

MCE 354 Fluid Mechanics - 3 Credits
Instructor - Prof. D.M.L. Meyer
Course Policy

Office Hours: To be Announced

Prerequisites: MCE263 (Dynamics); MTH243 (Calculus for Functions of Several Variables)
Text: Fluid Mechanics, F. White, 8th Edition, McGraw-Hill

1. **Homework:** Homework will be assigned on most Thursdays and must be completed by the following Thursday. Assignments and solutions will be posted on the Sakai website <http://sakai.uri.edu>. Only Homework No. 1 is collected and graded.
2. **Quizzes: Timed**, online quizzes will be given using Sakai, each consisting of one or two problems related to the homework. No makeup quizzes will be given, except for exceptional circumstances as described in the URI manual sections 8.51.11-14.
3. **Exams:** There will be 2 exams in the normal class period, each 1 hour and 15 minutes in length. You must have a charged calculator for all exams. Please be prompt: no extra time will be allotted if you arrive late. No make-up exams will be given, except for exceptional circumstances as described in the URI manual sections 8.51.11-14.
4. **No electronic devices** of any kind are allowed to be used during class lectures and exams except for a stand-alone calculator. The use of any electronic device other than a calculator at any time during exams will result in an automatic grade of zero. The use of a calculator on an electronic device (i.e. an iphone, tablet, etc.), is not permitted.
5. **Final Examination:** A comprehensive final exam is scheduled during final exam week.

6. Course Grade:

Quizzes and HW No. 1:	15%
Exam 1:	28%
Exam 2:	28%
Final Exam:	29%

7. Course Grades are calculated on a scale of 0 to 100, with the following breakdown:

A	90-100
A-	88-89
B+	85-87
B	80-84
B-	78-79
C+	75-77
C	70-74
C-	68-69
D+	65-67
D	60-64
F	<60

Academic Integrity: Included here is a statement on the topic of cheating and plagiarism. *The University Judicial System at the University of Rhode Island* defines academic dishonesty and related procedures: <http://www.uri.edu/judicial/index.html>

MCE 354 - Fluid Mechanics
Tentative Topic and Reading Schedule
Instructor: Prof. D.M.L. Meyer

Day	Topic	Reading
1	Introduction; Dimensions, Fluid Properties, Ideal Gas Law, Viscosity	Chap. 1
2	Secondary Properties; Fluid Statics -	Chap. 2
3	Fluid Statics – Hydrostatic Pressure Distribution; Manometry	
4	Fluid Statics - Forces on Submerged Surfaces	
5	Fluid Statics - Forces on Submerged Surfaces; Buoyancy & Stability	
6	Control Volume Analysis - Flow Fields; Reynolds Transport Theorem	Chap. 3
7	Control Volume Analysis - Continuity Equation (Conservation of Mass)	
8	Control Volume Analysis – Linear Momentum	
9	Control Volume Analysis – Bernoulli’s Equation	
10	Control Volume Analysis – Energy Equation; Shaft and Flow Work	
11	Exam No. 1 (exam date will be confirmed a week in advance)	
12	Control Volume Analysis – Kinetic Energy Correction Factor	
13	Dimensional Analysis – Buckingham Pi Theorem	Chap. 5
14	Dimensional Analysis – Non-dimensionalizing Equations Differential Analysis – Euler Equation	Chap. 4
15	Differential Analysis – Acceleration Field	
16	Differential Analysis – Boundary Conditions; Navier-Stokes Equations	
17	Differential Analysis – Navier-Stokes Equations; Conservation of Mass	
18	Differential Analysis – Conservation of Mass	
19	Viscous Flow in Pipes – Fully Laminar Flow	
20	Viscous Flow in Pipes – Fully Turbulent Flow	Chap. 6
21	Exam No. 2 (exam date will be confirmed a week in advance)	
22	Viscous Flow in Pipes –Moody Chart	
23	Flow Over Immersed Bodies – Flow Characteristics	
24	Flow Over Immersed Bodies – Boundary Layers	
25	Viscous Flow in Pipes – Piping Losses	
26	Last day of class –discussion of final exam content; If time permits we will start Chapter 7: Drag and Lift	Chap. 7

Final exam is scheduled during final exam week.