FLUID MECHANICS
ING-208

Instructor: Carlos A. Sanlley, Ph.D.

Description: As the first course in fluid mechanics, it aims to provide an introduction of fundamental principles governing fluid statics and dynamics and apply these theories to practical problems such as hydrostatics, open channel and pipe flow.

Prerequisites: ING-207 (Dynamics)

Credits: 5

Textbooks: **Munson, Young, and Okiishi's, Fundamentals of Fluid Mechanics**, by Philip M. Gerhart, Andrew L. Gerhart and John I. Hochstein, **Eighth Edition**, John Wiley & Sons, New York (2016).ISBN: 978-1-118-84713-8.

Victor Lyle Streeter, E. B. Wylie, K. W. Bedford, Fluid Mechanics, 9th Edition, WCB/McGraw Hill, 1998

Grading:

Homework	10%
Laboratory	30%
Quizzes	40%
Final Exam/Project	20%

Grading Policy:

1. All work must be submitted by 4:30 pm on the due date. Hardcopy assignments should be submitted at the ING Office. Digital documents will be submitted through Aula Virtual. Late assignments can be submitted and will receive partial credit.
2. Cooperative learning is encouraged and should be part of the learning process. However plagiarism and submitting others work as your own will not be tolerated.
3. Attendance to all classes is expected. Per University policy students require 80% attendance to obtain credits for the course. Recurring tardiness may be penalized at the instructor's discretion.

Course Learning Outcomes:

By the end of this course, the students should be able to:

- Understand the definition of a fluid
- Understand the concepts of viscosity, surface tension, capillarity, vapor pressure, cavitation, the difference of Newtonian and non-Newtonian fluids

- Understand the assumptions for ideal flow
- Understand the difference between laminar and turbulent flow and the transition between them, and know how to determine these flow regimes
- Able to calculate hydrostatic pressure on a plane or curved surface and locate the center of pressure
- Understand the principles of manometer and know about its applications
- Derive and apply the Bernoulli, the continuity, and energy equations
- Understand major losses and minor losses, and know how to quantify them using the Moody diagram in pipe flow analysis

Syllabus Change Policy:

This syllabus is subject to change with reasonable advance notice, as deemed appropriate by the instructor.