College: Engineering Department: Civil

Course Title: Fluid Mechanics

Course No: CE310

Credit Hours: 3Hours

Semester: First

About The Course

Course Title: Fluid Mechanics Class:
Course No: CE310
Credit Hours: 3 Lecture Room:

Obligatory/ Optional: Obligatory
Text Book: Roberson J.A., and Crowe C.T. "Engineering Fluid Mechanics".

The Instructor

Name: Eng. Alaa' Falaileh
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Course Description

1. Introduction, fluid definition and its various properties
2. Principles of fluid static
3. Flow concepts and conservation of mass principle
4. Pressure variation and Bernoulli's equation
5. Momentum principle
6. Energy principle
7. Pipe flow: Flow conditions, major head losses (Darcy Weisbach, and Moody diagram

1. مقدمة وتعريف السوائل وخصائصها المختلفة
2. مبادئ السوائل الساكنة
3. مفاهيم التدفق والحفاظ على مبدأ الكتلة
4. تباين الضغط ومعادلة برنولي
5. مبدأ الزخم
6. مبدأ الطاقة
7. تدفق الأنابيب: ظروف التدفق ، خسائر الرأس الرئيسية (Darcy Weisbacy and Moody diagram

Course Objectives

1. Students capable of connecting principles learned in other courses of solid mechanics, dynamics and physics to fluids,
2. Student learned the basic conservation laws as applied to typical problems of Pipe.
3. Students exposed to the methods of similarity and they are capable of using them to certain problems of pipe.

Learning Outcome

Making students aware of how language works to convey meaning as its basic function

Course Outline and Time schedule

Week	Course Outline
First week	Introduction
2nd week	Properties Involving Mass and Weight
	Ideal Gas Law (Theory + Example)
	Viscosity (Example)
	Bulk Modulus of Elasticity (derive the equation)
3rd week	Surface Tension (Theory +example)
	Vapor Pressure
	Absolute Pressure, Gage Pressure, and Vacuum Pressure (Theory + Example)
	Pressure Variation with Elevation (Example 1&2)
4th week	Pressure Measurements (Example 1&2&3)
	Forces on Plane Surfaces (Panels) (Example 1& 2)
	Forces on Curved Surfaces (Theory + Example)
5th week	Buoyancy (Theory + Example)
	Flowing Fluids and Pressure Variation
	Descriptions of Fluid Motion (Example 1&2)
6th week	Acceleration (Theory)
	Euler's Equation (Theory + Example 1&2)
7th week	**Review & Exam I**
8th week	Pressure Distribution in Rotating Flows (Example 1&2)
	The Bernoulli Equation Along a Streamline (Example 1&2&3)
9th week	Rate of flow ,Control volume approach & continuity equation (Theory + Examples1& 2 & 3&4)
10th week	Momentum Equation Derivation
	Common Applications - fluid Jet (Example)

11th week	Common Applications - Non uniformity flow (Theory + Example)
12th week	**Review & EXAM II**
13th week	Common Applications - Nozzle (Theory + Example)
	Common Applications - Forces on Bends (Theory + Example 1&2)
	Moment-of-Momentum Equation (theory + Example)
14th week	The Energy Equation General form, Shaft and Flow Work
	Energy Equation: Pipe Flow & power equation (Example1&2&3)
	Hydraulic and Energy Grade Lines (Theory + Example)
15thweek	**FINAL EXAM**

Presentation methods and techniques

Methods of teaching varied according to the type of text, student and situation. The following techniques are usually used:

1- Lecturing with active participations.
2- Problem solving.
3- Cooperative learning.
4- Discussion.
5- Learning by activities.
6- Connecting students with different sources of information

Sources of information and Instructional Aids

For example: Computer … power point …etc.

- Transparencies

- Distance learning
- Library sources

Assessment Strategy and its tools

The assigned syllabus is assessed and evaluated
Through: feed back and the skills that are acquired by the students

The tools:
1- Digonistic tests to identify the students level and areas of weakness
2- Formal (stage) evaluation
   a) Class Participation
   b) Ist Exam
   c) 2nd Exam
   d) Activity file

Tool & Evaluation

Tests are permanent tools & assessment, in addition to the activity file which contains curricular and the co-cussiculor activities, research, report papers and the active participation of the student in the lecture.

The following table clarifies the organization of the assessment schedule:

Test	Date	Grade
First Exam		20
2nd Exam		20
Activities & Participation	Students should be notified about their marks	20
Final Exam		40

Activities and Instructional Assignment

1- Practical assignments to achieve the syllabus objectives.

2- ……..

Regulations to maintain the teaching-Learning Process in the Lecture:

1- Regular attendance.

2- Respect of commencement and ending of the lecture time.

3- Positive relationship between student and teacher.

4- Commitment to present assignments on time.

5- High commitment during the lecture to avoid any kind of disturbance and distortion.

6- High seuse of trust and sincerity when referring to any piece of information and to mention the source.

7- The student who absents himself should submit an accepted excuse.

8- University relevant regulations should be applied in case the students behavior is not accepted.

9- Allowed Absence percentages is (%).

Internet websites

1…….

2…….

3……..

References :

1……

2……

3……

Syllabus Classification

Objectives	***Learning outcome***	***Assessment tools***
1-		
2-		
3-		
4-		
5-		