Soil and Water Sciences SWS 4932: Conservation Hydrology

Syllabus - Spring 2019

Description: This course presents a watershed-scale survey of the processes through which water moves through the hydrologic cycle, and how watershed characteristics influence these processes. We will also examine how watershed characteristics influence stream and riparian ecosystems, and how they influence water resources for human needs. Additionally, we will use contemporary methods and tools to quantify hydrologic processes, stream ecosystem condition, and water resources; and present case studies that illustrate how these concepts are applied to real-world situations in the southeastern United States and beyond.

Time and Location: Online through distance methods
Spring Semester: January 2019 to May 2019
Chat session: Weekly, Thursdays 6-7pm Eastern Time

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ISBN: 978-0-470-96305-0
Additional reading materials such as US Geological Survey reports will be provided in Canvas in each weekly module.

Course Objectives: Upon completion of this course, students will be able to:
1. List important components of the water cycle, and describe how they can be affected by land and water management practices.
2. Describe how stream ecosystems are structured by hydrologic processes.
3. Use historical streamflow records to identify changes in streamflow caused by water management practices.
4. Describe the process used for developing Minimum Flows and Levels in the state of Florida.
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Weekly topics:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
<th>Due</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan 7</td>
<td>Watersheds: an introduction; watersheds as hydrologic units; what is conservation?</td>
<td>Activity Set 1; Ch 1</td>
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<td>2</td>
<td>Jan 14</td>
<td>Units of measure; the hydrologic cycle, water balance; delineating watersheds; rainwater harvesting</td>
<td>Activity Set 2; Ch 2</td>
<td>AS1 (5pm)</td>
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<tr>
<td>3</td>
<td>Jan 21</td>
<td>Measuring the water cycle: inputs, outputs, changes in storage; hydrologic effects of landscape conversion</td>
<td>Activity Set 3; Ch 3, 4</td>
<td>AS2 (5pm)</td>
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<tr>
<td>4</td>
<td>Jan 28</td>
<td>Rainfall frequency and planning; Streams and data part 1: sources and analysis</td>
<td>Activity Set 4; Ch 5, 6</td>
<td>AS3 (5pm)</td>
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<td>5</td>
<td>Feb 4</td>
<td>Streams and data part 2; defining a stream’s flow regime</td>
<td>Activity Set 5</td>
<td>AS4</td>
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<tr>
<td>6</td>
<td>Feb 11</td>
<td>EXAM 1. Water management: dams and Indicators of Hydrologic Alteration; Term project explanation</td>
<td>Activity Set 5; Ch 9</td>
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<tr>
<td>7</td>
<td>Feb 18</td>
<td>Predicting peak flows; Physical stream processes</td>
<td>Activity Set 6</td>
<td>AS5</td>
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<td></td>
<td>Feb 25</td>
<td>Stream ecology; evaluating needs of a river and Minimum Flows and Levels</td>
<td>Activity Set 7; supplemental</td>
<td>AS6</td>
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<td>8</td>
<td>Mar 4</td>
<td>Spring break</td>
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<td>9</td>
<td>Mar 11</td>
<td>Virtual field trip: Big Coldwater Creek, Blackwater River State Forest</td>
<td>Activity Set 8</td>
<td>AS7</td>
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<tr>
<td>10</td>
<td>Mar 18</td>
<td>Groundwater and contemporary groundwater issues</td>
<td>Activity Set 9</td>
<td>AS8</td>
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<tr>
<td>11</td>
<td>Mar 25</td>
<td>EXAM 2; Bays, Estuaries, and coastlines</td>
<td>Activity Set 9</td>
<td>AS8</td>
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<td>Apr 1</td>
<td>Virtual field trip (Indian Bayou; begin 8AM)</td>
<td>Activity Set 10</td>
<td>AS9</td>
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<tr>
<td>12</td>
<td>Apr 8</td>
<td>Urban hydrology, green infrastructure, and SWMM</td>
<td>Supplemental</td>
<td>AS10</td>
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<tr>
<td>13</td>
<td>Apr 15</td>
<td>Lakes and wetlands</td>
<td>Supplemental</td>
<td></td>
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<td>14</td>
<td>Apr 22</td>
<td>Last week of classes; Term Project Presentations (date to be determined)</td>
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<td>15</td>
<td>May 2</td>
<td>Final Project and Report due</td>
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Student Evaluation Methods (600 points total):

Student grades will be determined based on student performance in the following categories:

**Weekly activities** 40% of grade

**Exams (2)** 35% of grade (17.5% apiece)

**Final project and report** 25% of grade

**Weekly Activities:** At the conclusion of each class session (weeks 1-11), students will be assigned a series of activities to reinforce lessons learned in class. These will include participations in online discussions, problem sets, analysis of virtual field lab data and completion of field lab reports, and computer program worksets. All activities will appear on Canvas in weekly modules and will be submitted via Canvas by Monday at noon Eastern time.

**Exams:** Occurring twice during the semester, exams will consist of short analyses of data sets, short answer questions, and/or brief essays based on reading assignments, lectures, and exercises. Exams will be available for students for 75 minutes; students can choose to take the exam at any time within a one- or two-day window. Exams will be proctored online.

**Final project:** Students will work individually or in groups of two to conduct a hydrologic study related to a topic of their choice. The hydrologic study will consist of components as discussed in class, and may include collecting new data or using historical data. Students will present a summary of their hydrologic study during the final week of class; it will be accompanied by a study Report. Expectations regarding the components of the hydrologic study, presentation, and report will be shared via handout and discussed in class after the first exam. The final project report is due one week after the last session of class (May 2).

**Participation/attendance:** Students are expected to view all instruction materials in each weekly Module in Canvas, including online lecture materials, interviews, and field lab sessions as appropriate. Students are also expected to participate in online discussions. We will also hold one-hour chat sessions each week on Thursdays. Chats provide the opportunity to reinforce class lessons with real-world examples and discuss data and problem sets in more detail. Additional information about class attendance at UF can be found at:

https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

**Grades will be scored as follows:**

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<tbody>
<tr>
<td>Letter Grade</td>
<td>A</td>
<td>A-</td>
<td>B+</td>
<td>B</td>
<td>B-</td>
<td>C+</td>
<td>C</td>
<td>C-</td>
<td>D+</td>
<td>D</td>
<td>D-</td>
<td>E</td>
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<tr>
<td>Grade Point</td>
<td>4</td>
<td>3.67</td>
<td>3.33</td>
<td>3</td>
<td>2.67</td>
<td>2.33</td>
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<td>1.67</td>
<td>1.33</td>
<td>1</td>
<td>0.67</td>
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A full explanation of UF grading policies can be found at:

https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx
On-line Resources:
An e-learning site for this course is available through CANVAS. This provides a format to share documents and discussions with your classmates. This syllabus and general announcements from the instructors to students will also be posted. **IT IS YOUR RESPONSIBILITY TO CHECK CANVAS AND USE THIS RESOURCE TO STAY UP-TO-DATE WITH SCHEDULES AND CLASSWORK.** The CANVAS app is free.

Late Policy
It is critical that your work be submitted in a timely manner. Assignments turned in on paper or electronically by the start of class are considered on time. After that, late assignments will lose value at the rate of 10% for the first late day and 5% for each subsequent late day (weekend days count!).

Making up course labs, field trips, and exams
In the event that you are unable to attend a course session or field trip, notify me as soon as possible and I will make arrangements for a substitute session. If you know you have a conflict with a scheduled event in the syllabus, tell me immediately. For all substitute activities, the expectations will be the same as if you were in attendance. If you are unable to the attend course session on an exam day or the final presentation day, alternatives will be planned (e.g., video recording of presentations). Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)

Academic Honesty
The University of Florida requires all members of its community to be honest in all endeavors. Cheating, plagiarism, and other acts diminish the process of learning. When students enroll at UF they commit themselves to honesty and integrity. I fully expect you to adhere to the academic honesty guidelines you signed when you were admitted to UF.

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: [https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/](https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/)
**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 wellbeing are encouraged to utilize the university’s counseling resources. The UF Counseling and 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. The Center is located at 3190 Radio Road.

- Career Resource Center, CR-100 JWRU, 392-1601,
- Student Health Care Center, 392-1161, www.crc.ufl.edu/

**Students with Disabilities:**
Services for Students with Disabilities: The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

**Student Complaints:**
The University of Florida believes strongly in the ability of students to express concerns regarding their experiences at the University. The University encourages its students who wish to file a written complaint to submit that complaint directly to the department that manages that policy. Residential Course: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf
Online Course: http://www.distance.ufl.edu/student-complaint-process