CSS/GEO 335
Introduction to Water Science and Policy

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Course Introduction

Nineteenth century humorist and novelist Mark Twain is attributed with the saying “Whisky is for drinkin’ and water is for fightin’.” Some international relations experts suggest that the next wars will be fought over water. Today, it is difficult to NOT find a newspaper or magazine article discussing conflicts over water. And the conflicts are not just limited to the arid countries such as the Middle East or western United States which are traditionally considered the “water war zones”. Areas that we have routinely considered water rich due to a history of precipitation such as the southeastern United States are now in the forefront of water conflicts over quantity and quality of water as we embark on what some scientists refer to as global warming or global climate change.

With all of the apparent changes in precipitation patterns and increasing populations on every continent, will you be prepared to evaluate media reports regarding water shortages, water conflicts, or worse, water wars? This class will introduce the student to the many parts of the hydrologic cycle along with the “road map” of federal and state policies designed to guide how water is used and “abused”. If you are searching for a class that uses applied exercises to introduce the student to the principles of water science and some of the policies that affect water, then search no further.

The student will be required to complete some limited field work such as visiting a wetlands and shopping for bottled water. Other exercises will introduce students to the perplexing world of water rights using “real world” web based resources maintained by state and federal agencies designed for, but rarely visited by, the public. The class will also visit a “virtual” watershed.

Who is the instructor? Visit http://water.oregonstate.edu/staff

Course Objectives
1. Learn the hydrologic cycle.
2. Learn how to be a consumer of scientific information related to water resources.
3. Learn some of the controversies associated with the use of water resources.
4. Learn about the environmental consequences of water resources development and use.

This course is offered through Oregon State University Extended Campus. For more information, contact:
Web: ecampus.oregonstate.edu   Email: ecampus@oregonstate.edu   Tel: 800-667-1465
Learning Resources


Jackson-Frazier Wetland Website
http://www.co.benton.or.us/parks/facilities/jackson_detail.php

Institute for Water and Watersheds Website http://water.oregonstate.edu

Blackboard = Most materials beyond the book will be posted on Blackboard for downloading.

Course Policies

Please note the dates and times for submitting assignments. Late work is discouraged. Late work will be marked down one grade each lecture overdue. For example, if the work is submitted the following lecture, it is subject to the penalty. Make-up work is not an option. However, extra credit work is available as discussed in later sections of the syllabus. Submit your work on the location in the View/Complete Assignment Function in Blackboard.

Assignments attached to emails to the instructor will not be graded! Why? ECampus wisely suggests this approach in the unlikely event a student decides to challenge a grade after the class has ended, then there is a record of the assignment to refresh the memory of all parties.

Some of the assigned reading will not be covered in lectures but will more than likely be important for your assignments and the exam.

Grading Scale:
The class will not be graded on a curve. Using this approach, the number of students receiving the same grade is not restricted.
100% - 93% A
92.9% - 90% A-
89.9% - 87% B+
86.9% - 83% B
82.9% - 80% B-
------------------------------------------
79.9% - 77% C+
76.9% - 73% C
72.9% - 70% C- S
------------------------------------------
69.9% - 67% D+ U

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66.9% - 63% D
62.9% - 60% D-
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59.9% - 0% F
For P/N or S/U students - 70% is required for a P or an S.

INCOMPLETES? – Rarely given, but considered if only if 70% of the class materials have been submitted. This means that the student would have earned 350 points by the time they requested an incomplete. Application for an incomplete requires a written proposal from the student which includes a timetable to submit the outstanding work and final exam. Once approved by the instructor, the proposal becomes a contract to complete the work. Any deviations from the mutually-agreed upon contract void the contract.

Grades (Preliminary Breakdown)

Weekly Participation on Discussion Board and Weekly Emails to Instructor  100
Assignments (Five Film Summaries, Consumer Confidence Report, One Day Virtual Water Analysis, Water Shopping, Willamette River Exercise, Course Evaluation Form)  100
Midterm Assignments (Two Mini-Projects with (2) Analyses)  100
Wetlands Field Trip with Report  100
Final Exam  100
TOTAL  500

Learner Outcomes for this Synthesis Course under the Category of Science, Technology, and Society

The intention of the course is for you to demonstrate your ability to:
1. Acquire specialized language relevant to water sciences and policy.
2. Analyze and integrate information on concepts relevant to the use of water resources.
3. Analyze relationships among science, technology, and society using critical perspectives or examples from historical, political, or economic disciplines.
4. Analyze the role of science and technology in shaping diverse fields of study over time.
5. Retain key concepts relevant to critical thinking and water resource issues.
6. Articulate in writing a critical perspective on issues involving science, technology, and society using evidence as support.
7. Communicate through writing your understanding of key concepts relevant to water resource science and policy issues.
8. Use knowledge acquired from assigned reading and lectures to analyze and solve problems on class exercises, midterm mini-projects, and the final exam.

**Learner Expectations:**

1. Be respectful of others, such as the instructor and your colleagues, by submitting the assignments on time.
2. Read assignments before they are discussed on the class discussion board and by email with the instructor.
3. Participate in learning activities such as the discussion board.
4. Submit the mini-projects and final exam on time (there are no make-up projects or exam).

**Schedule (Preliminary)**

**Week 1** – Introductions and the Hydrologic Cycle  
(Reading: Cech – Chapters 2, 3, 4)  
Friday Session: Oregon Water Story Film **(Write-up due by 5 pm, PST, on Friday)**

**Week 2** – Where Does Your Water Come From? Where Does Your Water Go?  
(Reading: Cech – Chapter 11)  
Friday Session: Consumer Confidence Report? **(Write-up due by 5 pm, PST, on Friday)**

**Week 3** – The Politics of Water  
(Reading: Cech – Chapters 8 and 10)  
Friday Session: Running Dry Film **(Write-up due by 5 pm, PST, on Friday)**

**Week 4** – History and Future of Water Development  
(Reading: Cech – Chapter 1 and 15, pages 482-490)  
Friday Session: Cadillac Desert Film **(Write-up due by 5 pm, PST, on Friday)**

**Week 5** – The Value of Water **(Two things due this week)**  
Reading: Cech – Chapter 13 and the following links:  
http://www.waterfootprint.org/?page=files/home  
http://www.waterfootprint.org/?page=files/productgallery  
http://www.waterfootprint.org/?page=cal/WaterFootprintCalculator  
Friday Session: Thirst **(Write-up due by 5 pm, PST, on Friday)**  
Virtual Water Footprint? **(Write-up due by 5 pm, PST, on Friday)**

**Week 6** – Farms, Fish and Fences – Irrigation, Wildlife, and Subdivisions  
(Reading: Cech – Chapters 6 and 12)
Friday Session: Midterm Mini-Projects Due (No later than by 5 pm, PST, on Friday)

Week 7 – Culture and Conflict Over Water (Two things due this week)
(Reading: Cech – Chapter 14)
Friday Session: Waterbuster (Write-up due by 5 pm, PST, on Friday)
Shopping for Water (Write-up due by 5 pm, PST, on Friday)

Week 8 – Wasted Water
(Reading: Cech – Chapter 5)
Friday Session: Willamette River Exercise (Write-up due by 5 pm, PST, on Friday)

Week 9 – Climate Change
Watch “Rising Water” Film
Friday Session: Jackson Frazier Wetlands Self-Guided Field Trip (Write-up due by 5 pm, PST, on Friday)

Week 10 – Did we learn anything?
(Reading: Cech – Chapter 15, pages 492-500)
Course Evaluations and Future Directions
Final Exam Review

FREQUENTLY ASKED QUESTIONS

What are the Assignments and Class Participation?

Submitting your written summary of the film(s) and field activities (shopping for water, etc.) asking questions, active engagement in the weekly discussion board and email discussion with the instructor, filling out the course evaluation form. Found in Assignments and Course Documents on Blackboard. 10 points for most activities.

What are the Midterm Mini-Projects?

Two web-based exercises on watershed analysis and water rights analysis. Please review the assignment from start to finish before starting so there is no confusion as to what data you need to collect and how you will submit it for a grade. You will be required to acquire data from online resources, plot the data, answer questions on the information acquired, and prepare a one page synopsis of your analyses. 50 points for each project.

What is the Jackson Frazier Wetland Field Trip?
The field trip is to Jackson Frazier Wetland located in North Corvallis. The goal of this field trip is to investigate wetlands. If you don’t live in Corvallis, then contact the instructor to find a wetland close to where you live.

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Visit the following website or find the website of a wetland near you because each state and most countries have programs protecting wetlands:
http://www.co.benton.or.us/parks/facilities/jackson_detail.php

The following is a **handy summary** of what you should consider when visiting your site and in your project write-up, regardless of whether or not it is located near Corvallis, Oregon.

1. Use the **field guide** for the Jackson-Frazier site found under *Assignments* as your guide to visiting your site. What does this mean? Regardless of your wetland, you will need to walk around in it, along it, etc. to make multiple stops and observations. The questions and observations you will make will be the same questions and observations you will make if you were visiting the Jackson-Frazier site. **The field guide is just that – a guide. It is not the entire assignment.**

2. Write **good field notes** because you will have to submit them for a grade. ORIGINAL SWEAT AND BLOOD STAINED COPIES ONLY FOR CREDIT. If you are using a digital notebook as professionals working in natural resources fields typically employ, you will need to submit a print-out of your digital file. Photos are valuable only if they are referenced to the notes. Your **field notes must include**: a. Answers to the five questions for each field observation point; and b. A brief description of site location, date of field trip and observed weather (e.g. partly cloudy, 72 degrees). Submit these an attachment to your summary report (scanned, photographed so that they can be read, or faxed).

3. You should be able to recognize and understand the variety of wetland types that currently exist within the local wetland in your area then you should recognize and understand the features of the wetland you are visiting.

4. You will need to sketch a field **map** that includes:
   a. Perimeter of wetland;
   b. Plant species within and surrounding the wetland Site hydrology (e.g. nearby streams, visual ponding of water, etc.); and
   c. A Legend that includes a North arrow, a Scale bar, the Topographic features nearby (e.g. mountains, steep hills, cliffs, etc), and the General site elevation.

   Your **map** can be submitted as a scanned and attached to the report or faxed image. Photos don't work well for these documents.

5. You should demonstrate in your **summary report** a basic understanding of local, state and federal on-line resources for wetlands.

6. Your **summary report will be similar to the memo that you submitted for the midterm**. Simply retyping your field notes with answers to the questions will not result in a good grade. Tell a story about your trip, about the rules and regulations governing the

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management of your wetland (federal, state, local, etc.), how the wetland changed from one area to another, what you can do to help protect your wetland. Professional appearance counts. A pdf formatted file is preferred.

7. If you are interested in earning up to 10 points extra credit, then answer the questions that can be found at the end of the field guide, making certain that the instructor can easily find them in your report (if you incorporate into your summary report text, then bold or italic the text). One free point for trying. Three points earned for each correct answer.

8. VISITING WITH A FRIEND THAT IS IN THE CLASS? Always fun and encouraged, but please submit your own work. Each term I have a couple of maps submitted by friendly students who were not very creative in hiding that they traced their friends map. This is not a hard assignment and is designed to get you outside and away from the computer screen. Don't run the risk of getting caught for academic dishonesty - I see so many of these reports that it is easy to spot, and my archives of the class date back a few years. If something looks familiar, I will ask about it, usually with a request to telephone me to discuss.

9. CLEAR AS MUD? Don't get mad and don't visit your wetland until contacting the instructor to have your questions and concerns addressed. 100 points for the field notes and written report.

What about Extra Credit?

NO MORE THAN 100 POINTS TOTAL FROM THE MANY EXTRA CREDIT OPTIONS THAT CAN BE EARNED AND APPLIED TO THIS CLASS.

Occasionally the instructor will post an extra credit assignment on Blackboard which can be completed within the week that it is posted. If the student elects not to pursue the extra credit assignment for the week it is posted, then the extra credit opportunity for that week is lost. MOST EXTRA CREDIT EXERCISES WORTH 10 POINTS.

What about Extra Credit for Attending Water Seminars or Attending a Watershed Council Meeting?

Attend lectures sponsored by the water-related seminars in other departments on campus (Forestry, Forest Engineering, Geology, Geography, Soil Science, etc.). Or attend a watershed council meeting such as those held by the Marys River Watershed Council, Calapooia River Watershed Council, or other water related events. Ask the instructor if a seminar or meeting you are interested in attending qualifies before attending. An email to the instructor will suffice.

GROUND RULES. If you attend the water-related seminars on campus, these are graduate level seminars with speakers traveling from in-state and out-of-state to present.

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on local, national, and international water and related policy issues. As a consequence, you must arrive before the speaker begins and stay for the entire lecture. If you attend a watershed council meeting or other water-related meeting, you must arrive on time and stay for the entire meeting. **NO EXCEPTIONS. If you cannot abide by these rules, please be respectful to the graduate students, faculty, and guest speakers and meeting attendees by not attending.**

**FOR 10 POINTS EXTRA CREDIT.** Have the moderator/facilitator initial your attendance sheet (a small slip of paper with your name, title of presentation, and the date). For all seminars or meetings that you attend, listen attentively and then prepare a 50 to 100 word typed-written summary of what you learned from the guest speaker and turn in on the Friday immediately following the lecture or meeting that you attended. Make sure you put the date the guest lecturer spoke or the meeting that you attended, the name of the speaker or meeting facilitator on your paper, along with your own name for credit.

**What is on the Final Exam?**

Up to 100 questions, multiple choice, fill in the blank, short answer, with most questions derived from information presented by lectures, films, readings, and exercises. **Worth 100 points.**

**OTHER QUESTIONS? – Contact the Instructor**

**SAMPLE EXTRA CREDIT SHEET**

<table>
<thead>
<tr>
<th>Name of Student</th>
<th>____________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>____________________________</td>
</tr>
<tr>
<td>Name of Speaker or Meeting?</td>
<td>____________________________</td>
</tr>
<tr>
<td>What School, Organization, etc. is Speaker Affiliated?</td>
<td>____________________________</td>
</tr>
<tr>
<td>Title of Presentation?</td>
<td>____________________________</td>
</tr>
</tbody>
</table>

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| Date and Location of Presentation? | ____________________________ |
| My 50 to 100 Word Summary of the Presentation or Meeting including what I learned: | ____________________________ |

**The Required Section on University and Departmental Policies**

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Please note: “Students with documented disabilities who may need accommodations, who have any emergency medical information the instructor should know, or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term. In order to arrange alternative testing, the student should make the request at least one week in advance of the test. Students seeking accommodations should be registered with the Office of Services for Students with Disabilities”.

PLEASE BE HONEST AND DO NOT CHEAT – IT IS A TIME CONSUMING THING FOR BOTH THE STUDENT AND INSTRUCTOR. The Departments of Crop and Soil Sciences and Geosciences follow the university rules on civility and honesty. These can be found at http://oregonstate.edu/admin/stucon/stuacdis.htm.

Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

- **Cheating** – use or attempted use of unauthorized materials, information or study aids;
- **Fabrication** – falsification or invention of any information;
- **Assisting** – helping another commit an act of academic dishonesty;
- **Tampering** – altering or interfering with evaluation instruments and documents; and
- **Plagiarism** – representing the words or ideas of another person as one’s own.

Please check out OSU’s policies on plagiarism if in doubt at http://oregonstate.edu/admin/stucon/plag.htm.

Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.

“The goal of Oregon State University is to provide students with the knowledge, skill, and wisdom they need to contribute to society. Our rules are formulated to guarantee each student’s freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive, or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action office.”

**Student Evaluation of Teaching**
We encourage you to engage in the course evaluation process each term – online, of course. The evaluation form will be available toward the end of each term, and you will be sent instructions through ONID. You will login to “Student Online Services” to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted.