ME 342 Fluid Mechanics II **Credits: 3 (3-0-6)**
Undergraduate Program, Department of Mechanical Engineering, **1st semester 2005**
Faculty of Engineering, Thammasat University

Lecturers: Dr. Wiroj Limtrakarn Room 413, Tel. 3144, E–mail :limwiroj@engr.tu.ac.th
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Objectives: 1.To understand fluid mechanics in engineering.
2.To be able to implement fluid mechanics to solve problems correctly.

Course Description:

Kinematics of fluid flow. Steady and unsteady. Uniform and non-uniform flows. Dimensions of flow. Streamlines. Path lines and stream function. Fluid strain and rotation. Flownets. Circulation and rotational flow. Radial flow. Equations of motion and energy. Laminar flows in closed conduits and shear stresses. Annulus flow and flow between parallel walls. Shear stresses in turbulent flows. Velocity distribution. Laminar and turbulent boundary layers. Flow past submerged bodies. Separation, circulation and lift force.

Tentative Schedule:

Weeks	Topics	Date	Reference no.
1	Differential Equation of Fluid Motion	7, 9/6/05	
2	Differential Equation of Fluid Motion	14, 16/6/05	
3	Potential Flow	21, 23/6/05	
4	Potential Flow	28, 30/6/05	
5	Boundary Layer	5, 7/7/05	
6	Boundary Layer	12, 14/7/05	
7	Drag & Lift	19, 21/7/05	
8	**Mid–Term (Week# 1–7)**	**26/7/05**	
9	Fluid Machinery	2, 4/8/05	
10	Fluid Machinery	9, 11/8/05	
11	Fluid Machinery	16, 18/8/05	
12	Piping Design	23, 25/8/05	
13	Computer–Aided Engineering	30/8, 1/9/04	
14	Compressible Flow	6, 8/9/04	
15	Compressible Flow	13, 15/9/04	
16	Compressible Flow	19, 22/9/04	
17	**Final Examination (Week #9 – 16)**	30/9/04	

References:

1 Robert W. Fox, Alan T. McDonald. *Introduction of Fluid Mechanics*, 5th edition, John Wiley & Sons, 1994.

2 V. L. Streeter et al., *Fluid Mechanics*, McGraw-Hill, 1998.

3 Frank M. White, *Fluid Mechanics*, 5th edition, McGraw-Hill, 2003.

4 Bruce R. Munson, Donald F. Yong, and Theodore H. Okiishi. *Fundamentals of Fluid Mechanics*, 4th edition, John Wiley & Sons, 2002.

Evaluations:

1	Assignment & Attention in subject	20
2	Mid–Term examination	40
3	Final examination	40

Minimum of 80% attendance is required to pass this course.