

**Fluid Mechanics I
(ME 3103)
Milwaukee School of Engineering
Fall 2020**

Instructor: Dr. Christopher Damm
Office phone: 414-277-7543
Cell phone: 414-870-2424 (call or text)
E-mail: damm@msoe.edu Website: https://faculty-web.msoe.edu/damm/
Office hours (via MS Teams): Wed 4-4:50 pm , and by appointment.
Office location: Not relevant as I will not be there due to Covid concerns.
Required textbook: Munson, Young and Okishii's Fundamentals of Fluid Mechanics by Gerhart, and Hochstein, 8th edition, Wiley. Course has a Canvas site (this course has been added automatically to your Canvas site). I will use Canvas to distribute and collect materials for the class.

Prerequisite courses: ME 2002 or ME 206, MA 232 or MA 2323, MA 235, PH 2031 or PH 2030

Prerequisites by topic:

- Dynamics
- Multivariable calculus
- Differential equations
- Thermal physics (at college sophomore level)

Course Description: This course begins framing the field of Fluid Mechanics within the larger area of continuum mechanics. Relevant fluid properties are defined, including stresses and strain rate descriptions. Applications of the Bernoulli equation and its restrictions, along with control volume analyses resulting in continuity, momentum and energy equations are the principal problem-solving methods used in this course. Fluid kinematics will be covered and help students transition from Fluids I to topics covered in Fluids II.

Course Learning Outcomes

Upon successful completion of this course, the student will be able to:

- Define a fluid's properties and their relations to stress and strain rates
- Apply the fluid-static equation to determine pressure at a point
- Apply the Bernoulli equations to a variety of problems and define when it can and cannot be used
- Apply the control volume forms of the mass, energy, and momentum equations to variety of problems

- Determine the equation for a streamline and the acceleration of fluid for a given flow field

Inclusive Learning Environment

This classroom is a place where you will be treated with respect. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Methods of Assessing Student Outcomes: Assignments, Quizzes, Exam, and a Final Exam

Letter Grades This is a rough guideline. Grade determination will be discussed further in class. Generally, the average grade for the class will be approximately a BC. If a curve is necessary to achieve that average grade, Dr. Damm will apply a curve.

<u>Letter Grade</u>	<u>% Equivalent</u>
A	93-100
AB	87-93
B	80-87
BC	75-80
C	70-75
CD	65-70
D	60-65
F	0-60

Grade Calculation	
2 quizzes	30 %
Week 7 exam	25 %
Assignments	5 %
Participation	5 %
Final Exam	35 %

Quizzes and Exams:

Exams will be closed book/closed notes/closed laptop. You will be allowed one side of an 8.5"x11" sheet of paper for formulas and notes. Calculators are allowed. Note: you are expected to follow a standard solution methodology on quantitative problems (e.g. start general, with foundational equations, and then refine symbolically before entering numerical values that include units). Since partial credit is given, a sound methodology is required to score well on exams. In other words—you are graded on your approach as well as whether you arrived at the correct answer (that's the nature of partial credit).

Final Exam:

There is no common final exam for ME 3103. The final exam will be comprehensive, made up by Dr. Damm. You will be allowed 2 sides of an 8.5"x11" sheet of paper for formulas and notes.

Note about giving exams in on-line environment: The exams will be administered during class meeting time via MS teams. See supplemental handout for details about how this process is handled.

Attendance, Homework Assignments, Participation and Class Decorum:

Students are expected to attend on-line course meetings regularly and to participate fully in the class survey questions that I will incorporate into my on-line presentations. I will keep track of your participation in class based on your presence during the MS Teams meetings and your participation in class survey questions. Your participation grade contributes to 5% of your overall grade. **There will be homework assignments** (they are chosen to reinforce the material covered in class or to give you some exposure to a topic that I will not be discussing directly in class). These assignments will be graded on a full-credit/half-credit/no credit basis. The determination is made based on my judgement regarding the level of effort that was put forth by the student in completing the assignment.

Regarding Collaboration and Academic Honesty:

You are expected to conform to the MSOE code for academic honesty. If a student is caught cheating on an exam or quiz, the student will receive an *F for the course*. (Students who are disciplined for cheating are not allowed to drop the course.) If a student cheats on an assignment, the student will receive a zero on the assignment and may receive an *F for the course* because of the zero grade. Cheating students will be reported to the Department Head and the VP of Academics. If you cheat you risk *expulsion* from MSOE.

Examples of cheating:

- copying homework or lab reports
- communicating with another person (besides the instructor) in any way during a quiz or exam
- copying (in any form) from another student on a quiz or exam
- permitting another student to copy from you on a quiz, exam, homework assignment, or lab report
- copying homework or lab reports from previous terms
- copying homework from a solutions manual or from previously distributed solutions
- copying a homework solution from a student who is solving the problem for others in a group setting (whether online or in person)

Bottom line--Any time you represent the work of others as your own you are cheating.

Late Work, Missed Exams:

Assignments are due at the time/date specified on the assignment handout. **Late homework will not be accepted for credit or graded.** A student will receive a zero on exams that are missed without a legitimate excuse (e.g. documented illness, family tragedy, etc.).

Piazza

This term we will be using Piazza for class discussion in concert with other sections of ME 3103. The system is highly catered to getting you help fast and efficiently from classmates and instructors. This is the venue to pose questions (anonymously if you wish) you may have regarding the lecture material, homework assignments, etc. The idea is that I would like you all to try and help your fellow class-mates out with any questions they may have. I (and/or the other instructors) will address any misconceptions, incorrect explanations, and unresolved questions on the forum or in class. Here is where you enroll: <https://piazza.com/msoe/fall2020/me3103> Join the ME 3103 class (Valerie Troutman is listed as the instructor but it's for all ME 3103 sections).

Contesting Grades

We are all human, and there may be grading mistakes from time to time. If you have an issue with how an assignment was graded, please provide a formal written application for grade change, including a copy of the particular question and your original answer, and a paragraph explaining why you believe you deserve a grade change. These applications should be emailed to me no later than 7 days after the assignment was returned; verbal requests for grade change will not be considered. If there was an obvious mistake in grading, I will immediately correct the issue. If the grade change is more subjective in nature, I will file your request and reconsider at the end of the quarter if a change in this grade could change your final grade in the class.

Tentative Schedule		
Week 1	Course Overview, Chapter 1	
Week 2	Chapter 1, Chapter 2	
Week 3	Chapter 2	Quiz 1
Week 4	Chapter 4	
Week 5	Chapter 3	
Week 6	Chapter 3 and Chapter 4 revisited	
Week 7	Chapter 5	Exam
Week 8	Chapter 5	
Week 9	Chapter 5	Quiz 2
Week 10	Chapter 8	
	On-line Review(Q&A) Session, Time and place TBA	
<i>Final Exam Date and Time to be determined</i>		

MSOE Covid Safety Statement

MSOE is committed to the health, safety, and well-being of all members of our community. In an effort to maintain such an environment, as well as to prevent further spread of COVID-19, students, faculty, staff and guests of the university must wear a facial covering when they are inside university buildings and when they are outdoors on campus and social distancing of at least six feet is not possible.

- *Failure to wear a facial covering in class or laboratory will result in your faculty member requiring you to leave class and not return until you have secured a facial covering for yourself.*
- *Failure to comply with your faculty member's instructions will result in immediate action from the Office of the Dean of Students.*
- *Failure to comply with this policy will be handled according to the Student Code of Conduct and may result in sanctions, up to and including expulsion.*
- *The university strongly encourages all students to keep an extra and clean facial covering on their person at all times and strongly discourages students from borrowing and lending others their facial coverings.*

If you suspect you are ill, have symptoms of COVID-19, or have possibly been exposed to COVID-19, please contact the Dean of Students Office at deanofstudents@msoe.edu for guidance on testing and self-isolation procedures. Please do not physically come to campus if you are ill or suspect you may be ill. MSOE is committed to your education and will work with you to provide a virtual educational experience until you are cleared to return to campus.

Student Accessibility Services (SAS)

- For students with documented disabilities, chronic medication conditions and mental health concerns; MSOE provides services to make reasonable accommodations available. If you are a student who requires or anticipates the need for accommodations, please contact Student Accessibility Services Office at 414-277-7281, by email at moureau@msoe.edu, or in person at K250 to discuss appropriate accommodations and eligibility requirements.