Soil and Water Sciences SWS 4932: Conservation Hydrology

Syllabus - Spring 2020

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.

Prerequisites: Junior or Senior Standing.

Time and Location: Tuesdays, 5:00 – 8:00 PM
Spring Semester: January 2020 to May 2020
West Florida REC Milton Campus, Room 4814

Instructor: Matthew Deitch, Ph.D.
Assistant Professor, UF Soil and Water Sciences Department
West Florida Research and Education Center
Building 4900, Room 4917
Telephone: (850) 983-7131 (office); (510) 299-1359 (cell)
Email: mdeitch@ufl.edu
Office hours: Monday 10-12, Tuesday 2-4

Text: Textbook for this class is available free through the UF Library System: Hydrology and the Management of Watersheds, 4th edition, by Brooks, Ffolliott, and Magner
ISBN: 9781118459768 (search at https://cms uflib ufl edu/)
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.
### Weekly topics:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
<th>Due</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 7</td>
<td>Watersheds: an introduction; water resources and conservation; delineating watersheds</td>
<td>Problem Set (PS) 1; Ch 1</td>
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<tr>
<td>2</td>
<td>Jan 14</td>
<td>Units of measure; the hydrologic cycle, water balance; (rainwater harvesting), watersheds as hydrologic units</td>
<td>PS2; Ch 2</td>
<td>PS1 (5pm)</td>
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<tr>
<td>3</td>
<td>Jan 21</td>
<td>Measuring the water cycle: inputs, outputs, changes in storage</td>
<td>PS3; Ch 3, 4</td>
<td>PS2 (5pm)</td>
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<td>4</td>
<td>Jan 28</td>
<td>Rainfall frequency and planning; Streams, part 1: data and analysis (sources, trends, etc.)</td>
<td>PS4; Ch 5, 6</td>
<td>PS3 (5pm)</td>
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<td>5</td>
<td>Feb 4</td>
<td>Streams and data part 2</td>
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<td>PS4 (5pm)</td>
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<td>6</td>
<td>Feb 11</td>
<td>EXAM 1; Water management: dams and IHA; Term project explanation (Dr. Deitch in Tampa)</td>
<td>PS5; Ch 9</td>
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<tr>
<td>7</td>
<td>Feb 18</td>
<td>Physical stream processes part 1</td>
<td>PS6</td>
<td>PS5 (5pm)</td>
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<td>8</td>
<td>Feb 25</td>
<td>NO Tuesday class this week (Dr. Deitch in Gainesville)</td>
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<td>PS6 (5pm)</td>
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<td>8</td>
<td>Feb 29</td>
<td>All-day Saturday field trip to Big Coldwater Creek (BRSF; 8AM to completion)</td>
<td>Field trip report 1</td>
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<td>9</td>
<td>Mar 3</td>
<td>(NO CLASS – SPRING BREAK)</td>
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<td>10</td>
<td>Mar 10</td>
<td>Physical stream processes part 2; field trip review</td>
<td>PS7, Supplemental</td>
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<tr>
<td>11</td>
<td>Mar 17</td>
<td>Groundwater</td>
<td>PS8, Supplemental</td>
<td>PS7 (5pm); Field trip report 1</td>
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<td>12</td>
<td>Mar 24</td>
<td>Stream Ecology; evaluating needs of a river and MFLs</td>
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<td>PS8 (5pm)</td>
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<tr>
<td>13</td>
<td>Mar 31</td>
<td>EXAM 2; Bays, Estuaries, and coastlines</td>
<td>Field trip report 2</td>
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<tr>
<td>13</td>
<td>April 4</td>
<td>All-day Saturday field trip (Indian Bayou; begin 8AM)</td>
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<tr>
<td>14</td>
<td>April 7</td>
<td>Urban hydrology, green infrastructure, and SWMM</td>
<td>Supplemental</td>
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<tr>
<td>15</td>
<td>April 14</td>
<td>Lakes and wetlands; work on term projects (Dr. Deitch in Tampa)</td>
<td>Supplemental</td>
<td>Field trip report 2</td>
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<tr>
<td>16</td>
<td>April 21</td>
<td>Project presentations; Contemporary watershed issues in the Gulf Coastal Plain, beyond (Dr. Deitch in Bangalore)</td>
<td>Supplemental</td>
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**April 30**  
Final Project and Report due (grades from instructor due Monday, May 4)

### Course evaluation

Online Course Evaluation Process  
Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students will have the opportunity to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. These evaluations are conducted online at GatorEvals. Evaluations are typically open for students to complete during the last two or three weeks of the semester; students will be notified of the specific times when they are open. It is expected that you will contribute your feedback for this course and the others in which you are enrolled this term. Summary results of these assessments are available to students at GatorEvals ([https://gatorevals.aa.ufl.edu/](https://gatorevals.aa.ufl.edu/)).
Student Evaluation Methods (555 points total):

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

**Weekly activities/problem sets (7)**  25% of grade  (20 points each)

**Exams (2)**  36% of grade  (100 points each)

**Weekend field trips/reports (2)**  9% of grade  (25 points each)

**Final project: presentation and report**  25% of grade  (70 points each)

**Participation/attendance**  4.5% of grade  (25 points)

**Weekly Problem Sets:** At the conclusion of each class session (weeks 1-11), students will be assigned a problem set related to the topic discussed. Problem Sets will appear on Canvas in weekly modules and can be submitted via Canvas or in class by the beginning of the following class session. The lowest Problem Set score will be dropped.

**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 occur during class time.

**Field trips:** Students will participate in two Saturday (or other day if feasible) field trips. Field trips provide the opportunity to reinforce class lessons with real-world examples, get hands-on experience with field equipment, and collect data that will be used in subsequent class sessions.

**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 Project 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 and two days after the last session of class (April 30).

**Participation/attendance:** Students are expected to attend each three-hour class session, which will include lectures, discussions, in-class activities, and outdoor lab sessions. I value student perspectives, so I welcome input during class. Additional information about class attendance at UF can be found at: [https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx](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>
<td>2</td>
<td>1.67</td>
<td>1.33</td>
<td>1</td>
<td>0.67</td>
<td>0</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](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. I will also use it to post Problem Sets and supplemental materials. 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 Problem Sets and other course work be submitted in a timely manner. Problem Sets are due Tuesday at 5:00 pm Central time one week after they are assigned (unless otherwise indicated in Canvas). However, you may turn in assignments after the due date and still receive some credit. After the due date posted, late assignments will lose of 10% of their value for the first late day; 20% of their value the second third day; and 30% of their value (i.e., a maximum of 14 points) for the rest of the week after the due date. For the following week, Problem Sets will be worth 50% of their value (i.e., a maximum of 10 points); after that, late assignments will receive no credit. A full chart of possible points and time windows for each Problem Set appears in the Canvas webpage, under the heading “Download explanation of points for late assignments here.” Late assignments must be turned in via Canvas.

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/
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.

• University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575
  www.counseling.ufl.edu
    - Counseling Services Groups and Workshops
    - Outreach and Consultation
    - Self-Help Library
    - Wellness Coaching

• U Matter We Care, www.umatter.ufl.edu/

• Career Connections Center, First Floor JWRU, 392-1601, https://career.ufl.edu

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, https://disability.ufl.edu/

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://scrc.dso.ufl.edu/policies/student-honor-code-student-conduct-code/
Online Course: http://www.distance.ufl.edu/student-complaint-process