

# THREE RIVERS COMMUNITY COLLEGE

Spring 2011

## Hydraulics CIV 203 & Fluid Mechanics MEC 270

Text: Applied Fluid Mechanics, Mott, Merrill, 6th edition

Location B 208; Day/Time: W; 5:30 pm – 8:15pm

Instructor; Donald W. Gerwick, P.E., L.S., C.F.M.

On campus Phone Number 860-885-2337

Off campus weekday Phone 860-442-2201

Email [dgerwick@trcc.commnet.edu](mailto:dgerwick@trcc.commnet.edu) or [don@gerwickmereen.com](mailto:don@gerwickmereen.com)

Office Hours: T 4:00 – 5:30, W 3:00 – 4:45, R 4:00 – 5:00

Additional Days and Times by Appointment are Available

This course will familiarize the student with the basic principles of hydraulics as related to the field of engineering. The understanding of basic fluid properties and water movement is given. Detail work in hydrostatics, Bernoulli's equation, pressure pipe systems, and uniform open channel flow is given.

**Learning Outcomes** – Students will understand and be able to use fundamental fluid mechanics equations and definitions to analyze and solve problems involving the movement of water through pipe flow and open channels.

Week	Topic	Quiz	Chapter
1	The Nature of Fluids, Viscosity of Fluids, Hydrostatics		1,2,3
2	Hydrostatics, Forces Due to Static Fluids		3,4
3	Forces Due to Static Fluids		4
Beginning Portion of Week 4		Quiz 1	
4	Buoyancy; Flow & Bernoulli's Equation		5,6
5	Flow & Bernoulli's Equation		6
6	The General Energy Equation		7

Week	Topic	Quiz	Chapter
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Beginning Portion of Week 7		Quiz 2
7	Friction & Other Losses	8,10
8	Spring Break	
9	Friction & Other Losses & Pipeline Systems	8,10, 11,12
10	Pipeline Systems	11,12

Beginning Portion of Week 11		Quiz 3
11	Open Channel Flow	14
12	Open Channel Flow	14
13	Flow Measurement	15
14	Flow Measurement	15
15	Pumps	13
16	Final Quiz, Portfolio's Due	Quiz 4

- At the end of the semester you will be required to have a completed homework portfolio. You will also provide a class presentation on a completed homework problem that I will assign you.

## **HOMEWORK ASSIGNMENTS and REQUIREMENTS**

ALL students will be expected to hand in all homework assignments.

All assignments will be completed neatly, showing all work. Excel Spread sheet solutions may be submitted; however development of spread sheet formulas must be fully demonstrated by each student. **Using spread sheet formulas developed by another student will be considered a form of cheating.**

**Portfolio** - All homework will be put into a 3 ring binder with the course outline and any other assignments or relevant materials, such as syllabus, homework hand out sheets and any other assignments. Portfolio's will not be returned, so students should make copies of any and all material they want to keep.

**Withdrawal:** The last day to drop this class is May 9<sup>th</sup> 2011. Students that stop coming to class but do not withdraw will be given a grade based on all assigned work and quizzes for the semester, including any and all that were missed (with an assigned “0”, including the participation portion of the grade).

**Incomplete:** Students that qualify for an incomplete **MUST** have the permission of the instructor and sign an agreement **prior to** the last day of classes; failure to do so will result in any missed work being averaged into your grades. An incomplete must be finished within 60 days of the last day of the semester; failure to complete within 60 days will result in an assigned grade of “F”.

**Disabilities:** If you have a visible or hidden disability that may require classroom or test taking modifications you are encouraged to contact me and to contact Student Services for assessment.

**Cheating/Plagiarism:** Any student caught cheating or plagiarizing will receive a zero for that assignment. Cheating is defined as the giving of assistance to another or the receiving of assistance from another person, another examination paper, other written material, or any source not explicitly permitted by the instructor, is cheating. Thus, you may not look at another's paper or answers; you may not show your paper or answers to another or leave your paper or answers around for others to look at; and, you may not verbally read or reveal your answers to another. It is also cheating to have access, without the instructor's approval, to examination, quiz, or test questions prior to the administration of the examination, quiz, or test.

Plagiarism is the submission or presentation of ideas or work in any form that are not one's own without appropriate acknowledgement of the source(s). Even with the acknowledgement, close paraphrasing can constitute plagiarism. You may quote the work of others if properly referenced.

**I do want you to work in groups and study together. Mentoring each other is good. Providing just the answer is NOT!**

**NO CELL PHONE USAGE WHILE IN CLASS!!**

**Grades** – Your final grade will be based on the following:

70% - QUIZZES (4 – each to count an equal weight)

10% - ASSIGNMENTS

10% - Attendance, Presentation, and Participation (hard copy to be part of your portfolio).

10% - Portfolio

## **Homework Assignments**

Homework Assignments will be handed out at with this syllabus for problems through the first quiz. Thereafter, assignment sheets will be passed out after each quiz for work to be completed prior to the next quiz. Selected Problems will be reviewed in class on due date.

Chap. 1 – 1.1, 1.8, 1.12, 1.17, 1.37, 1.67, 1.75, 1.80, 1.86, 1.108, 1.111

Chap. 2 – 2.1 to 2.4, 2.10, 2.11, 2.18, 2.22, 2.30, 2.34

Chap. 3 - 3.9, 3.11, 3.13, 3.15, 3.17, 3.19, 3.35, 3.37, 3.39,  
3.46, 3.54, 3.56, 3.65, 3.75, 3.81

Chap. 4 – 4.1, 4.3, 4.5, 4.7, 4.9, 4.11, 4.17