Soil and Water Sciences SWS 6932: Watersheds Processes and Management

Syllabus, Summer 2019

Description: This course presents an overview of relevant principles and theories related to the management of land and water resources, with special focus on relationships between the landscape and aquatic ecosystems. The course is divided into three units: Water Quantity, Water Quality, and Integrated watershed management. We will examine how changes in the landscape and streamflow affect ecosystems, and management frameworks designed to protect aquatic ecosystems. We will also examine the tools and methods that are used to create management measures and inform restoration guidelines. The course will rely heavily on case studies (especially in the Florida Panhandle) that illustrate how concepts presented in lectures are applied to real-world situations of watershed management. Conceptual models of human-environment interactions, relevant regulations, and policies are also reviewed.

Time and Location: Tuesdays, 1:00 – 5:00 PM
Summer C Session: May 14, 2018 to August 13, 2019
West Florida REC Milton Campus, Room 4822

Instructor: Matthew Deitch, PhD
Assistant Professor, UF Soil and Water Sciences Department
West Florida Research and Education Center
Building 4900, Room 4917
Telephone: 850 377 2592
Email: mdeitch@ufl.edu
Office hours: Mon 10-12; Fri 1-3

ALSO AVAILABLE ONLINE THROUGH UF LIBRARY

Course Objectives: Upon completion of this course, students will be able to:
1. Describe how frameworks such as conceptual models and adaptive management models are incorporated into watershed management.
2. Describe how ecological goals are incorporated into the management of water quality.
3. Describe how managers develop quantitative frameworks for improving water quality in streams.
4. Describe in detail how watershed dynamics are incorporated into the restoration of streams and lakes.
### Weekly topics (1PM – 5PM Tuesdays):

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14</td>
<td>Foundations 1: watersheds review; sustainability; ecosystem services; reading scientific papers and reports; insights on reports; contemporary topics in watersheds (Estuary Programs); primer on models</td>
<td>Conceptual models activity</td>
</tr>
<tr>
<td>2</td>
<td>May 21</td>
<td>Common-pool resources; adaptive management; frameworks; resilience; watershed management; primer on ecological experiments</td>
<td>Adaptive management frameworks; experiment design</td>
</tr>
<tr>
<td>3</td>
<td>May 28</td>
<td>No class</td>
<td>(none)</td>
</tr>
<tr>
<td>4</td>
<td>June 4</td>
<td>Watershed hydrology review; streamflow data and sources; how managers think about streamflow data; challenges and realities of collecting data (incl. models); water rights and policies in the U.S. and beyond</td>
<td>Water rights analysis</td>
</tr>
<tr>
<td>5</td>
<td>June 11</td>
<td>Water quality and water quality issues in the southeastern US; concept of pollutant loads</td>
<td>Pollutant study design</td>
</tr>
<tr>
<td>6</td>
<td>June 18</td>
<td>Urban watersheds; green versus gray infrastructure; stormwater design; models for managing water quality; where to find water quality data</td>
<td>Stormwater site design</td>
</tr>
<tr>
<td>7</td>
<td>June 25</td>
<td>No class</td>
<td>(none)</td>
</tr>
<tr>
<td>8</td>
<td>July 2</td>
<td>Geomorphology and watershed sediment dynamics; how we examine sediment in the environment; effects of sediment</td>
<td>Sediment study design</td>
</tr>
<tr>
<td>9</td>
<td>July 9</td>
<td>Alphabet soup: TMDLs, BMAPs, USEPA, FDEP, and water quality assessment through budgets / Agriculture and agricultural BMPs in the southeastern US</td>
<td>BMP implementation design</td>
</tr>
<tr>
<td>10</td>
<td>July 16</td>
<td>Restoration of rivers, lakes, wetlands, and estuaries</td>
<td>Stream restoration design project</td>
</tr>
<tr>
<td>11</td>
<td>July 23</td>
<td>Field trip: aquatic ecosystem restoration sites and urban stormwater sites</td>
<td>Final project: presentation Aug. 6, paper due Aug 12</td>
</tr>
<tr>
<td>12</td>
<td>July 30</td>
<td>Managing coastal ecosystems (sea level rise, living shorelines; managing for low-frequency events; SLAMM)</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Aug 6</td>
<td>Final class – class presentations</td>
<td></td>
</tr>
</tbody>
</table>

### 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 GatorRator. 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 GatorRator.
Student Evaluation Methods:
Student grades will be determined based on student performance in the following categories:

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly assignments</td>
<td>52%</td>
</tr>
<tr>
<td>Literature review</td>
<td>10%</td>
</tr>
<tr>
<td>Final project/presentation</td>
<td>28%</td>
</tr>
<tr>
<td>Field trip</td>
<td>5%</td>
</tr>
<tr>
<td>Participation/attendance</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Weekly assignments:** At the conclusion of each class session (weeks 1-10), students will be assigned an in-depth activity related to topics discussed during class. Students may work individually or in groups of two to accomplish the assignments. Additional materials necessary to complete each assignment will be available through a Module in the course Canvas page. Students should be prepared to discuss activity results at length during the following class session. Students are required to submit assignments via Canvas **by the beginning** of the following class.

**Literature review:** Students will conduct a review of scientific literature to identify quantitative models that could be used to inform their proposed adaptive management frameworks. Students will then discuss the data necessary to inform these models.

**Final project:** Students will work individually or in small groups to develop a Watershed Management Plan for a selected stream or estuary in northwest Florida County). The management plan will incorporate issues discussed in class, including conceptual models and adaptive management frameworks, data summaries, hypotheses, and future needs. Students will present a summary of their watershed management plan during the final session of class; it will be summarized in a report. Expectations regarding the components of the management project, presentation, and report will be shared via handout and discussed in class in Week 4. The final project report is due on August 12.

**Participation/attendance:** Students are expected to attend each four-hour class session. Students will also participate in one field trip, during class time. Field trips provide the opportunity to reinforce class lessons with real-world examples and collect data that will be used in subsequent class sessions. Additional information about class attendance at UF can be found at:

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

All excused absences from class or field trips must have prior approval from the instructor.

Grades will be scored as follows:

<table>
<thead>
<tr>
<th>Course grade</th>
<th>Letter grade</th>
<th>Grade point</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;93</td>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>90-92.99</td>
<td>A-</td>
<td>3.67</td>
</tr>
<tr>
<td>87-89.99</td>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>83-86.99</td>
<td>B</td>
<td>3</td>
</tr>
<tr>
<td>80-82.99</td>
<td>B-</td>
<td>2.67</td>
</tr>
<tr>
<td>77-79.99</td>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>73-76.99</td>
<td>C</td>
<td>2</td>
</tr>
<tr>
<td>70-72.99</td>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>67-69.99</td>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>63-66.99</td>
<td>D</td>
<td>1</td>
</tr>
<tr>
<td>60-62.99</td>
<td>D-</td>
<td>0.67</td>
</tr>
<tr>
<td>&lt;60</td>
<td>E</td>
<td>0</td>
</tr>
</tbody>
</table>

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/attendance.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 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 each day,
 according to a schedule provided in the course Canvas page and discussed on the first day of class.

Making up course quizzes, field trips, and projects
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 attend the course session on project 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

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://www.dso.ufl.edu/sccr/process/student-conduct-honor-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