

## Mekanika Fluida

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**Course Brief  
Description:**

The student will be able to demonstrate the understanding of processes and phenomena in fluid statics and dynamics in both flows in pipe and open channel. This course covers concept and fluid characteristics, control volume (Bernoulli's Law) and energy balance in fluid, flow in pipe: energy and pressure of water in pipe using Moody, flow in open channel: uniform and non-uniform flow, hydraulic jump, gradually and rapid flow.

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**Course Learning  
Objectives:**

- [1] Student will be able to demonstrate understanding of static and dynamic fluids.
  - [2] Students will be able to classify the type and forms of fluid-flow
  - [3] Students will be able to calculate and draw: depth, head, and energy in pipe-flow and open channel flow.
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**Related Expected  
Learning Outcomes  
(ELOs):**

- ELO-3: Apply knowledge of mathematics, sciences, and engineering principles in agricultural fields.
  - ELO-4: Use quantitative analysis, information technology and critical thinking in agricultural engineering profession.
  - ELO-5: Use techniques, skills, and modern tools necessary for agricultural engineering practices.
  - ELO-7: Ability to design simple equipment, components, or processes needed in agricultural engineering operations
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**Teaching Method**

- Lecture
  - Practice
  - Independent assignment.
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**Grading Policy**

- Quiz and Assignment : 20%
  - Practice in Laboratory : 30%
  - Exam : 50%
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**Reference**

Gerhart, PM. & RJ. Gross, 1985. Fundamentals of Fluid Mechanics, Addison Wesley Pub. Co., California

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**Lecturer Name**

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## Course Outline

Lecture	Topic:	
1	Introduction: Basic Concept of Fluids	
2	Fluid Flow: Theory, and Equations	Assignment 1
3	Fluid Flow: Applications	Quiz 1
4	Hydrostatics (Lab. Practices)	
5	Mechanics of Non-flowing Fluids	Assignment 2
6	Principles and Concepts of Flow Analysis (Lab. Practices)	Quiz 2
7	Control Volume Approach to Flow Analysis (Bernoulli, Momentum and Energy law)	
8	Mid Test	
9	Regime of Flow in a straight Pipe and Duct	Quiz 3
10	Analysis of Fully developed Flow in Pipes and Ducts	Assignment 3
11	Concept in Open Channel Flow (Lab. Practices)	
12	Uniform Flow	
13	Concept for Analysis of Varied Flow	Quiz 4
14	Gradually Varied Flow	Assignment 4
15	Hydraulic Jump (Lab. Practices)	
16	Final Exam	