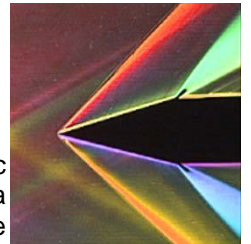

6038 Course Outline: Mechanics of Fluids (MECH 345)**(Spring 2016)**

Instructor: Dr. Mohsen Akbari
Office Location: EOW 331
Office Hours: Wednesdays, 4 -5 pm, email for other times

Laminar to
turbulent flow

Lecture Times: Tuesdays, Wednesdays, and Fridays, 8:30 AM – 9:20 AM
Lecture Location: Engineering Comp Science Bldg 125

Tutorial: Tuesdays, 3:30 AM – 4:20 AM
Tutorial Location: Engineering Comp Science Bldg 125

supersonic
2D flow over a
wedge**Lab Sessions:**

B01 Mondays 4:00 pm - 6:50 pm
B02 Tuesdays 4:30 pm - 7:20 pm
B04 Fridays 12:30 pm - 3:20 pm
B05 Fridays 5:00 pm - 7:50 pm

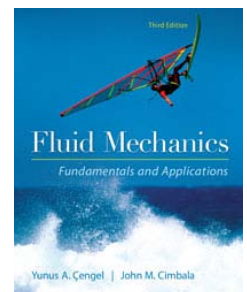
Lab Location: Engineering Lab Wing A140**Teaching Assistants:**

Sean Blaney: blaney@uvic.ca
Premakumara Govindappa: premg@uvic.ca
Valérie Losier: vlosier@uvic.ca
Virag Mishra: virag@uvic.ca
Markus Sommerfeld: msommerf@uvic.ca
Boyu Wang: boyuwang@uvic.ca

Textbook (s):

Required: YA Cengel, JM Cimbala, Fluid Mechanics, 3rd Edition, McGraw-Hill, 2014

Optional: FM White, Fluid Mechanics, 8th Edition, McGraw-Hill, 2016.



Course Objectives:

This is an introductory course in Fluid Mechanics for undergraduate engineering students in their junior or senior year. Students should have sufficient knowledge of basic physics, mathematics, and engineering mechanics. The course objectives are:

- Explain the physical properties of a fluid and their consequence on fluid flow, expressed in terms of Mach and Reynolds numbers
- Understand the conservation principles of mass, momentum, and energy for fluid flow
- Apply the basic applied-mathematical tools that support fluid dynamics
- Create conceptual and quantitative models of inviscid, steady fluid flow over simple bodies (airfoils, wings) and in channels

Labs:

There are four laboratory experiments for this course. Required materials (background, instructions, and lab report template) are posted on the course website. Students will be assigned into groups, to perform the experiments.

NOTE: Individual laboratory reports must be submitted by students at each group.

Experiment #1: Linear Momentum Experiment

Experiment #2: The Energy Equation in a Venturi-Type Flow

Experiment #3: Friction in Laminar and Turbulent Pipe Flow

Experiment #4: Pressure Distribution, Lift and Drag on an Airfoil

Tutorials:

Assignments from previous weeks will be solved.

Evaluation:

Labs:	% 15
Pop quizzes:	% 15
Mid-term:	%25 (Tuesday 23rd, 2016, 3:30 PM-4:20 PM)
Final Exam:	%45 (TBD)

- The midterm and final are closed-book exams. Quizzes are open-book.
- Students are permitted to use a copy of unit conversion tables and property tables from the textbook. One page cheat sheet is allowed for the exams.
- Attendance and participation on lab sessions are required to pass the course.
- If the averaged mark for assignments is 80% and more, the student would have the choice to exchanges the evaluation percentages between the midterm and final exams, whichever leads to a higher grade.
- Each week assignments along with several practice problems will be posted online. It is highly recommended to work on the practice problems and the assignments.
- There will be at least 3 pop quizzes during the semester. The problems for pop quizzes will be selected from the assignments and the practice problems posted online.