

**NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
MEC 265 - FLUID MECHANICS (3 CR.)**

Course Description

Studies properties of fluids and fluid flow, Bernoulli's theorem, measuring devices, viscosity and dimensional analysis. Emphasizes pumps, piping, and fluid motors. Lecture 3 hours per week.

General Course Purpose

The course introduces the student to the fundamental principles of fluid mechanics and their applications. Student will acquire knowledge of fluid properties, measurement of pressure, density, viscosity and flow. Additionally, student will be exposed to fluid statics, flow of fluids in pipes and non-circular conduits, pump selection and application, open channel flow and forces developed by fluids in motion.

Prerequisites/Corequisites

Prerequisites: MTH 163 and MTH 164 or MTH 166 or instructor's permission.

Course Objectives

Upon completion of the course the student will be able to:

- Use various fluid properties in solving problems involving pressure, volume and temperature
- Determine fluid pressure and apply different methods in measuring fluid pressure
- Calculate different forces on submerge areas
- Solve problems involving buoyance and stability
- Calculate fluid flow problems, including the use of Bernoulli's equation and Energy equation
- Solve problems involving viscous flows in both laminar and turbulent conditions
- Identify frictional and minor loss in fluids
- Describe the different piping systems and pump applications
- Calculate fluid flow problems in an open channel flow
- Solve problems involving lift and drag

Major Topics To Be Included

- Properties of Fluids
- Fluid Pressure and Measurement
- Forces on Submerge Areas
- Bouyancy
- Fluid Flow
- Bernoulli's Equation
- Energy Equation
- Viscous Flow (Laminar and Turbulent Flow)
- Frictional and Minor Losses
- Piping Systems
- Pumps
- Open Channel Flow
- Lift and Drag