

## **The World of Water**

SWS 2007

Time: Monday, Wednesday, Friday 5<sup>th</sup> period or  
Monday, Wednesday, Friday 8<sup>th</sup> period  
Fall 2019

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**Office Hours:** Monday, Wednesday 3:00-3:45 pm, Thursday 10:00-11:00.

**Canvas Website:** <http://lss.at.ufl.edu>

### **Course Description:**

This is an introductory course intended to acquaint students with many of the essential roles of water in the environment. Topics range from fundamental properties of water to the importance of water and water quality to society. Course topics also will include water in oceans, lakes, rivers, soils, and the atmosphere as well as the importance of water in various physical and chemical processes.

Each student who successfully completes the course should have a practical understanding of the following:

- The scale and distribution of global water resources
- Vocabulary to communicate fundamental concepts related to water science.
- The varied and unusual properties of water
- The varied roles of water in many environmental processes including new and historic scientific developments in relation to water in the environment.
- The fundamentals of water quality, terms and criteria for evaluating water quality, and how water quality is impacted by humans

### **Course Objectives:**

This course satisfies the (P) designation for the physical sciences general education requirement.

#### Physical Sciences (P)

Physical science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern physical systems. Students will formulate empirically-testable hypotheses derived from the study of physical processes, apply logical reasoning skills through scientific

criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

These general education objectives will be accomplished through

1. Evaluation of how the properties of water influence its function in human, organism, and environmental systems.
2. Analysis of how water and chemicals interact and how this influences aquatic systems, environments, and organisms.
3. Formulation and critical evaluation of hypotheses related to water's availability, quality, and distribution.
4. Application of basic scientific methodologies to the study of water science and foster new perspectives on the role of water and water quality in the environment.

### **Student Learning Outcomes**

This course also will assess Student Learning Outcomes which can be defined as.

Student Learning Outcomes: Content and Skills

Content: Students demonstrate competence in the terminology, concepts, and methodologies used within the discipline

Communication: Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline.

Critical Thinking: Students analyze information carefully and logically from multiple perspectives using discipline-specific methods, and develop reasoned solutions to problems.

The Student Learning Outcomes will be assessed through ongoing evaluation. Content will be tested using three objective exams, eight multiple choice and True/False quizzes, and 4 written homework assignments incorporating fundamental concept knowledge and computations relevant to course material. Communication will occur through discussion during assigned meeting times, web-based discussion posts, and short answer as well as computation-based homework assignments. Critical thinking will be assessed through analysis, and application of data/results to issues related to water quality and treatment.

## Course Schedule

Week 1	8/20-8/23	Introduction to the World of Water <b>Homework I due</b>	<b>Wednesday 8-28</b>
Week 2	8/26-8/30	Water, Humans, and Civilization <b>Quiz I Online due</b>	<b>Wednesday 9-4</b>
Week 3	9/2-9/6	Agriculture, Industry, Economic Development	
Week 4	9/9-9/13	Water Demand: Affluence, Energy <b>Homework II due</b>	<b>Wednesday 9-18</b>
Week 5	9/16-9/20	Surface and Groundwater Overview, Groundwater Mining <b>Quiz II Online due</b>	<b>Wednesday 9-25</b>
Week 6	9/23-9/27	Exam I and Preparation  <b>Exam Review</b> <b>Exam</b> <b>Make-up Exam</b>	<b>Monday, 9-23</b> <b>Wednesday, 9-25</b> <b>Friday 9-27</b>
Week 7	9/30-10/4	Introduction to Florida's Water Resources	
Week 8	10/7-10/11	Sinkholes, Lakes, Aquifer Recharge, and Springs <b>Quiz III Online Due</b> <b>Homework III Due</b>	<b>Wednesday 10-16</b> <b>Wednesday 10-16</b>
Week 9	10/14-10/18	Water, Weather, and Climate	
Week 10	10/21-10/25	Water Quality: Parameters and Sources <b>Homework IV Due</b> <b>Quiz IV Online Due</b> <b>Reading: The Unusual Properties of Water (pdf)</b>	<b>Wednesday 10-30</b> <b>Wednesday 10-30</b>
Week 11	10/28-11/1	Exam II and Preparation  <b>Exam II Review</b> <b>Exam II</b> <b>Make-up Exam</b>	<b>Monday, 10-28</b> <b>Wednesday, 10-30</b> <b>Friday, 11-1</b>
Week 12	11/4-11/8	Inorganic vs. Organic Contaminants	

Week 13	11/11-11/15	Inorganic Chemical Pollutants/Contaminants <b>Homework V Due</b>	<b>Wednesday 11-20</b>
Week 14	<b>Thanksgiving (one Lecture)</b>		
Week 15	11/25-11/29	Organic Chemicals/Contaminants: Sources, Fate, Toxicity <b>Quiz V Online Due</b>	<b>Wednesday 12-4</b>
Week 16	12/2-12/6	Exam III and Preparation	
	<b>Exam II Review</b>	<b>Monday, 12-2</b>	
	<b>Exam II</b>	<b>Wednesday, 12-4</b>	
	<b>Make-up Exam</b>	<b>Friday, 12-6</b>	

**Textbook:**

There is no required textbook.

However, topic-related readings may be assigned from "When the Rivers Run Dry", by Fred Pearce or other sources. Appropriate text excerpts will be provided.

Additionally, online discussion topics will be posed based on a reading of Dune by Frank Herbert. Participation is voluntary but, it's a great book and relevant to our subject.

**Evaluation of Grades**

Grading will be based on three in-class examinations, homework assignments, quizzes, and written questions posed during lecture. Opportunities for bonus points also will be provided throughout the semester.

<u>Assignment</u>	<u>Point Value</u>	<u>Percentage of Grade</u>
<b>Exams</b>	<b>600</b>	<b>60%</b>
<b>Quizzes</b>	<b>150</b>	<b>15%</b>
<b>Homeworks</b>	<b>150</b>	<b>15%</b>
<b>Lecture Questions</b>	<b>100</b>	<b>10%</b>
<b>TOTAL</b>	<b>1000</b>	<b>100%</b>

**Extra Credit:** Several in-class bonus questions will be posed throughout the semester and allow students to accumulate up to a 1% bonus factored into the overall grade based on the number of correct written responses.

<u>Letter Grade</u>	<u>Numerical Grade</u>	<u>GPA Points</u>
A	92-100	4.0
A-	90-91.9	3.67
B+	86-89.9	3.33
B	83-85.9	3.0
B-	79-82.9	2.67
C+	77-78.9	2.33
C	72-76.9	2.0
C-	70-71.9	1.67
D+	66-69.9	1.33
D	63-65.9	1.0
D-	59-62.9	0.67
E	<59	0

#### **BASIC COURSE REQUIREMENTS:**

1. **Exams** consist of objective and interpretive multiple choice and true/false questions. Study guides and review sessions will be provided prior to each exam.
2. **Homeworks** will address current and historic topics of soils in the environment as well as basic assignments related to class lectures and problem solving. There are 5 homework assignments; due dates are indicated above. Submission will be on the course management site; emailed assignments are not permitted. **One homework drop is permitted.**
3. **Quizzes** will be conducted online in the course management system. Each quiz will consist of 10 questions randomly selected from a large bank of questions. You may take the quiz 5 times during the prescribed period indicated in the course schedule above. There are 5 total; due dates are indicated above. **Additionally, a comprehensive quiz will be offered at the end of the term. The grade on this quiz will replace 1 missing quiz grade.**
4. **Lecture Questions/Quizzes** will be provided prior to the commencement of each lecture. These questions will be answered during the course of the lecture; therefore, attendance is required. **Students who are late for class will incur a 50% penalty for that day's lecture questions.** Students may miss 7 lecture question assignments without penalty.

#### **GENERAL POLICIES**

**Lecture notes** will be posted on the course management site following each lecture.

**Homework submissions:** All work is expected to be the product of each individual member of the class. Assignments submissions must be clearly presented **and the product of each individual student's work. Copying information verbatim from the web, books, articles, etc. requires appropriate citation, but is discouraged.**

**Late Work:** Submission of assignments is expected on time. Late work will not be accepted. Students may apply for an exception to this rule by supplying appropriate documentation.

**Make-up Exams:** Contact the instructor or teaching assistant as early as possible if you must legitimately miss a scheduled exam. If an emergency arises immediately before an exam, notify the instructor or

teaching assistant as soon as the emergency is resolved. Make-up exams are scheduled as indicated in the course schedule above.

**This is a large class.** Students are expected to arrive and be prepared to commence on time. Please be considerate to the instructor and your fellow students and avoid talking, texting, or other disruptive behavior. **Use of electronic devices of any kind is not permitted in class.** Students also are expected to remain in class for the duration of the lecture. If you must leave early, inform the instructor prior to commencement of class.

### **Students Requiring Accommodations**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/) ) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### **Course Evaluation**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

### **Academic Honesty**

As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php>.

### **Software Use:**

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

### **Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, [www.counseling.ufl.edu/cwc/](http://www.counseling.ufl.edu/cwc/)*

Counseling Services  
Groups and Workshops  
Outreach and Consultation  
Self-Help Library  
Training Programs  
Community Provider Database

Career Resource Center, First Floor JWRU, 392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)