

## SYLLABUS CURRICULUM

<b>COURSE</b>	<b>Course Name : BASIC FLUID MECHANICS I</b>
	<b>Course Code : TM184307</b>
	<b>Credit : 3 sks</b>
	<b>Semester : III</b>

### COURSE DESCRIPTION

Application of fluid mechanics is very often we encounter in everyday life. Various natural phenomena are related to fluid mechanics, where their properties and characteristics depend on the properties of fluid flow. Given the basic concept and proper engineering, we can utilize fluid flow to produce the desired force or power, such as wing airfoil and pump or compressor.

This course discusses basic concepts of fluid mechanics, among others fluid types and classifications, the scope of fluid mechanics, fluid statics, and approaches by developing mathematical modeling in integral form for regulated volumes, and the analysis of dimensions, likenesses, and study model. With the learning in the classroom and practicum, students get the opportunity to apply the theory obtained directly in the laboratory.

With this course, students are expected to be able to understand the basic concepts of fluid mechanics and be able to analyze and apply the basic equations of fluid mechanics, which will then be used as a basis for studying the Basic Mechanics course of Fluid II.

### LEARNING OUTCOMES

LO6	Understand the engineering principles in mechanical system to identify, formulate and solve the problem of mechanical engineering.
LO9	Able to find the source of engineering problems in mechanical system through research that includes identification, formulation, analysis, data interpretation based on engineering principles.
LO10	Able to formulate the solution of engineering problem in mechanical system by considering economy, safety, environment and energy conservation.

### COURSE LEARNING OUTCOMES

- Able to understand the basic concepts of fluid mechanics, flow classification, velocity field and shear stress.
- Ability to reason and analyze pressure and force variations within the static fluid, and analysis of dimensionless numbers and model studies.
- Able to apply the basic equations of fluid mechanics with a volume analysis method set.

MAIN SUBJECT
<ul style="list-style-type: none"> <li>– Concepts about fluids, systems and volumes arranged, analysis of differential and integral, Euler and Lagrange descriptions</li> <li>– System dimensions and units</li> <li>– Basic concepts of fluid mechanics (Newtonian and Non-Newtonian fluids, surface tension, fluid flow classification)</li> <li>– Statics fluid</li> <li>– Basic equations in integral form for set volume</li> <li>– Introduction to dimensional analysis and likeness</li> </ul>
PREREQUISITES
<p>Fundamental Physics I &amp; II</p>
REFERENCE
<ol style="list-style-type: none"> <li>1. Robert W. Fox, Alan T. McDonald, and P. J. Pritchard, "Introduction to Fluid Mechanics", Seventh Edition, John Wiley &amp; Sons Inc., New York, 2010.</li> <li>2. Bruce R. Munson, Donald F. Young, and Theodore H. Okiishi, "Fundamentals of Fluid Mechanics", Fourth edition, John Wiley &amp; Sons Inc., New York, 2002.</li> <li>3. Frank M. White, "Fluid Mechanics", Seventh edition, McGraw-Hill, 2009.</li> <li>4. Robert L. Mott, "Applied Fluid Mechanics", Sixth edition, Prentice Hall, 2005.</li> </ol>