Course Outline

• Title: Fluid Mechanics（流体力学）
• Type: Required for undergraduate students
• Credit: 3
• Prerequisite: Physics, Engineering Mechanics, Engineering Mathematics
• Lecturer: Chung Fang
• Description: Fluid mechanics is that discipline within the broad field of applied mechanics concerned with the behavior of liquids and gases at rest or in motion. It is the very fundamental discipline to civil and other engineering sciences. After visiting the course the participants are expected to have a very clear and sound understanding of the mechanics of fluids, and are able to apply what they have learned to practical problems.

• Contents:

Part I.
1. Introduction
2. Fundamental concepts
3. Fluid statics
4. Basic equations in integral form for a control volume
5. Introduction to differential analysis of fluid motion
6. Incompressible inviscid flow
7. Dimensional analysis and similitude
8. Internal incompressible viscous flow
9. External incompressible viscous flow

Part II.
10. Fluid machinery
11. Open-channel flow
12. Introduction to compressible flow
13. Compressible flow
14. Basic equations of fluid mechanics

Introductory level:
7. “揭開飛行的奧秘”, 4版，王懷柱, 全華, 2009

Advanced level:

• Grading
  1st Midterm exam: 25%,  2nd Midterm exam: 35%,
  Final exam: 40%

• Office hour:
  AM 08:00 – 10:00, Friday, Room 47248, CE Department

• Advanced Courses:
  Advanced Fluid Mechanics
  Viscous Flows
  Compressible Flows / Aerodynamics
  Non-Newtonian Fluid Mechanics / Rheology
  Mass and Heat Transfer
  Wind Effects on Structures