53:171 Water Resources Engineering
Spring 2014

Instructor: Gabriele Villarini
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Lectures: 2:30 PM– 3:20 PM MWF (3026 SC)

Office Hours: 3:20 PM– 4:20 PM M (4115 SC)

References: Gupta, R A., *Hydrology and Hydraulics Systems*, 3rd Edition, Waveland Press, 2007.

Linsley, R. K., J.B. Franzini, D. L. Freyburg, and George Tchobanoglous, *Water Resources Engineering*, 4th Edition, McGraw-Hill, 1992.

Loucks, D. P., and E. van Beek, *Water Resources Systems Planning and Management — An Introduction to Methods, Models, and Applications*, UNESCO, Paris, 2006. http://www.deltares.nl/en/expertise/101129/integrated-water-resources-management/1523609

Mays, L. W., *Water Resources Engineering*, 2nd Edition, John Wiley & Sons, 2010

Class Web Site: The class web site is http://www.engineering.uiowa.edu/~cee_171. The web site contains lesson objectives, reading assignments, class handouts, and homework assignments. To prepare for each class period, **you will need to (1) review the lesson plan, (2) do the reading assignments, and (3) make copies of handouts to bring to class.**

ICON: ICON will be used to post grades and to distribute certain course material and documents to students enrolled in the course.

Course materials and documents are proprietary information. They are for your individual use only. They may not be redistributed (in an original or modified form) under any circumstances without prior consent of the Instructor.

Email: Late-breaking announcements and homework hints will occasionally be emailed to all students at your university account (as it appears on ICON). **You are responsible for receiving any and all information sent to your university email address, just as if the information had been given in class.**

Grading:

Homework	25 %
Exam I	25 %
Exam II	25 %
Exam III	25 %
Total	100 %

The final course letter grade will be based on the University of Iowa's grading system which includes +/- letter grades with A's in the 90's, B's in the 80's etc. Class participation will be considered when a student falls on the borderline

between two grades. These are guaranteed cutoffs, so there would be the chance that everyone receives an "A." I reserve the right to lower the cutoff.

Attendance: Class attendance is expected but is not mandatory. Exceptions are for class examinations. Students who choose to attend class are expected to arrive on time and behave in a professional manner.

If you miss a class, you are responsible for obtaining the missing notes from a classmate.

For permission to be absent from a scheduled class activity (e.g., examination, laboratory) to participate in authorized University activities, students must present before the absence a written statement signed by a responsible official specifying exactly the dates and times necessary for them to miss class. Students who are absent for medical or personal reasons are expected to present written evidence to verify the reason (an *Absence from Class Form* from http://www.registrar.uiowa.edu and other relevant documentation). If excused, the instructor will set a revised schedule for class work.

Homework: The homework grade is based on (1) written homework assignments, and (2) quizzes and in-class assignments.

Homework problems are posted on the class web site with each lesson. Students will have 7 days to complete the assigned problems. Students must follow the Homework Guidelines to receive credit for their assignment. Each homework assignment must be turned in on time; homework assignments may be turned in to the instructor before class begins. Any homework received after 3:20 PM on the due date is late.

Late homework will only be accepted if (1) it is turned in before the graded assignment has been returned, and (2) the student has fewer than two previous late assignments. **Late assignments must be turned in before the beginning of class (i.e., before the assignment has been returned).**

Unannounced quizzes may be given during class. Quizzes will be short (5 to 10 minutes) and cover material from recent homework assignments or material from class that day. Other individual or group problem-solving assignments may also be given in class. Quizzes and in-class assignments count towards the homework grade.

Collaboration: Exams are designed to test how well students understand the fundamental principles covered by the assignments (among other things). Students are encouraged to discuss homework assignments and analysis approaches to gain a deeper understanding. However, homework submissions must represent a **student's independent effort**. Put another way, students may collaborate by discussing homework problems and working out solutions together; but when preparing the document that will be submitted for a grade (a homework submission), each student must work independently. Copying someone's homework, sharing copies of figures or tables or spreadsheets with others, and giving (or receiving) a copy of someone's homework (a paper or electronic version), are all examples of cheating. Students who cheat will be disciplined according to the College of Engineering's regulations on Academic Misconduct.

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Description: *This course covers* topics in water resources planning, assessment, and economics, through the evaluation of water-infrastructure development and contemporary civil & environmental engineering problems.

After taking this course you will understand many of the engineering challenges associated with society's demand for water, and will be able to apply hydrologic, hydraulic, and economic principles to the solution of a variety of problems in water resources engineering.

Course Topics:

Water Resources Assessment

- Planning concepts
- Hydrologic assessment
- Flood and drought management
- Economics of water resources planning

Water Resources Infrastructure

- Storage and distribution reservoirs
- Reservoir sedimentation
- Wind and waves
- Water distribution networks

Environmental Water Resources

- Erosion and sediment control
- River sediment transport
- River stability and restoration
- Dam removal

Exams

Exam 1 (TBD)
Exam 2 (TBD)
Exam 3 (TBD)

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Homework Guidelines

General Guidelines

The engineering problem solving approach will be used in this class for all homework submissions. The specific format to use is described below.

Your homework submission is meant to document an engineering problem and its solution. Equations and numbers alone are insufficient to document the problem and solution. Instead, you need to describe the problem (in sentences) and the steps in the solution so that another engineer can follow the work. Also, your submission is meant to represent your final solution. Use scratch paper to figure out how to solve the problem. Afterwards, document the problem and solution on your homework submission in an orderly and professional manner.

Homework assignments must be neat and legible. Use may use engineering paper or the Microsoft Word Template for your submission. Solutions must be clearly marked (underline and label). Sketches and figures must be done on computer (AutoCAD) or hand-drawn using a straight-edge. Plots and graphs may be done using a computer, when appropriate. Assignments that are messy, or do not follow the format shown below, will be returned for no credit.

Specific Format

Use the following format for your homework submissions:

Date: 1 January 2011 53:171, HW Problem #2 Name

Problem 2. Problem Title (something you can get from the assignment itself)

Statement: A brief but complete description of the problem to be solved.

Include a *Diagram* if necessary. Note all the given information. Clearly state the desired result.

Solution: An organized, annotated, step-by-step documentation of the solution to the problem.

Write-out in detail the formulation of the solution. Provide comments for each major step (or part) of the solution. Your text should explain the equations, numbers, and figures that follow, as well as any necessary assumptions. Reference any materials (spreadsheet tables and/or figures) that are attached. Underline the final answer for each part. Finally, add any additional comments to justify your answer, i.e. does the answer make sense physically?

Other Information

Administrative Home

Class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the *College of Engineering*. Students wishing to add or drop this course after the official deadline must receive the approval of the Associate Dean for Academic and Student Affairs in the College of Engineering.

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail address (@uiowa.edu). Students should check this account frequently.

Availability of Accommodations for Students with Disabilities:

Any student eligible for and needing academic adjustments or accommodations under the Americans with Disabilities Act is requested to notify the instructor as soon as possible to make appropriate arrangements.

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety *web site*.

Concerns about Faculty Actions

Students who have a concern about a faculty action should first address the issue with the instructor or the departmental DEO. Students may also contact the Associate Dean for Education and Student Affairs in the College of Engineering. Another resource for students is the Office of the University Ombudsperson. If a complaint cannot be resolved at the departmental and/or collegiate level, students may file a formal complaint utilizing the procedure specified in the Operations Manual (II-29.7)

Academic Misconduct

Academic Misconduct relative to this class includes but is not limited to the following:

- copying from someone else's exam or homework assignment
- allowing someone to copy or submit one's work as his/her own;
- using notes or other materials during a test or exam without authorization;