# Three Rivers
COMMUNITY COLLEGE

# Civil Hydraulics / CIV*K203 and Intro to Fluid Mechanics / MEC*K270
# Spring 2012 Syllabus
# Room B208, Wednesdays 5:30 – 8:15 pm

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| **Instructor:** | Prof. Wanda Short |
| **Office:** | C 128 |
| **Email:** | wshort@trcc.commnet.edu |
| **Telephone:** | (860) 885-2349 office |
| **Office Hours:** | Wednesdays 11:00 am – Noon; Thursdays 1:00 – 3:00 pm |
| | Other Dates/Times by Appointment |

## Course Descriptions:

CIV*K203, Hydraulics: This course will familiarize the student with the basic principles of hydraulics as related to the field of civil 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. This course is equivalent to MEC* K270. Corequisite: MAT* K186

MEC*K270, Introduction to Fluid Mechanics: This course introduces the mechanics of fluids. Basic characteristics of fluids, hydrostatics, pressure, centers of pressure, and pressure measuring devices are discussed. The application of the general energy equation to fluids in motion is also shown, along with the modifications necessary to introduce the effects of viscosity and friction on fluid flow, pressure heads, and pump calculations. This course is equivalent to CIV* K203. Prerequisites: PHY* K115 and MAT* K186. Corequisite: MEC* K275.

## Text Book:
Mott, Merrill, *Applied Fluid Mechanics*, 6th Edition, Pearson/Prentice Hall, 2006, ISBN: 9780131146808

## 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.

## Instructor Assistance:
Seeking help from the instructor outside of class is encouraged if you are having difficulty understanding course material. Feel free to Email/call for an appointment during office hours.

## Academic Integrity:
Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to success in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all times with honor. A grade of "0" may be assigned upon infraction of this policy.

## Attendance:
This course is designed in such a way that a student should get more from the in-class activities than from the textbook alone. Therefore, students are expected to attend class regularly. Though students will not be penalized for non-attendance, they will be responsible for material covered in their absence. It will be the student's responsibility to determine what assignments have been missed and to ensure that they are made up in a timely manner. Attendance will be noted for each class and may be used for extra-credit of 1 to 2 points in determining final grades.

**Class Room Policies**:
Cell phones brought to class shall be off and out of site (no texting). Language and behavior that is disrespectful, or disruptive, to others is unacceptable; Students should refer to their Student Handbook for examples of such behavior as well additional school policies.

**Grading Policy:**
Your final grade will be based on the following:
- 60% Quizzes (4 Quizzes, 15% each)
- 30% Homework Assignments
- 5% Assignment Presentation
- 5% Portfolio

    100% Total

**Assignments:**
Quizzes and/or homework assignments missed for any reason cannot be made up unless prior arrangements have been made with the instructor. Assignments not received on date due may result in alternate assignment with reduction of grade of 5% (100% total) per day late.

All assignments will be completed neatly, <u>showing all work</u>. 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 Course Requirements:** Students will assemble a **notebook,** to be made up of the syllabus, handouts, graded and corrected quizzes, graded and corrected homework assignments, assignment presentation <u>and any other assigned projects</u>. A 3-inch "*Slant-ring"* notebook with plastic sheet protectors is recommended – this will be a good resource for future reference.

**Homework Assignments:** Homework Assignments will be handed out 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 subsequent 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

**Withdrawal**
The last day to drop this class is May 7, 2012. 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 you 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 are a student with a disability and believe you will need accommodations for this class, you must contact the Disabilities Counseling Services at (860) 823-2830. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. The instructor cannot provide accommodations until an accommodation letter from the Disabilities Counselor is received.

**Lecture Schedule – Spring 2012**
**Room B208, Wednesdays 5:30 – 8:15 pm**
**Civil Hydraulics / CIV K203 and Intro to Fluid Mechanics / MEC K270**

| Date | Class # | Event | Topic | Reading Prior to Class |
|------|---------|-------|-------|------------------------|
| Jan 25 | 1 | | The Nature of Fluids and the Study of Fluid Mechanics | Chapter 1 |
| Feb 1 | 2 | HW #1 due | Viscosity of Fluids | Chapter 2 |
| Feb 8 | 3 | HW #2 due | Pressure Measurement | Chapter 3 |
| Feb 15 | 4 | HW #3 due | Forces Due to Static Fluids | Chapter 4 |
| Feb 22 | 5 | HW #4 *Quiz #1* | Buoyancy and Stability ➢ *Quiz #1 Covering Chapters 1 – 3* | Chapter 5 |
| Feb 29 | 6 | HW #5 due | Buoyancy and Stability; Flow of Fluids and Bernoulli's Equation | Chapters 5, 6 |
| Mar 7 | 7 | HW #6 due | General Energy Equation | Chapter 7 |
| Mar 14 | 8 | HW #7 *Quiz #3* | Reynolds Number, Laminar Flow, Turbulent Flow, and Energy Losses Due to Friction ➢ *Quiz #2 Covering Chapters 4 – 6* | Chapter 8 |
| Mar 21 | | | Class Not in Session – Spring Break | |
| Mar 28 | 9 | HW #8 due | Series Pipeline Systems | Chapters 11 |
| Apr 4 | 10 | HW #9 due | *Classroom B208 @ 5:30 pm & Room C-101 @ 6:00 pm* Environmental Issues Seminar: Don Gerwick The Coca-Cola Project, Environmental Planning and Stormwater Management | Handout |
| Apr 11 | 11 | HW #10 *Quiz #3* | Parallel Pipeline Systems ➢ *Quiz #3 Covering Chapters 7, 8, 10, 11* | Chapter 12 |
| Apr 18 | 12 | HW #11 due | Parallel Pipeline Systems; Open-Channel Flow | Chapters 12, 14 |
| Apr 25 | 13 | HW #12 due | Flow Measurement | Chapter 15 |
| May2 | 14 | HW #13 due | Pump Selection and Application | Chapter 13 |
| May 9 | 15 | *Quiz #4* | Submission of Portfolio ➢ *Quiz #4 Covering Chapters 12 – 15* | |

**Notes:**

- On April 11 will meet at the regular class time, 5:30 pm in room B208, to review homework. We will then proceed to room C-101 for the seminar at 6:00 pm.

- A class presentation on a completed homework problem will be assigned during the semester.

- At the end of the semester you will be required to have a completed portfolio as outlined in the syllabus.

**Quizzes are Opened Book and Only One (1) Page of Notes Permitted (8 ½ X 11, Double-Sided)**