

## CIV 342 – Hydraulics Lab

**Current Catalog Description:** Laboratory experiments are conducted that illustrate the fundamentals of hydraulics including pipes under pressure (water mains and networks), and open channel flow (sewers, drains, and channel sections). The fundamental concepts of energy, momentum and continuity will be discussed. Topics covered include but are not limited to fluid statics, orifice and free jet flow, hydrostatic pressure, flow over weirs, energy loss in pipes and bends, and critical, subcritical and supercritical flow. Lab report writing, measurement and error analysis.

**Prerequisite:** MEC 364

**Corequisite:** CIV 320

**Textbooks and/or** None

**Other Required Material:**

**This course is:** Required

- Topics Covered:**
1. Fluid Statics
  2. Reynold's Number
  3. Coefficient of Velocity
  4. Fundamentals of Energy, Momentum, & Continuity
  5. Hydraulics of Pipe Flow
  6. Critical, Subcritical and Supercritical Flow
  7. Bridge Pier Design

**Course Learning and Student Outcomes:**

Course Learning Objectives	<a href="#">ABET Student Outcomes</a>
Employ various testing methods to identify fundamental properties of fluid mechanics.	6
Conduct laboratory testing to develop a working knowledge of fluid mechanics within civil engineering applications.	1, 2, 6
Operate modern civil engineering testing machines, measuring devices, and data acquisition systems.	1, 2, 6
Write comprehensive lab reports and give oral presentations in order to discuss experimental results and enhance understanding of underlying theories and applications of each test.	3
Design and conduct a unique experiment to explore the properties of hydraulics related to civil engineering	2, 5, 6
Work as an effective member of a multidisciplinary team	5

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