5.2.12	
10/3	F	Exam 1 (Ch1-3), and Informal Early Feedback			
10/6	M	5.3 Moving CV Problems	5.2.2	5.2.36, 5.B	HW6
10/8	W	5.4 Mechanical Energy Equation for Finite CV	5.3.1-5.3.3	5.3.31, 5.C	
10/10	F	6.1 Differential Analysis and Relevant Concepts	6.1	6.1.1	
10/13	M	6.2 Differential Form of Continuity Equation	6.2	6.1.8, 6.2.1, 6.2.2, 6.A	HW7
10/15	W	6.3 Stream Function	6.2	6.2.6, 6.B	
10/17	F	6.4 Velocity Potential and Irrotational Bernoulli Equation	6.4	6.4.1, 6.4.7, 6.4.12	
10/20	M	6.5 Basic Plane Potential Flows and the Method of Superposition	6.5, 6.6.1	6.6.1	HW8
10/22	W	6.6 Navier-Stokes Equation and Viscous Flow in Slit	6.3, 6.8, 6.9	6.4.6, 6.9.2, 6.9.5	
10/24	F	6.7 Viscous Flow in Circular Pipe	6.9	6.9.23	
10/27	M	7.1 Dimensional Analysis and Buckingham Pi Theorem	7.1-7.4	7.1.2, 7.1.4, 7.3.3, 7.A	HW9
10/29	W	7.2 Similitude and Scale Models	7.8	7.B	
10/31	F	7.3 Common Dimensionless Groups and Dimensionless Equations	7.6, 7.10	7.6.1, 7.8.1	
11/3	M	8.1 Viscous Flow in Pipes: Flow Regime and Entrance Length	8.1	8.1.5, 8.1.6	HW10

11/5	W	8.2 Fully Developed Flow, Major Loss and Minor Loss	8.2-8.4	8.4.8, 8.A	
11/7	F	Exam 2 (Ch4-7)			
11/10	M	8.3 Example: Noncircular Pipes, Δp With and Without loss	8.5	8.4.22, 8.5.14, 8.B, 8.C	HW11
11/12	W	8.4 Example: Determine Flowrate	8.5	8.D, 8.E	
11/14	F	9.1 External Flow: Concepts of Drag and Lift	9.1.1, 9.3, 9.4	9.A	
11/17	M	9.2 Examples: Drag and Lift	9.3, 9.4	9.3.44, 9.4.12, 9.4.13, 9.B	HW12
11/19	W	9.3 Boundary Layer Concept and Examples	9.1.2, 9.2	9.2.2, 9.C	
11/21	F	9.4 More Discussion on Boundary Layer Concept	9.2		
11/24	M	Fall Break			
11/26	W	Fall Break			
11/28	F	Fall Break			
12/1	M	10.1 Thermodynamics Review and Stagnation Properties	11.1, 11.2	11.2.3	HW13
12/3	W	10.2 Sound Speed and Mach Number	11.3	11.3.1, 11.3.3, 11.A	
12/5	F	10.3 Steady Isentropic Flow of Ideal Gas	11.6, 11.7	11.B, 11.C	
12/8	M	10.4 Operation of Nozzles	11.7		HW14
12/10	W	Review			
		Final Exam, Comprehensive			