FOREST WATER RESOURCES
FNR 4343C (3 credits)
Spring 2018

GENERAL COURSE OVERVIEW

This course explores the hydrologic cycle in forested ecosystems and watersheds with an emphasis on the impacts of forest management on that cycle. By midway through the semester students will be able to describe and construct a water budget for a forest and/or watershed, and explain how the various components of that budget are measured. Students will be able to describe how forests differ from other land uses with respect to their influence on regional hydrologic systems, and how these differences vary with forest management. An emphasis on the role of forests in watershed functions will help students highlight the services provided by forests, and understand their value to our aquatic ecosystems.

By the end of the semester, students will be familiar with various aspects of water quality and how forests and forest management affect them. Key processes such as erosion and sedimentation, eutrophication, anoxia, and auto-purification will be understood, as well as the context within which these processes are regulated by government. In particular, students will understand the role and mechanisms of phosphorus, nitrogen, and carbon enrichment on the dynamics in aquatic ecosystems, with an emphasis on Florida. Throughout our discussion of the implications of impaired water quality on lakes, wetlands, and streams will be addressing associated forest Best Management Practices (BMPs) that have been developed to reduce negative environmental consequences. Experts from forest industry, the Florida Forest Service, engineering/environmental science firms, state Water Management Districts and conservation organizations will help explore current issues in forest water resources.

HOURS AND LOCATION

Class Time: Mon./Wed. (9:35-10:25 a.m.)
Lab Time: Monday (2:00- 5:00 p.m.)
Location: Newins-Ziegler Hall 222

INSTRUCTOR

Dr. Matthew Cohen (Professor)
328 Newins-Ziegler Hall
mjc@ufl.edu
(352) 846-3490

Class Website – http://sfrc.ufl.edu/eco/hydrology/fwr.html

RECOMMENDED TEXT(S)


ADDITIONAL REFERENCE MATERIALS (available at course reserve in Marston Science Library)

- Principles of Forest Hydrology. 1982. J. Hewlett
- Water in Environmental Planning. 1978. T. Dunne et al.
PERFORMANCE EVALUATION

Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100-90</td>
</tr>
<tr>
<td>B+</td>
<td>89-86</td>
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<tr>
<td>B</td>
<td>85-80</td>
</tr>
<tr>
<td>C+</td>
<td>79-76</td>
</tr>
<tr>
<td>C</td>
<td>75-70</td>
</tr>
<tr>
<td>D+</td>
<td>69-66</td>
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<tr>
<td>D</td>
<td>65-60</td>
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<tr>
<td>E</td>
<td>&lt;60</td>
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Quizzes
Three (3) during the semester (unannounced) 9%

Tests and Assignments
Midterm 23%
Final Exam 23%
Term paper 15%

Lab Section Grades
5 laboratory reports (6% each) 30%

Notes:
- Class attendance is required. To ensure your participation, 3 unannounced quizzes will be given during the semester, each worth 3% of your grade.
- Your term paper is due Monday April 9th. An assignment outline is provided below; more detailed instructions for writing a term paper are provided at the class website. Penalty for a late term paper is one letter grade per day.
- The midterm will be during lab Monday March 19th. A take-home final exam will be available Monday April 30th and due via email by 5:00 pm Wednesday May 2nd.
- Lab attendance is required. Reports are due at the beginning of the following lab. Penalty for late labs is a letter grade per day. If you miss one lab (with prior notification), a replacement assignment will be provided at the discretion of the instructor. Additional absences are given a zero. Many labs will be in the field - dress appropriately. We will depart promptly from Newins Ziegler at 2 pm, and will return to campus before 5 pm for most of labs, but may run over on a couple of long distance labs. Plan accordingly! For labs scheduled for the classroom (see schedule), bring a laptop computer if at all possible.
- Graduate students enrolled in the course (FOR6934) will be expected to fulfill all of the undergraduate requirements in addition to delivering a more thorough and synthetic research paper (see below), and expanded lab reports.

TERM PAPER

Choose from among the listed topics in forestry and/or water resources. Start thinking about this early – an outline of your paper is due by the 29th of January. Select at least 5 peer-reviewed research journal articles (a list of potential sources is given below), and write a review article. Your objectives are to 1) understand the issues in greater detail than when you started, 2) identify knowledge gaps (what questions remain), 3) contrast the articles, and 4) present a well written summary.
**Topic Areas (choose one):**
1) Impacts of Forest Management on Water Supply
2) Wildfire and Forest Hydrology
3) Water Quality Impacts from Forestry
4) Logging Impacts in Wetlands

- The final paper is due **Friday April 9th (no exceptions)**. It should be 10 pages long (double-spaced). The class website has examples of effective term papers for your reference.
  - Graduate student papers are expected to be ~20 pages long on a topic relevant to their research. They are expected to provide a more thorough synthesis of current literature.

**Potential Sources of Water Resources articles**
Water Research
Journal of Hydrology
Journal of the American Water Resources Association
Water Resources Research
Hydrological Processes
Water Environment Research
Water Science and Technology

**Potential Sources of Additional Water Related Information**
UF’s Water Institute
Alachua County DEP
Florida Division of Forestry - General
  - Florida Division of Forestry – Forest Hydrology
  - Wetland Restoration on State Forests
  - Silviculture Best Management Practices
Water Management Districts - General
  - St. Johns River
  - Suwannee River
  - South Florida
  - Southwest Florida
  - Northwest Florida
Florida Department of Environmental Protection - General
  - Water Resources
  - Wetlands
US Environmental Protection Agency - General
  - Office of Water
  - Surf Your Watershed
US Geological Survey
Pacific Institute – The World’s Water
UNESCO Water Portal
**FOREST WATER RESOURCES COURSE SCHEDULE (SPRING 2018)**

<table>
<thead>
<tr>
<th>Week of…</th>
<th>Monday Lecture</th>
<th>Wednesday Lecture</th>
<th>Monday Lab</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-Jan</td>
<td>NO CLASS</td>
<td>Intro to Forest Water Resources</td>
<td>NO LAB</td>
<td></td>
</tr>
<tr>
<td>15-Jan</td>
<td>NO CLASS – MLK Day</td>
<td>The Hydrologic Cycle</td>
<td>NO LAB – MLK Day</td>
<td></td>
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<tr>
<td>22-Jan</td>
<td>Watersheds</td>
<td>Precipitation I</td>
<td>Optional Tutorial: Excel Skills</td>
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<tr>
<td>29-Jan</td>
<td>Precipitation II</td>
<td>Evapotranspiration I</td>
<td>Rainfall Lab (classroom)</td>
<td>Term Paper Outlines Due</td>
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<tr>
<td>5-Feb</td>
<td>Evapotranspiration II</td>
<td>Streamflow I</td>
<td>NO LAB</td>
<td>Rainfall Lab Report Due</td>
</tr>
<tr>
<td>12-Feb</td>
<td>Streamflow II</td>
<td>Streamflow III</td>
<td>ET Lab (classroom)</td>
<td></td>
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<tr>
<td>19-Feb</td>
<td>Groundwater I</td>
<td>Groundwater II</td>
<td>Streamflow Lab (ACMF)</td>
<td>ET Lab Report Due</td>
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<tr>
<td>26-Feb</td>
<td>Groundwater III</td>
<td>Soil Water I</td>
<td>Groundwater Lab (ACMF)</td>
<td>Streamflow Lab Due</td>
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<tr>
<td>5-Mar</td>
<td>SPRING BREAK</td>
<td>SPRING BREAK</td>
<td>SPRING BREAK</td>
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<tr>
<td>12-Mar</td>
<td>Soil Water II</td>
<td>Midterm Review</td>
<td>Hydrogeology Field Trip (Alachua Sink)</td>
<td>Groundwater Lab Report Due</td>
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<tr>
<td>19-Mar</td>
<td>Intro to Water Quality</td>
<td>Water Quality - Oxygen</td>
<td>MIDTERM EXAM</td>
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<tr>
<td>26-Mar</td>
<td>Water Quality – pH, Salt and Sediments</td>
<td>Water Quality – Nutrients</td>
<td>Stream Biology Lab (Hogtown Creek)</td>
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<td>2-Apr</td>
<td>Water Quality – Nutrients</td>
<td>Water Quality – Pesticides</td>
<td>Nutrient Budget Lab (classroom)</td>
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<tr>
<td>9-Apr</td>
<td>Water Regulations – MFLs</td>
<td>Water Regulations – TMDLs</td>
<td>Term Paper Due</td>
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<tr>
<td>23-Apr</td>
<td>Forestry and Ecosystem Services</td>
<td>Forestry and Ecosystem Services</td>
<td>NO LAB</td>
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<tr>
<td>30-Apr</td>
<td>FINAL EXAM – Take Home DUE Wednesday May 2nd by 5:00 PM</td>
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ADDITIONAL INFORMATION

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. Your instructor fully expects you to adhere to the academic honesty guidelines you signed when you were admitted to UF. As a result of completing the registration form at the University of Florida, every student has signed the following statement: “I understand the University of Florida expects students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University.” Furthermore, on work submitted for credit by UF students, 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 to be assumed all work will be completed independently unless the assignment is defined as group project, in writing by the professor. This policy will be vigorously upheld at all times in this course.

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 crisis or personal problems that interfere with their general wellbeing are encouraged to utilize the university’s counseling resources. Both the Counseling Center and Student Mental Health provide confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal or lacking clear career and academic goals, which interfere with their academic performance. The Counseling Center is located at 301 Peabody Hall (next to Criser Hall). Student Mental Health is located on the second floor of the Student Health Services in the Infirmary.

1. University Counseling Center, 301 Peabody Hall, 392-1575; personal and career counseling: www.counsel.ufl.edu
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling: www.hsc.ufl.edu/shcc/smhs.htm
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual assault counseling; and
4. Career Resource Center, Reitz Union, 392-1601, career assistance and counseling.

Students with Disabilities Act:
The Dean of Students Office coordinates the needed accommodations of students with disabilities. This includes the registration of disabilities, academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faulty-student disability related issues. Dean of Students Office, 202 Peabody Hall, 392-7066, www.dso.ufl.edu.