



# HANYANG UNIVERSITY

## INTERNATIONAL SUMMER SCHOOL

\* Please fill out the form completely in English in detail.

<b>Name</b>	Jeongmoon Park
<b>E-mail</b>	<a href="mailto:jpark@astate.edu">jpark@astate.edu</a>
<b>Home University</b>	Arkansas State University
<b>Department</b>	Mechanical Engineering

<b>Course Title</b>	Fluid Mechanics
<b>Field of Study</b>	Engineering
<b>Credits</b>	3
<b>Contact Hours</b>	45
<b>Course Code/Number</b>	MEE3003
<b>Course Description</b>	Introduction to fluids and flow. Topics include Fluid Properties, Fluid Statics, Buoyancy, Bernoulli Equation and Energy Analysis of Steady Flows, Reynolds Transport Theorem, Linear Momentum of Flow, Internal Flow (Laminar & Turbulent Flows, Flow Losses, Pumps), External Flow (Laminar & Turbulent Flows, Drag & Lift), Open Channel Flow
<b>Course Objective</b>	Fluid Mechanics is the study of fluids and physics of fluid motion. At the end of this class, students will learn principles of fluid mechanics and power with applications. Students will understand the classic mathematical model of fluids motion for laminar and turbulent, internal and external, and incompressible flows, including its applications and limitations. Students will also reinforce the necessary analytical skills to solve and analyze a variety of fluid mechanics and fluid power related problems. Students will learn how to appreciate and appropriately apply empirical data to solve turbulent flow problems.
<b>Preparations (Pre-Knowledge)</b>	Statics (Calculus 1 based), Calculus 3



# HANYANG UNIVERSITY

## INTERNATIONAL SUMMER SCHOOL

<b>Materials</b> (Textbook/Websites link)	Text Book: "Munson, Young, and Okiishi's Fundamentals of Fluid Mechanics, 8th edition" by Philip M. Gerhart, Andrew L. Gerhart, and John I. Hochstein, Wiley
---	--

Lesson Plan: Fill out the topic for each class in detail		
<b>Week 1</b> (Tentative)	<b>1<sup>st</sup> Day</b>	<b>Orientation &amp; Opening Ceremony</b>
	<b>Class 1</b>	Introductory Material, Introduction No-Slip Condition, Classification of fluid Flows, Viscosity
	<b>Class 2</b>	Fluid Statics, Hydrostatic Forces on Plane Surface and Curved Surfaces
	<b>Class 3</b>	Buoyancy, Stability
<b>Week 2</b> (Tentative)	<b>Class 4</b>	Review, The Bernoulli Equation
	<b>Class 5</b>	Energy Analysis of Steady flows, Newton's Laws, Control Volume, Forces Acting on a Control Volume
	<b>Class 6</b>	Reynolds Transport Theorem, Linear Momentum
	<b>Class 7</b>	Review & Quiz 1
<b>Week 3</b> (Tentative)	<b>Class 8</b>	Internal Flow, Laminar and Turbulent Flows, Entrance Region
	<b>Class 9</b>	Laminar Flow in Pipes, Turbulent Flow in Pipes
	<b>Class 10</b>	Minor Losses, Pumps
	<b>Class 11</b>	Review & Quiz 2
<b>Week 4</b> (Tentative)	<b>Class 12</b>	External Flow, Drag and Lift
	<b>Class 13</b>	Parallel Flow Over Flat Plates
	<b>Class 14</b>	Friction and Pressure Drag, Open Channel Flows
	<b>Class 15</b>	Final Exam

<b>Evaluation (%)</b>  * Total sum of percentages should be 100%  * Only below options are available, please do not change the form (fill out the given form)
---



# HANYANG UNIVERSITY

INTERNATIONAL SUMMER SCHOOL

Assignments	Attendance	Final	Quiz 1	Quiz 2	Total
15	10	35	20	20	<b>100%</b>