**CIVE 401 HYDRAULIC ENGINEERING**  
COLORADO STATE UNIVERSITY  
Spring 2015  

**Instructor:**  
Dr. Timothy K. Gates, B209 Engineering, 970-491-5043, tkg@engr.colostate.edu  
Office Hours: 10 - 11 Monday, 11 - 12:30 Wednesday, or by appointment.  

**Teaching Assistant:**  

**Objectives:**  
To introduce students to the basic approach and methods for effective application of fluid mechanics principles in the analysis and design of hydraulic systems.  

**Tentative Schedule:**  

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>21 January</td>
<td>Introduction to the Course</td>
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<tr>
<td>23 – 26 January</td>
<td>Principles of Hydraulic Systems Analysis and Modeling</td>
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<tr>
<td>26 January – 4 March</td>
<td>Analysis and Design of Open-Channel Flow Systems; Specific Energy and Channel Transitions; Hydraulic Jumps; Regulating Structures, Control Structures, and Measurement Structures</td>
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<td>6 March</td>
<td>Midterm Exam I</td>
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<tr>
<td>9 – 13 March</td>
<td>Energy Grade Line and Hydraulic Grade Line in Pipe Flow; Parallel and Branched Flow in Pipelines</td>
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<td>14 - 22 March</td>
<td>Spring Break</td>
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<tr>
<td>23 - 30 March</td>
<td>Analysis and Design of Pipe Network Flow Systems</td>
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<td>1 - 15 April</td>
<td>Pumps and Pumping Systems</td>
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<td>17 April</td>
<td>Midterm Exam II</td>
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<tr>
<td>20 April – 6 May</td>
<td>Dams and Spillways; Stilling Basins and other Energy Dissipation Structures</td>
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<tr>
<td>8 May</td>
<td>Course Review</td>
</tr>
<tr>
<td>14 May</td>
<td>Final Exam (11:50AM – 1:50PM)</td>
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**Text:**  

**Website:**  
We are in the process of converting CIVE 401 to the new Canvas online learning system. In the meantime, the following webpage will be used to post course information:  
http://www.engr.colostate.edu/CIVE401/ce401_main_page.html  

**Homework:**  
Typically, eight to ten problems will be assigned each week. Usually, problems will be posted each Friday on the class website and will be due on the following
Friday. Though all problems must be turned in, three problems out of each homework assignment will be indicated by the instructor as candidates for grading and only one of those three will be thoroughly graded. Points will be deducted for problems that were assigned but the student failed to work.

This course will adhere to the Academic Integrity Policy of the Colorado State University General Catalog and the Student Conduct Code (http://tilt.colostate.edu/integrity/honorpledge/index.cfm). The Honor Pledge (attached) with a place for the student’s signature must be applied to every exam and assignment turned in for this course. Please make sure that you read, understand, and comply with the Policy on Academic Integrity in Homework in CIVE 401 statement on the class website. Late homework will not be accepted except in the case of a warranted emergency.

Solutions to all assigned problems will be posted on the website after about a week. Reading assignments also will be made, for which students will be held responsible.

**Grading:**

Homework Problems – 20% of grade; two Midterm Exams – 25% each; Final Exam – 30%.

A: 90-100%
B: 80-89%
C: 70-79%
D: 60-69%
F: <60%

Term grades for this course will use the +/- grading system as described in the CSU catalog.
Introduction to Instructor:

Born in Texas, I was raised with my younger brother and sister in Louisiana, where my mother still lives (you can probably detect the accent). I completed my BS degree at Louisiana Tech University in 1978 and my MS degree at Colorado State University in 1980. After working for several years, I attended the University of California at Davis where I completed my PhD degree. In 1988, I accepted a position on the Civil and Environmental Engineering faculty here at Colorado State University. Over the course of my career, I have had the opportunity to work on water projects in Egypt, Sri Lanka, India, and Australia and have lectured in China and in Vietnam.

I teach a variety of courses, primarily related to fluid mechanics and hydraulic engineering. My research focuses on field and computational analysis for description, design, and management of hydraulic and water resources systems. My specialty is in hydrosystems for irrigation and drainage, particularly open-channel and shallow groundwater systems. Much of my work has examined how to describe, simulate, and optimize such systems subject to various forms of uncertainty. I have some interesting research projects currently that address the characterization and improvement of flow, water quality, and water conservation in rivers, in shallow unconfined aquifers, and in irrigation systems.

My wife of 38 years, Valerie, and I are blessed with two sons, both now grown. Jeremy is a medical doctor serving as a surgeon with the U.S. Army, and is married to Robin. He is now serving in the Army hospital at Fort Benning in Georgia. Benjamin is a loan officer with Colorado Business Bank here in town, and is married to Katie. We are proud grandparents of Emmi, Cade, and Halle, children of Jeremy and Robin; and Everette, Penny, and Harvey, children of Ben and Katie. Valerie is the consummate craftswoman: she loves quilting, needlepoint, cross-stitching, stenciling, interior decorating, and cooking. My sons participated in baseball, basketball, and soccer while they were at home. We also have enjoyed camping and skiing as a family. Reading, working in our yard, riding my bicycle, and spending time visiting with people are some of my favorite pastimes. Recently, I have enjoyed reading William Dembski’s new book Being as Communion: A Metaphysics of Information (http://www.beingascommunion.com/about/).

I am a Christian. I believe that nature is chock-full of countless examples of the Creator’s intelligent design. I believe that Truth and Right exist in a real and objective sense, that they are found in Christ and should be pursued, and that they bring great blessing to those who embrace them. My convictions as a Christian form my worldview and guide the way I strive, under God’s grace, to conduct my personal and professional life. Even though I enjoy my engineering and academic endeavors a great deal, I don’t view them as the most important things (MITs) in life. I welcome the opportunity to chat with students outside of class about these MITs.

I look forward to getting to know you this semester, not only academically and professionally, but also personally. I take seriously my responsibility to help you learn hydraulic engineering, a subject that is both fascinating and of great practical importance. Please keep me informed of your concerns about the course.

T. K. Gates
CSU Student Honor Pledge

I pledge on my honor that I have not received or given any unauthorized assistance in this exam [assignment] [academic work].

Signature: _____________________________

Date: _____________________________