CE – 371 FLUID MECHANICS
SPRING 2017-2018

COURSE INSTRUCTOR: Assoc.Prof.Dr. Kerem TAŞTAN/ Office: Rm. 202

COURSE OUTLINE

1. INTRODUCTION (approx. 3 hr.)
- **1.1. Characteristics of Fluids**
- **1.2. Dimensions, Dimensional Homogeneity, and Units**
- **1.3. Physical Properties of Fluids**

2. HYDROSTATICS (approx. 12 hr.)
- **2.1. Pressure at a Point**
- **2.2. Measurement of Pressure**
- **2.3. Pressure Variation in a Fluid at Rest**
- **2.4. Hydrostatic Force on Surfaces**
- **2.5. Buoyancy**

3. KINEMATICS (approx. 4 hr.)
- **3.1. Lagrangian & Eulerian Flow Descriptions**
- **3.2. The Velocity, Derivatives and Acceleration**
- **3.3. Streamlines, Pathlines**
- **3.4. Fluid Element Kinematics**
- **3.5. Brief Classification of Fluid Flow**

4. BASIC PRINCIPLES AND METHODS OF ANALYSIS (approx. 4 hr.)
- **4.1. Laws of Nature**
- **4.2. Integral and Differential Approaches**
- **4.3. System and Control Volume Approaches**
- **4.4. The Reynolds Transport Theorem**

5. GOVERNING EQUATIONS (approx. 16 hr.)
- **5.1. Integral Approach for Fix, Finite Control Volume**
  - ***5.1.1. Conservation of Mass***
  - ***5.1.2. Forces Involved in Fluid Flow***
  - ***5.1.3. Conservation of Momentum***
  - ***5.1.4. Conservation of Energy; Bernoulli Equation***

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REFERENCE BOOKS

1) Munson, B. R., Young, D. F., and Okiishi, T. H., 'FUNDEMENTALS OF FLUID MECHANICS', John Wiley & Sons, Inc.
2) Munson, B. R., Young, D. F., Okiishi, T. H., (Çevirmenler : Prof.Dr. Haşmet Türkoğlu, Prof.Dr. Nuri Yücel, Prof.Dr. Zekeriya Altaç, Doç.Dr. Nureddin Dinler) Akışkanlar Mekaniğine Giriş (A Brief Introduction to Fluid Mechanics) Nobel Yayınevi, 2013.
3) Fox, R.W., McDonald, A.T., and Pritchard, P.J., "INTRODUCTION TO FLUID MECHANICS, John Wiley & Sons, Inc.
4) White, F.M., "FLUID MECHANICS" , McGraw Hill
5) Çengel Y.A, Cımbala J.M, "Akışkanlar Mekaniği- Temelleri ve Uygulamaları" Palme Yayınevi
6) Shames I., 'MECHANICS OF FLUIDS', McGraw Hill.
7) Streeter V.L. and Wylie B., 'FLUID MECHANICS', McGraw Hill.
8) Ilgaz C., Karahan E., Bulu A., 'Akışkanlar Mekaniği ve Hidrolik Problemleri' Çağlayan Yayınevi.
9) Sümer M., Unsal İ., Bayazıt M., 'Hidrolik', Birsen Yayınevi.
10) Sümer A. ve Sümer M., 'Hidrolik Problemleri', Birsen Yayınevi.
11) Ronalds V.G., 'Akışkanlar Mekaniği ve Hidrolik', Sanem Çözümlü Serisi.
12) Douglas J.F., Janusz M.G. and Swaffield J.A., 'FLUID MECHANICS', Prentice Hall.
13) Şekerdağ, N. "Akışkanlar Mekaniği ve Hidrolik Problemleri" Nobel Yayın Dağıtım
14) Yıldırım, N., Taştan, K., "Pompalar ve Pompalı Boru Hatları (Çözümlü Problemler)", Nobel Yayınevi, 2014.

EXAMS: 2 Midterms, 1 Final, Assignments and Reports

GRADING:	Midterm I:	35%
	Midterm II:	35%
	Assignments + Reports :	30%
	TOTAL:	60% of your grade
	Final:	40%

Recommendations:
1. Do the assignment problems regularly
2. Do the assignment problems on your own
3. **Copy homeworks will nullify your entire Assignment score.** (you may ask your friends and take their opinions about the homeworks, however, copying their homeworks will not be accepted)
4. **Late submission of homeworks will not be accepted.**
5. Attendance is strongly recommended.
6. Take notes during the class.
7. Buy or borrow from a library a Fluid Mechanics Book.
8. Do not hesitate to ask questions during the class or at office hours.
9. Follow the course website for homeworks and announcements.

I wish you all a successful semester ☺