

MECH2210 Fluid Mechanics

Course Code: MECH2210	Course Title: Fluid Mechanics	
Required Course Or Elective Course: Required	Terms Offered (Credits): Spring (3 credits)	
Faculty In Charge: Zhigang Li	Pre-Requisites: (MATH2011 or MATH2023) and MECH2310	
Course Structure: Lecture: 2 sessions/week, 80 minutes/session		
Textbook/Required Material: Fundamentals Of Fluid Mechanics, 6th Ed. B.R. Munson, D.F. Young And T.H. Okiishi, Wiley And Sons, 2010		
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		
Course Topics: <ol style="list-style-type: none"> 1. Introduction 2. Fluid Statics 3. Fluids in Motions (Streamline, Bernoulli Equation) 4. Kinematics of Fluid Motion (Velocity and Acceleration Fields, Reynolds Transport Theorem) 5. Flow Analysis Using Control Volume Approach (Continuity, Linear Momentum, Energy Equations) 6. Differential Methods (Potential and Viscous Flows) 7. Dimensional Analysis (Modelling and Similitude) 8. Pipe Flows (Laminar and Turbulent Flows) 		
Course Objectives:	<ol style="list-style-type: none"> 1. To equip students with some fundamental concepts in fluid mechanics, including statics and kinematics. 2. To show how the basic ideas in mathematics can be applied to understand and explain some phenomena in fluid mechanics. 3. To introduce some basic skills for scientific analysis of practical problems in the area of fluid mechanics. 4. To inspire students to understand the nature (hurricanes) and man-made objects (airplanes) using the knowledge obtained in classes. 	
Course Outcomes:	<ol style="list-style-type: none"> A. Explain key fundamental concepts in fluid mechanics. B. Understand the role of mathematics in studying fluid mechanics problems. C. Employ mathematics to scientifically analyze practical fluid mechanics problems. D. Apply fluid mechanics principles to explain natural phenomena. 	
Assessment Tools:	Regular homework assignments	10 %
	Class quizzes	10%
	Mid-term and final examinations	80%