

The Hong Kong University of Science and Technology

Course Title: FLUID MECHANICS

Course Code: MECH 2210 L2

No. of Credits: 3 credits

Pre-requisites: MATH 2011/2023, MECH 2310

Instructor: Prof. Lin FU (Tel: 3469 2969 Email: linfu@ust.hk Room: 2606A)
Office hour: 3:00-5:00pm Tuesday or by appointment

Teaching Assistants: Mr. Shiyi Lu slubd@connect.ust.hk
Mr. Justin Edmund Sun kijesun@connect.ust.hk

Course Description:

Fundamental concepts; fluid statics; fluid kinematics, integral and differential equations of fluid flows; conservation of mass, momentum and energy; dimensional analysis; pipe flows, external flows, and nanofluidics.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Homework	10%
Mid-term exam	40%
Final exam	50%

Required Texts and Materials:

Fundamentals of Fluid Mechanics, 5th or 6th edition

B.R. Munson, D.F. Young and T.H. Okiishi (Wiley and Sons, 2006/10)

Mechanics of Fluids (Cengage Learning, 2015)

M.C. Potter, D.C. Wiggert, and B.H. Ramadan

Nanofluidics: An Introduction, 1st edition

Zhigang Li (CRC-Taylor & Francis, 2018)

Classrooms and Time Slots:

Lecture: Wednesday – 15:00 – 16:20 (Rm 2302)

Friday – 15:00 – 16:20 (Rm 2302)

Tutorial: Thursday – 15:00 – 15:50 (Rm 1527)

Detailed Course Outline: (times are subject to changes)

Chapter 1. Introduction	week 1
Chapter 2. Fluid Statics	weeks 2-3
Chapter 3. Fluids in Motions	weeks 3-4
Chapter 4. Kinematics of Fluid Motion	weeks 4-5
Chapter 5. Flow analysis using C.V.	weeks 6-7
Chapter 6. Differential methods	week 7-9
Mid-term TBD	week 9/10
Chapter 8. Pipe Flows	weeks 10-11
Chapter 9. External Flows	weeks 11-12
Chapter 10. Advances in wall-bounded turbulence modelling	weeks 13