

## Department of Chemical Engineering

**Course Name: Fluid Mechanics (10626231)**

**Total Credits: 3**

**Contact Credits: 3 hours per week.**

**Course Type: Compulsory**

**Categorization of Credits: Engineering Topics**

**Prerequisites**

P1: General Physics I (10221101)

### Course Contents

This course will provide the student with an overview of key fluid mechanics topics. These topics include fluid properties and pressure measurements. It also covers the flow of fluids, Bernoulli's equation, the general energy equation, Reynolds's number, laminar and turbulent flow, major and minor energy losses. The course also covers calculations for fluid flow systems and their classes. This course will introduce students to the fundamentals of pump selection and applications.

Course Learning Outcomes (CLO's)		Student Outcomes (SO's)	Performance Indicators (PI's)	Contribution %
i.	Identify and solve fluid mechanic problems including pressure measurements, continuity equation and Bernoulli's equation.	1	1.1	25
ii.	Identify and solve fluid mechanic problems including general energy equation and energy losses calculations.	1	1.1	25
iii.	Formulate and solve fluid mechanic problems related to pump selection and pipeline sizing.	1	1.2	30
iv.	Apply engineering design for single pipeline and simple combination of pipes and pumping system to produce solutions that meet specified needs.	2	2.1	20

### Textbook and/ or References

Mott, R. L., Untener J.A, (2016). *Applied Fluid Mechanics*. 7<sup>th</sup> edition. New Jersey: Prentice Hall.

Assessment Criteria	Percent (%)
First Exam	20
Second Exam	20
Homework	10
Quizzes	10
Final Exam	40

### Course Plan

Week #	Topic
1	Fluid properties and flow parameters.
2	Pressure measurement
3-4	Continuity and Bernoulli equations
5-6	General energy equation

6	<b>FIRST EXAM</b>
7-8	Reynolds number and laminar and turbulent flow.
9-11	Major and minor friction losses in fluid flow systems.
11	<b>SECOND EXAM</b>
12-13	Series pipeline systems
14-15	Pump selection and applications
16	<b>FINAL EXAM</b>