**MATH 6750**
**FLUID DYNAMICS**
**Fall Semester, 2009**

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| Time and Place: | T,Th 10:45-12:05, 222 LCB |
| Instructor: | Professor Aaron Fogelson |
| Offices: | 312 LCB |
| Phone: | 581-8150 |
| email: | fogelson@math.utah.edu |
| Course Web Site: | `http://www.math.utah.edu/~fogelson/6750_f09` |
| Office Hours: | By appointment |
| Unofficial Texts: | L. Gary Leal, Advanced Transport Phenomena: Fluid Mechanics and Convective Transport Processes, 2007. |
| | Roger I. Tanner, Engineering Rheology, 2000. |
| | These and some other references are on reserve at Marriott Library. |

**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.

(Note: Math 6750 will not be concerned with numerical methods for solving fluid dynamics equations. In Spring 2010 I will teach Math 6630 Numerical Solution of Partial Differential Equations and part of that course will be concerned with computational fluid dynamics.)

**Homework.** Homework problem sets will be assigned and collected. They will consist of theoretical analyses (using Maple when needed) and some computational solution using MATLAB.

**Homework Writeups:** I require that homework be indisputably **neat** and that answers be **expressed in complete sentences**. The best way to ensure that I will regard your homework as 'neat' is to typeset it with LaTex. There are links to online tutorials and other information for LaTex at:
`http://www.tex.ac.uk/cgi-bin/texfaq2html?label=man-latex`

or at

`http://www.math.hmc.edu/computing/support/tex/online/`

Additional information about LaTex (including introductions to its use) can be found at websites obtained by typing 'LaTex tutorial' into a search engine.

**Prerequisite.** MATH 5440 or 6420 (PDEs) or the equivalent. If in doubt speak with me.

**ADA Statement** The Americans with Disabilities Act requires that reasonable accommodations be provided for students with physical, sensory, cognitive, systemic, learning and psychiatric disabilities. Please contact me at the beginning of the quarter to discuss any such accommodations for the course.