Three Rivers Community College

Civil Hydraulics – CIV K 203
Syllabus

Spring 2015
Instructor; Donald W. Gerwick, P.E., L.S.

Class Location – B 208;
Times: Tuesday & Thursday 8:00 a.m. – 9:15 a.m.
Office: D 205W – 205.5
Office Hours: Tues. 1:15 – 2:25 & 3:20 – 4:50, Thurs. 4:00 – 5:30
Additional Days by Appointment

Text; **Applied Fluid Mechanics**, 7th edition
Robert L. Mott & Joseph A. Untener

Email dgerwick@trcc.commnet.edu or don@gerwickmereen.com

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.

Required for Course, text listed above and a basic calculator with trigonometric functions.

Homework is outlined below; the instructor reserves the right to assign additional or alternate problems. All problems will be from the "Practice Problems" at the end of the assigned chapter, unless otherwise noted.

Assigned sections to be covered of each chapter assigned shall include the introductory section "The Big Picture".

Chap. 1 – The Nature of Fluids – All Sections
H. W. Prob. Set 1:1.2, 1.3, 1.6, 1.7, 1.10, 1.19, 1.22, 1.25, 1.34, 1.43.
Set 2: 1.67, 1.72, 1.75, 1.87, 1.95
Supplemental Problems1.112, & 1.116

Chap. 2 – Viscosity of Fluids - Sections 2.1 through 2.3, 2.5, 2.7 through 2.9.
H.W. Prob. Set 1; 2.1, 2.2, 2.4, 2.5, 2.6, 2.9, 2.10, 2.11; 2.48

Chap. 3 — Pressure Measurement – All Sections

HW Set 1 - 3.2, 3.3, 3.4, 3.7, 3.11, 3.13; Set 2 - 3.38, 3.41, 3.44, 3.48,3.56, 3.63;
Set 3 – 3.73, 3.80, 3.82, 3.97, 3.98

Quiz 1- Tentative Date - Feb. 12. Chap. 1, 2 & 3; All lecture material and all assigned sections of the noted chapters.

Chap. 4 –Forces Due to Static Fluids – Sections 4.1 through 4.5;

HW Chap. 4 – 4.4, 4.11, 4.14, 4.17, 4.25

Chap. 5 – Buoyancy and Stability – All sections

HW Chap. 5 – 5.1, 5.3, 5.6, 5.9, 5.11, 5.22, 5.23

Quiz 2 – Chap. 4 & 5 all lecture material and all noted sections of your text.

Paper - Due date to be assigned.

Chap. 6 - Flow of Fluids & Bernoulli's Equation – Sections 6.1 to 6.2; 6.4 – 6.10

HW Chap. 6 – 6.1, 6.5, 6.10, 6.15, 6.29, 6.36, 6.37, 6.40, 6.49, 6.59, 6.60, 6.65, 6.67, 6.92, 6.96

Chap. 7 – General Energy Equation – 7.1 – 7.5

HW Chap. 7 –7.1, 7.3, 7.8, 7.10
Quiz 3 – Chap. 6, 7, all lecture material and all noted sections of your text.

Chap. 8 – Laminar and Turbulent Flow – All Sections

HW Chap. 8 - 8.l, 8.5, 8.11, 8.22, 8.30, 8.33, 8.38, 8.63, 8.66,

Chap. 9 - Velocity Profiles – Sections; 9.1 through 9.4

HW Chap. 9 – 9.1, additional problems to be assigned.

Chap. 10 – Minor Losses – 10.1 – 10.9
HW Chap 10 – 10.1, 10.3, 10.16, 10.17, 10.19, 10.20, 10.21

Quiz 4 – Chap. 8, 9 & 10; all lecture material and all noted sections of your text.

Chap. 14 – Open Channel Flow – All Sections

HW Chap 14 – 14.1, 14.3, 14.5, 14.9, 14.11, 14.15, 14.32, 14.36, 14.43, 14.47, 14.51, 14.57, 14.58

Chap. 15 Flow Measurement – All sections
H.W. Chap. 15 – To be assigned

Quiz 5 – Chap. 14 & 15; all lecture material and all noted sections of your text.

Final Grade – The students final grade will be based on the weighted average of 5 quizzes and 1 paper, (must have been posted to the students digication portfolio) taken during the semester which will account for 90% of your grade. Assigned homework and class participation will make up the remaining 5 % and 5% respectively.

Home Work (HW) – Home work assigned will be due on the next regular scheduled class. Homework will be turned in at the beginning of class. Students must SHOW ALL WORK FOR MATH RELATED PROBLEMS. HW will be graded and returned at the following class. Home work will receive a grade of 0, 1, 2, 3, or 4. As homework is a learning process grading will be based largely on effort, with correct answers counting only as a secondary measure.

None turned in = 0
Minimal Attempt = 1
Moderate Attempt and Poor Results = 2
Moderate Attempt and Fair results = 3
Good Attempt and Largely Correct results = 4

Late home works, unless otherwise excused will be marked at 25% off (drop of one numeric grade).

Quizzes – Students will allowed one side of one 8 1/2 x 11 sheet of paper for formulas and conversion factors only (no definitions or other written notes).

Students must have their **calculators, cell phones will not be allowed** as a substitute; failure to bring a calculator may result in lost points as many questions will be impossible to answer without one. Quizzes will be based on lecture material and all assigned sections of the text, and homework.

Quizzes will be assigned a value by the instructor; quiz grades will be the number of points earned on the quiz divided by the total value of the quiz.

Class Attendance is expected, although, while students will not be directly 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 that may have been missed. Attendance will be taken, both for assessment of your participation, as well as various reporting forms for the College.

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.

Academic Integrity – Unless indicated by specific assignments, or by the instructor for group projects, all work for assignments shall be that of the individual student. Cheating on quizzes or using the work of others without proper credit (plagiarism) for assignments, or other forms of academic dishonesty, as defined by the Student Handbook, is unacceptable. If, after evaluation of the potential infraction(s), consistent with the Student Handbook, a grade of "0" for the assignment may be assigned.

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

Digication

All students are required to maintain an online learning portfolio using a TRCC designed template. Through this electronic tool, students can see their own growth in college-wide learning. The student can keep and continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select random works to improve the college experience for all. No names will be attached to the assessment work; it will remain private and anonymous for college improvement purposes. In class outlines, students will find recommended assignments which support various college-wide learning abilities. The student will have a tool which can integrate their learning from the classroom, school, and life and allow for another opportunity of learning at TRCC! Students will be able to make multiple portfolios.