

**MATH 6750**  
**FLUID DYNAMICS**  
**Fall Semester, 2021**

Time and Place: T,Th 12:25-1:45, CSC 25  
Instructor: Professor Aaron Fogelson  
Offices: 312 LCB  
Phone: 581-8150  
email: fogelson@math.utah.edu  
Course Canvas Site: <https://utah.instructure.com/courses/719886>  
Office Hours: By appointment (send email)

**Texts: (Do NOT buy before class starts.)**

- Elementary Fluid Dynamics by D.J. Acheson
- Advanced Transport Phenomena by L. Gary Leal

**Some other useful books (listed alphabetically):**

- Batchelor, An Introduction to Fluid Dynamics
- Chorin and Marsden, A Mathematical Introduction to Fluid Dynamics.
- Drazin, Introduction to Hydrodynamic Stability
- Happel and Brenner, Low Reynolds Number Hydrodynamics
- Landau and Lifschitz, Fluid Mechanics
- Lighthill, Mathematical Biofluidynamics
- Lighthill, An Informal Introduction to Theoretical Fluid Mechanics
- Segel, Mathematics Applied to Continuum Mechanics
- Tritton, Physical Fluid Dynamics
- Van Dyke, An Album of Fluid Motion

**The Course:** An introduction to fluid dynamics: Derivation of the partial differential equations of fluid dynamics, Euler and Navier-Stokes equations, Bernoulli's theorem, Kelvin's circulation theorem, potential flow, exact and asymptotic solutions, vorticity, fluid instabilities, flow of viscoelastic fluids. The emphasis will be on incompressible flow with a view toward applications in biology and engineering.

**Homework.** Five or six homework problem sets will be assigned and collected. They will consist of theoretical analyses (using Maple when needed) and some computational solution using MATLAB. There will also be individual course projects.

**Final Exam:** There will be no final exam.

**Grading:** Grades are determined according to class participation, homework score, and project.

**Honor Code:** Students are expected to abide by the University of Utah Honor Code and to avoid any instances of academic misconduct, including but not limited to: (1) possessing, using, or exchanging improperly acquired written or oral information during an exam, (2) substitution of material that is wholly or substantially identical to that created or published by another individual(s), and (3) false claims of performance or work.

**COVID19 Information:** University leadership urges all faculty, students, and staff to model the vaccination, testing, and masking behaviors we want to see in our campus community. These include:

**Vaccination:** Get a COVID-19 vaccination if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. Visit <http://mychart.med.utah.edu/>, <http://alert.utah.edu/covid/vaccine>, or <http://vaccines.gov/> to schedule your vaccination.

**Masking:** While masks are no longer required outside of Health Sciences facilities, UTA buses and campus shuttles, CDC guidelines now call for everyone to wear face masks indoors.

**Testing:** If you are not yet vaccinated, get weekly asymptomatic coronavirus tests. This is a helpful way to protect yourself and those around you because asymptomatic individuals can unknowingly spread the coronavirus to others. Saliva based testing is available at [alert.utah.edu/covid/testing](http://alert.utah.edu/covid/testing)

**Self-Reporting:** All of us, including faculty, students, and staff, must self-report if we test positive for COVID-19 via this website: <https://coronavirus.utah.edu/>.

#### **Other Information:**

**The Americans with Disabilities Act:** The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020, <https://disability.utah.edu/>. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

**Addressing Sexual Misconduct:** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, office for equal opportunity and affirmative action including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, <https://oeo.utah.edu/contact-us/index.php> or to the Office of the Dean of Students, 270 Union Building, 801-581-7066, <https://deanofstudents.utah.edu/>. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS), <https://police.utah.edu/>.

**Campus Safety:** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu)

**University Counseling Center:** The UCC staff is committed to supporting the mental health needs of our campus community. Their phone number is 801-581-6826. Their hours are Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000 . More information is at <https://counselingcenter.utah.edu/> .

**Office of the Dean of Students:** The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. To contact the Office of the Dean of Students, please email [deanofstudents@utah.edu](mailto:deanofstudents@utah.edu) or call 801-581-7066. There is more information at <https://deanofstudents.utah.edu/> .