

**Faculty of Engineering & Technology**

**Fluid Mechanics**

**Information :**

**Course Code :** MPR 252

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Department of Petroleum Engineering

**Instructor Information :**

Title	Name	Office hours
Lecturer	Mohamed Ahmed Mahmoud Karali	3

**Area Of Study :**

Enrich students knowledge about Fluid Mechanics.  
Train students to perform experiments related to Fluid Mechanics.  
Prepare students for the practical filed in the work market of Mechanical Engineering.

**Description :**

Basic properties of fluids and fundamental concepts; Statics of fluids; Hydrostatic forces and buoyancy; Fluid kinematics; Characterization of fluid flow; Basic equations: Conservation of mass; Momentum and energy; Bernoulli's equation; Energy Equation Applications; Momentum equation. Laminar and Turbulent flow in ducts and pipes and their applications. External flow; Lift and Drag forces. Basics of dimensional analysis and dynamic similarity.

**Course outcomes :**

**a.Knowledge and Understanding: :**

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

**b.Intellectual Skills: :**

1 -	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 -	Collaborate effectively within multidisciplinary team in preparing researches in heat transfer.
2 -	Refer to relevant literatures.

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to fluid mechanics	5	3	2
Properties of fluids	10	6	4
Fluid statics	9	6	3
Fluid kinematics	6	3	3
Fluid dynamics	14	9	5
Internal flow	11	6	5
Momentum Equation	11	6	5
External flow and drag	9	6	3

**Teaching And Learning Methodologies :**

Interactive Lecturing
Problem solving
Lab. Experimental work
Research activity

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Assignments	5.00		
Final Exam	40.00		
Mid- Exam I	15.00		
Mid- Exam II	15.00		
Oral Exam	5.00		
Participation	10.00		
Quizzes	5.00		