

Faculty of Engineering & Technology

Fluid Mechanics

Information :

Course Code : MPR 252

Level : Undergraduate

Course Hours : 4.00- Hours

Department : Department of Structural Engineering & Construction Management

Instructor Information :

Title	Name	Office hours
Lecturer	Mohamed Ahmed Mahmoud Karali	5
Assistant Lecturer	Zakaria Mostafa Abdo Salim Marouf	2
Teaching Assistant	Mahmoud Mohamed Khalaf Ahmed	2

Area Of Study :

1. Differentiate between fluids and other substances and classify different fluid flow types.
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2. Calculate the forces acting on dams and gates, aiding in the design of such systems.
3. Use continuity, Bernoulli and energy's equations to design different engineering systems.
4. Measure different fluid properties and analysis different fluid systems in laboratory and assess different losses in piping networks.

Description :

Introduction and fundamental concepts of fluids, Statics of fluids, Characterization of fluid flow, Integral equations, Basic equations: conservation of mass, momentum and energy, Bernoulli's equation, Application on momentum and Bernoulli's equations, Viscous flow in ducts and pipes, Basics of dimensional analysis and dynamic similarity.

Course outcomes :

a. Knowledge and Understanding: :

1 -	Demonstrate the use of studied physics in our course.
2 -	Understand the difference between fluids and other substances.
3 -	Define new terms in Fluid Mechanics.
4 -	Recall the difference between different fluid flow types.
5 -	Distinguish between series and parallel pipe network design.

b. Intellectual Skills: :

1 -	Think in a creative method to solve different engineering problems related to Fluid Mechanics.
2 -	Analyse different system types found in nature.
3 -	Deduce conservation equations of mass and energy.

c. Professional and Practical Skills: :

1 -	Evaluate the performance of fluid and thermal devices.
2 -	Practice basic experiments on Fluid Mechanics.
3 -	Follow up safety requirements at experimental work and observe the appropriate steps to manage risks.
4 -	Analyse experimental results.
5 -	Write a technical report on a project or an assignment.

d. General and Transferable Skills: :

1 -	Manage time and meet deadlines
2 -	Lead and motivate others.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to fluid mechanics	6	3	3
Properties of fluids	12	6	6
Fluid statics	12	6	6
Fluid kinematics	6	3	3
Fluid dynamics	18	9	9
Internal flow	15	6	9
External flow and drag	12	6	6
Momentum Equation	9	6	3

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	10.00		
Final exam	40.00		
In class quizzes and attendance	10.00		
Midterm exams	30.00		
Participation (Lab reports, Research activity and Oral Exam)	10.00		