EGEN 335 Fall 2017 Dr. Joel Cahoon
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Objectives: Upon completion of the course, students will competently apply concepts learned in previous mathematics, physics, and engineering mechanics courses to the solution of fluid mechanics problems.

Outcomes: Homework assignments are frequent and focus on tools-building and the processes used to be successful in analysis of fluid mechanics topics. The content of this course is preparatory to the introductions to design that will be found in follow-up courses in mechanical and civil engineering.

D2L: We will make use of D2L content, e-mail and gradebook features. It is expected that students will frequently check D2L and their D2L e-mail. Forward your D2L e-mail to the e-mail account you check often. I try to answer e-mail promptly, but rarely do I have e-mail access after standard work-day hours or on weekends

The Text, Reading Assignments, On-Line Supplement: The syllabus shows the required reading from the text (Fundamentals of Fluid Mechanics, by Munson et al., 8th Edition). Read these sections prior to the date indicated on the syllabus. It will be difficult to be successful in this class if you do not *study* the text. There is a companion to the text (material in Wiley Plus). This is optional and may be of great benefit to some students. The Wiley Plus resources are nice but not required.

Quizzes and Homework: Suggested homework problems from the end of the chapters in the text are indicated on the syllabus – some have video support, some are on-you-own. These are not collected or graded, but you should work these in a way that ensures that you know the material.

Graded homework assignments are provided via D2L. Graded homework are not problems from the text, these are problems I have written – one problem corresponding to each lecture. The homework is due on the dates indicated on the syllabus, always at 5:00 in the box outside my office door in 205 Cobleigh Hall.

There is a quiz in-class (about 10 minutes at the end of the lecture) about once per week. Quiz scores will be posted within hours after the quiz. Your quiz score determines if the corresponding homework is optional or required. The higher of your HW or Quiz scores for each pair will be recorded each time. The only possible quiz scores are 0, 75 or 100.

Quiz Score < 75, Corresponding HW is Required
Quiz Score => 75, Corresponding HW is Optional

The quiz/homework content is indicated on the syllabus by the color coding. Your lowest 2 homework/quiz scores will be dropped when your overall grade is calculated. I will use the homework return facility in the Civil Engineering Department (204 Cobleigh Hall) to return homework and quizzes after they are graded.

Exams: There are 2 in-class exams that will each last 50 minutes. The final exam is scheduled during the Registrar's published final exam period and will last 110 minutes. Exams will include material selected from class lectures, text reading assignments, and from graded and suggested homework problems. All exams are "closed book". You may bring a single HAND WRITTEN (no photocopying) sheet of 8.5" x 11" paper with you to the exams, (one side only for hourly exams, both sides for the final exam). Your exam sheets may include anything you want to write on them. You are encouraged to program your calculator to the extent possible and use it in exams (calculators, not laptop, tablet, smart-devices, or notebook computers). No electronic devices other than your calculator are allowed during the exam session. Do not

even look at or have your phone in any way exposed during an exam. If I see your phone or any smart-enabled device during the exam period the result is an immediate 0 on the exam.

Grading: A standard grading scale will be used. The grade percentages are:

Homework	25%
Exam I	20%
Exam II	20%
Final Exam	35%

Instructions for Graded Homework (See D2L Video Also)

1. Graded homework is posted in D2L and is due at the time and date noted on the syllabus. Late homework without prior arrangements will not be accepted. Do not attempt to turn in homework after it is due.

2. All homework problems must be neat, complete, and follow these guidelines. Minor deviations from these rules are sometimes appropriate, but the general spirit of these rules will be used to help determine an appropriate grade for each problem. Homework submissions that significantly deviate or blatantly ignore these rules will not be graded and a score of zero will be assigned.

2a. Problem Statement State the problem using complete sentences that you have written in your own words). It is often helpful, but not required, to imbed the words "given" and "find" in the problem statement.

Here's an example:

Dr. Cahoon's Problem Statement: A horizontal duct that is square in cross-section is shown in side view. If the fluid is air, what is the mass flow rate (slug/sec). The air may be assumed to have constant density equal to 2.4×10^{-3} slug/ft^3.

A Good Student's Version: Given that air at constant density flows through a square cross-sectioned horizontal duct, find the mass flow rate in slugs/sec.

This is unacceptable:

Given: The drawing shown.
Find: The mass flow rate.

Do not photocopy or cut-and-paste (by hand or electronically) any part of the assignment sheet from D2L - reword the problem statement and redo the drawings yourself. This is intentional; it turns out that students that reproduce the problem statement and drawings on their own understand the problem more fully and make less mistakes.

2b. Drawing Provide a descriptive sketch of the problem including all important dimensions and properties. Sometimes more than one drawing may be necessary, especially if free-body diagrams are part of the solution process. Important assumptions may be included here, or in a bulleted list above or below the sketch. Most problems in fluid dynamics require a sketch, but a few don't and it will be pretty obvious when that is the case. Use a straight-edge; free-hand sketches are almost always insufficient.

2c. Solution Use appropriate sentences, sentence fragments (bulleted list format), or margin notes to describe the solution process.

2d. Calculations Show all calculations at least once (redundant calculations should use a single example) including important algebraic steps, with comments describing the process. Be sure and document the source of all values taken from tables or graphs.

2e. Units Include units in all calculations the first time that the calculation is used in each problem. Show the units on the answer.

2f. Answer Draw a box around the answer and double-check your units.

2g. Significant Figures Display all numbers to a reasonable number of significant figures, even if your calculator or software is using many more that this in calculations.

3. On-paper solutions are required for all homework problems. Engineering pad is required for all hand-written work except for hand-written notes in the margins of computer print-outs. The use of your calculator, Excel, MatLab, or MathCAD to complete these problems is encouraged, but you must still document and fully describe all your work on the paper solution. If you include printouts make sure that they comply with the same rules for homework submission that you would use for hand-written solutions.

4. **DO NOT** use any software other than Excel or MathCAD or Matlab. The use of WaterCAD, EPANet, FlowMaster, **Wolfram**, or other "canned" programs will result in a grade of 0 for the entire assignment.

5. Sharing ideas is encouraged. Sharing work or results is not acceptable. If I suspect that any person has turned in shared work I will promptly issue an Academic Misconduct report to the Dean of Students.

6. Work each problem in the unit system (SI or English) in which the problem is presented, except when noted in class for certain types of problems.