Fluid Mechanics

Contents

1 Introduction

This module deals with using and understanding the conservation laws of mass, energy and momentum.
Lectures are recorded and will be uploaded to blackboard, along with slides, solved problems, and visualiser notes.

Office hours will be on Tuesday 10:00-12:00 in A122 Engineering Central. It is recommended to come to this if you have a problem as he is unlikely to reply to emails.

1.1 Assessment

100% of the marks are from a final exam at the end of the year. In this exam:

- 35% is from multiple choice questions
- 25% is from a problem similar to those seen in class or in the excersises. This is again a multiple choice question with negative marks if you get the wrong answer
- 40% will be from an aditional question based on the taught material. This will be a standard question (e.g not multiple choice)

1.2 Recommended Reading

- Fluid Mechanics: Fundamentals and Applications - YunusA. engel, John M. Cimbala, McGraw Hill
- Applied Fluid Mechanics: Global Edition - Robert L. Mott, Joseph A. Untener, Pearsons

2 Basic Characteristics of Fluids and Flows

2.1 The Continuum Assumption

Fluids are considered a continuum on length scales larger than the molecular ones. For example, you can't measure individual water 'grains' until you look at the molecular level.

2.2 Types of Problems

Macroscopic - Deals with the overall flow (e.g amount of water entering and leaving a pipe)

Microscopic - Deals with a specific section of the flow (properties of the fluid flow within a small section of this pipe)