Course	Course Name	: **Introduction to Computation Fluid Dynamics**
	Course Code	: **KM184824**
	Credit	: **2**
	Semester	: **8**

Description of Course

Basic concepts of fluid flow, numerical methods, up to and volume up to fluid flow related, Navier-Stokes equation settlement, fluid flow through complex geometric form, and turbulent flow.

Learning Outcome

PLO 2	[C3] Students are able to solve simple and practical problems by applying basic mathematical statements, methods and computations
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
PLO 4	[C5] Students are able to work on a simple and clearly defined scientific task and explain the results, both written and verbally either on the area of pure mathematics or applied mathematics or computing sciences
PLO 5	[C3] Students are able to make use of the principles of long life learning to improve knowledge and current issues on mathematics

Course Learning Outcome

1. Students understand, master and understand the basic concept of fluid flow.
2. Students are able to develop Numerics to solve fluid flow equations.
3. Students are able to understand and solve the Navier-Stokes equation.
4. Students are able to understand the basic concept of turbulence flow.

Main Subject

Basic concepts of fluid flow, numerical methods, up to and volume up to fluid flow related, Navier-Stokes equation settlement, fluid flow through complex geometric form, and turbulent flow.

Prerequisites

Reference

1. Anderson, J. D. Jr.,"*Computational Fluid Dynamics (The Basics with Applications), International Edition"*, New York, USA: Mc Graw-Hill, 1995
2. Hoffmann, K. A. and Chiang, S. T*.,"Computational Fluid Dynamics For Engineers"*, Wichita, USA: Engineering Education System, 1995
3. Chung, T.J., "*Computational Fluid Dynamics"*, Cambridge: Cambridge UniversityPress, 2002

Supporting Reference

1. Welty, J.R., et al., *Fundamentals of Momentum, Heat and Mass Transfer, 3rd Edition*, New York, USA: John Wiley & Sons, Inc., 1995
2. Versteeg, H.K. and Malalasekera, W., *An Introduction to Computational Fluid Dynamics – The Finite Volume Method, Second Edition*, England: Prentice Hall - Pearson Education Ltd., 2007.
3. Tu, J.Y., Yeoh, G.H. and Liu, G.Q., *Computational Fluid Dynamics-A Practical Approach*, Oxford, UK: Butterworth-Heinemann Publications, 2008
4. Yeoh, G.H. and Yuen, K.K., *Computational Fluid Dynamics in Fire Engineering*, Oxford, UK: Butterworth-Heinemann Publications, 2009