NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
EGR 282 – HYDRAULICS FOR CIVIL ENVIRONMENTAL ENGINEERING (3 CR.)

Course Description
Introduces the basic principles governing the statics and dynamics of fluids, especially incompressible fluids. Examines hydrostatic pressure; continuity, Bernoulli, and momentum equations; viscosity flow problems; measuring instruments; and applications to closed conduits and open channels. Lecture 3 hours. Total 3 hours per week.

General Course Purpose
The course is intended for transfer students specializing in civil engineering. It provides an understanding of the basic principles governing the statics and dynamics of fluids, especially incompressible fluids.

Course Prerequisites/Corequisites
Prerequisite: EGR 240

Course Objectives
- Scientific Literacy
  - Explain properties of fluids
  - Differentiate subcritical and supercritical flow
- Critical Thinking
  - Analyze pressure distributions in a static fluid and calculate forces on a surface
  - Analyze flow and energy losses in circular pipes
  - Analyze steady open channel flow
- Quantitative Literacy
  - Differentiate laminar and turbulent flow, steady and unsteady flow
  - Apply governing equations including the continuity equation, momentum equations and energy equations
  - Calculate momentum and forces in fluid flow

Major Topics to be Included
- Dimensions and Units
- Properties of Fluids
- Fluid Statics
- Basics of Fluid Flow
- Energy in Steady Flow
- Momentum and Forces in Fluid Flow
- Similitude and Dimensional Analysis
- Steady Incompressible Flow in Pressure Conduits
- Steady Flow in Open Channels