

EVALUATIONS AND EXPECTATIONS:

Student performance will be evaluated on the basis of 2 exams (Midterm, Final) and lab exercises. The following is a breakdown of evaluation points and letter grades:

Midterm Exam	100 pts	27%
Final Exam	120 pts	32%
Midterm Lab Portfolio	60 pts	16%
Final Lab Portfolio	65 pts	17%
Weekly Class Participation	30 pts	8%
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TOTAL:	375 pts	100%

Final Grading Scale

Percent Range of Total Points	Letter Grade	Percent Range of Total Points	Letter Grade
94-100%	A	77-79%	C+
90-94%	A-	73-76%	C
87-89%	B+	70-72%	C-
83-86%	B	67-69%	D+
80-82%	B-	63-66%	D
		60-62%	D-
		<60%	F

Exams: Exams will be administered at evenly spaced increments throughout the semester; the final will be 20% comprehensive with test material drawn from throughout the term. Exams will largely consist of essay questions and homework-type problems. *Warning: the exams are very comprehensive and will likely require a full 2+ hours to complete, please plan accordingly.*

Make-Up Exams: Under NO circumstances will make-up exams be administered without prior arrangement (at least five days) and good reason. Please show up on exam day!

Class and Lab Assignments: Class and lab assignments will be worked BOTH during class time and outside of class time each week. You will have lab, reading, and homework assignments that **may** take up to 3 or 4 hours to complete outside of class time, maybe more in some cases, depending on your skill levels and ability. Please plan your schedule accordingly. Due dates for class exercises will be prescribed by the instructor. Late work will be accepted up to 1 week after the due date, but will be automatically assessed a penalty of -20% of the point total.

Due to the volume of students assigned to the instructor each term, he will not be able to grade the lab exercise work in detail. The homework and lab assignments will be checked for completeness, with questions randomly chosen for content and accuracy. Grade points will be assigned on the basis of these two criteria. Exercise answer keys will be posted on the class web site by the instructor. **It is your responsibility to: (1) check your work against the lab / homework keys, (2) make sure you understand how to complete the exercises, (3) find help if you have trouble with lab exercises, and (4) study / learn the exercise skills and material for the exams.**

A NOTE ABOUT INCOMPLETES: No incomplete grades will be given during the last week of class. If you have a problem that warrants an incomplete, make arrangements prior to the last week (no exceptions!!).

FIELD TRIP(S): Local field trips and field exercises may be scheduled during the term as time permits. Please be aware that additional scheduling and personal time may be required as the course develops. Field trip

ideas include travel to hydrology-related seminars at other universities.

STUDENT HONOR POLICY: Plagiarism and cheating will not be tolerated. Cheating includes copying others work and using cheat sheets on exams. However, students are encouraged to interact in small groups during class assignments, i.e. you can freely discuss concepts in all portions of the class, except exams.

OTHER REQUIRED MATERIALS: Students will also need access to a scientific calculator, colored pencils, ruler, and protractor. You will be required to use these materials during lecture, lab, and exams. Please plan accordingly, or you will have trouble successfully completing the class. The Natural Science computer labs and software will also be used for completing lab exercises.

STUDENTS WITH DISABILITIES: Any student who has a disability that requires accommodation, please make an appointment to see me.

A NOTE ABOUT THE LAST WEEK OF CLASS: Given that the Oregon University System employs the "quarter method" of academic scheduling, upper division courses are by nature "compressed" with much detailed information to cover in a relatively short period of time. Please note that most upper division text books are geared for courses at universities with a 16 week semester system (i.e. we are truly trying to pack 10 gallons of water in a 5 gallon bucket). As such, the 10th week of class is as critical to content coverage as the 1st week. Students should anticipate a full slate of "normal" activities during the last week of class, including lectures, lab exercises, written reports, etc. The class is not over until after the final exam! **Plan your schedule accordingly!**

A SPECIAL NOTE ABOUT LAB EXERCISES: Lab exercises will be quantitative in nature with an expectation that students have or will develop skills in the areas of applied algebra and trigonometry. Students will learn computer applications with emphasis on data analysis and problem solving in the hydrologic sciences. As such, lab exercises will require an additional time commitment outside of the scheduled weekly meeting (i.e. you will have "homework" and "projects" to work on outside of the scheduled class time).

LAB EXERCISE PORTFOLIO: The lab exercises represent a significant component of the class. Exercises are based on scientific observation, data analysis, and problem solving. Students will compile a Lab Portfolio consisting of a well-organized 3-ring binder with completed lab exercises. Students will complete approximately one (1) long-format lab exercise per week of the term, and multiple short-format "in-class" exercises. At the beginning of the term obtain a 2.5-inch thick three-ring binder with "see-through" plastic slip cover. Also include tab-separation sheets (three-hole punched), with stick-out tabs that can be clearly labeled. Create a professional-looking binder cover and insert it into the plastic slip cover.

Lab entries will be checked for completeness at the prescribed due date. A check-list will be maintained to reward those students who are responsibly completing the assignment on time. It is important to complete assignments on schedule, as the assignments are designed to help students understand lecture concepts and aid in successfully passing the exams. Lab Portfolio Part 1 will be submitted for comprehensive review and grading at the mid-term (this will include all labs and assignments completed prior to the mid-term exam). Lab Portfolio Part 2 will be submitted for comprehensive review during finals week (this will include all labs and assignments completed during the term).

Lab Portfolios-Assignments-Class Exercise Submission Procedure:

In-class assignments, homework, and lab exercises are to be completed by the prescribed due date (to be determined as term progresses). Your assignments will be compiled into a lab portfolio consisting of the three-ring binder, with organized tabs / labels. Your lab portfolios will be graded once at midterm and once at finals time. Prior to the midterm and final portfolio submissions, you will scan your assignments by the due date and make digital copies as acrobat *.pdf files. A scanner is available for student use in NS218A and a digital photocopier in the main Natural Science office. The digital copies will be electronically submitted to the instructor by the prescribed due date using the Moodle software interface. You will retain your "hard copy" originals and compile them into a lab portfolio which will be submitted and graded at the midterm and final,

respectively. Timely completion and electronic submission of your scanned assignments will comprise a portion of your lab grade.

The following are procedures for electronically submitting your homework assignments:

- (1) Complete the lab or class assignment either in handwritten or electronic format, as needed. Use either the NS218A scanners, the NS photocopier, or your home scanner to create an acrobat *.pdf file. The NS Computer labs also have "pdf creators" that will export your digital documents to the acrobat format.
- (2) Upload your *.pdf files to the Moodle management system by the prescribed due date:
 - (a) You will have an individual student account set up on Moodle with a username and password.
 - (b) The Moodle website may be accessed in the following ways:
 - (i) from the class homepage (www.wou.taylor ... follow the links to ES492 ... then follow the links to "Moodle" in the "Assignment Submission" section), or
 - (ii) by browsing to <http://online.wou.edu>
 - (c) Once at the site, go to the "Login Box" at the upper right of the page and enter your WOU student username (the one you use to access the WOU server network and email). Once you are logged in, look for the "Change Password" icon... you can change your password at any time.
 - (d) Click on the "Electronic Assignment Submission" icon.
 - (e) Click on the homework assignment you wish to submit, type in the relevant information, and choose "upload" to browse to your *.pdf scanned copy.
- (3) Make sure you save a hard copy of your assignments to include in your portfolio. Pay attention to the assignment availability and due dates.

Weekly Class Participation

ES476/576 Hydrology is a course that emphasizes hands-on activities and skill building. It is not a traditional "lecture" course, but one in which students are expected to actively engage inquiry-based learning with their peers and instructor. Successful completion of the course is based on in-class student participation and collective interaction. As such, student work activities and progress will be checked at the end of each three-hour class period. Students will be assigned weekly lab activities with an introduction and overview of required methodology. Progress on weekly assignments will be assessed at the end of each class period, beginning in the last twenty-minutes of the class. Assessment will involve one-on-one debriefing with the instructor and clear demonstration of student achievement. Four points per week are available to students who demonstrate adequate weekly progress on their in-class assignments (a total of 40 points for the term). Students who are absent or leave class prior to the last twenty minutes without instructor assessment will receive a "zero".

A NOTE ABOUT LOST OR MISSING WORK

The instructor will only grade work that is received and physically visible. Any missing work (lab assignments, homework, quiz/test answer sheets) will receive a "0" on the grade sheet. This policy applies to work lost by the student or instructor. If the student demonstrates that the work was turned in, but is missing due to instructor's error, then the student will be afforded an opportunity to make up the work and resubmit it for graded credit. Otherwise, the student will not receive credit for lost or missing work. In general, the instructor's assignment philosophy is: "turning something in, late or otherwise, is better than nothing at all", "better late than never", and "something is worth more than nothing".

TENTATIVE CLASS SCHEDULE: This outline should be considered tentative at best. The following schedule may be modified as class ideas evolve throughout the term. Reading references: “Cech” = Principles of Water Resources Text, “Viessman” = Viessman and Lewis Text, Introduction to Hydrology; “Dingman” = Dingman text, “Physical Hydrology”; “Waltham” = Waltham Text, “Mathematics as a Tool for Geologists”.

Week	Dates	Class Content	Reading
1	Jan. 6	Lecture: Class Introduction, Hydrologic Systems, Hydrologic Cycle, Global Water Budget <i>In-Class Lab: Intro to Quantitative Applications</i>	Cech Chap 1, 2 Waltham Chap 1 (handout)
Homework assignment – Week 1: Print out all of the course notes available on the class web site and organize them in a three-ring binder. Class note binders will be checked Jan 16.			
2	Jan. 13	Lecture: Physical and Chemical Principles <i>In-Class Tutorial: Intro to MS Excel as a Tool for Hydrologic Analysis</i>	Viessman Chap 3 (handout) Waltham Chap 3 (handout)
Homework: Intro to Applied Problems in Hydrology			
3	Jan. 20	Lecture: Atmospheric Processes/Precipitation <i>In-Class Lab: Analysis of Oregon Climate Data</i>	Cech Chap 2 Dingman p105-140 (handout)
Homework: Intro to Contouring and Precipitation Maps			
4	Jan. 27	Lecture: Surface Water-Watersheds-Rivers I <i>In-Class Tutorial: Introduction to Surfer Raster-Based Mapping Software</i>	Cech Chap 3 Surfer Tutorial (handout)
Homework: Cascade Mountain Ice Budgets			
5	Feb. 3	Lecture: Surface Water-Watersheds-Rivers II <i>In-Class Lab: Techniques in Watershed Analysis</i>	Viessman Chap 9 (handout)
Homework: Flood Frequency and Drainage Basin Analysis			
6	Feb. 10	Mid-Term Exam Week (Exam 1) Open Lab Period	Last day to drop class without grade penalty
7	Feb. 17	Lecture: Introduction to Groundwater I <i>In-Class Lab: Hydrogeologic Problem Solving</i>	Cech Chap 4
Homework: Groundwater Problem Set 1			
8	Feb. 24	Lecture: Groundwater II; Flow Mechanics <i>In-Class Lab: Application of Surfer to Groundwater Hydraulics</i>	Viessman Chap 7, 10 (handout)
Homework: Groundwater Problem Set 2			
9	Mar. 3	Lecture: Groundwater III; Well Hydraulics <i>In-Class Lab: Well Hydraulics / Aquifer Testing Using</i>	Software Tutorial (handout) Reading / Handout
Homework: Well Hydraulics / Aquifer Testing			
10	Mar. 10	Lecture: Water Resources Management Open Lab and Homework Schedule: Compile Final Portfolios	Cech Chap 9-10 Reading / Handout
11	Mar. 17	EXAM 2 (Final)	

The following is a tentative list of lab portfolio problem sets that may be included as part of the course content. Problems will be worked both during and outside of class time. This list may be modified as the term progresses.

Midterm Portfolio Lab Problems and Class Assignments

- Task 1. Introductory Hydrology Problems (Veissman Chap. 1 Problems)
http://www.wou.edu/las/physci/taylor/hydro/intro_problems.pdf
- Task 2. p. 5 Intro notes: global water budget
<http://www.wou.edu/las/physci/taylor/hydro/intro.pdf>
- Task 3. p. 12 Physical Principles notes: Conservation Equation for Hydrology
<http://www.wou.edu/las/physci/taylor/hydro/intro.pdf>
- Task 4. p.60-61 Concentrations and water chemistry problems
http://www.wou.edu/las/physci/taylor/hydro/watr_chem.pdf
- Task 5. Intro to Applied Problems in Hydrology
<http://www.wou.edu/las/physci/taylor/hydro/hydrolab1.pdf>
- Task 6. In-Class Precipitation Analysis Exercise (Theissen Method / Isohyets)
<http://www.wou.edu/las/physci/taylor/hydro/prcpex.pdf>
- Task 7. Contouring Exercise / Isohyet Map of Eastern Oregon
<http://www.wou.edu/las/physci/taylor/hydro/context1.pdf>
- Task 8. (OPTIONAL) - Intro to Spreadsheets, MS Excel, and Data Analysis
<http://www.wou.edu/las/physci/taylor/hydro/intrexcl.pdf>
- Task 9. Analysis of Oregon Climate Data
<http://www.wou.edu/las/physci/taylor/hydro/orclima.pdf>
- Task 10. Cascade Mountain Ice Budget Lab
<http://www.wou.edu/las/physci/taylor/hydro/mticelab.pdf>
- Task 11. Mono Lake Water Budget Exercise
<http://www.wou.edu/las/physci/taylor/hydro/monolake.pdf>

Final Portfolio Lab Problems and Class Assignments

- Task 1. Alsea River Flood Frequency Tutorial / Example
http://www.wou.edu/las/physci/taylor/hydro/Alsea_Flood_Tutorial.pdf
- Task 2. Flood Frequency Lab Exercise
http://www.wou.edu/las/physci/taylor/hydro/flood_frequency_analysis_exercise.pdf
- Task 3. Groundwater Problem Set 1 (Introduction to Groundwater)
<http://www.wou.edu/las/physci/taylor/hydro/gwprob1.pdf>
- Task 4. Groundwater Problem Set 2 (Groundwater Flow)
<http://www.wou.edu/las/physci/taylor/hydro/gwprob2.pdf>
- Task 5. Introductory Surfer Tutorial (http://www.wou.edu/las/physci/taylor/hydro/surf_tut1.pdf)
Demo Contour Map (data, grid, map)
Demo Contour Map with Color Fill
- Task 6. Introduction to Surfer Exercise
<http://www.wou.edu/las/physci/taylor/hydro/introsrf.pdf>
- Task 7. Applications of Surfer to Groundwater Hydraulics
<http://www.wou.edu/las/physci/taylor/hydro/gwsrflab.pdf>
- Task 8. In-Class Exercise: Monmouth Groundwater Contouring Exercise
- Task 9. Aquifer Testing Tutorial
http://www.wou.edu/las/physci/taylor/hydro/aqte_tutorial.pdf
- Task 10. Well Hydraulics / Aquifer Testing Exercise
<http://www.wou.edu/las/physci/taylor/hydro/wellaqtex.pdf>