Syllabus

Wetlands Management and Restoration

WIS 4934 section 1630
WIS 6934 section 3B43
Room 219 Newins-Ziegler Hall
3 credits

Instructor: Dr. Peter Frederick, Department of Wildlife Ecology and Conservation
pfred@ufl.edu, Ofc 352-846-0565
Office: Building 87, next to Florida Cooperative Wildlife Research Unit
(knock on entrance door, someone will open it)

Office hours: Dr. Frederick T Period 8, TH Period 9. TA Diego Sanchez TBA

Class Time and location: Tuesday 219 Newins-Ziegler Hall 1:55 – 2:45pm
Thursdays periods 6-8 in 219 Newins-Ziegler Hall or field trips, 12:50 – 3:50 pm

Course Description

Wetlands ecology is an important and separate area of ecological inquiry because of the unique physical and biological attributes of wetlands. Management and restoration of wetland systems similarly requires a unique set of knowledge and skills to be effective. This course approaches wetland management through an overview of wetland ecology and an understanding of the linkages between community variation and both natural and anthropogenic stressors. We will cover identification of soils and biota, measurement and monitoring techniques, and management and restoration techniques using examples primarily from Florida and the southeastern US. Learning will be accomplished through a combination of class lectures, identification of biota, and hands-on field exercises and labs. Graduate students in the course will develop management, monitoring or restoration plans in conjunction with a wetland management NGO or agency. This course will prepare students for basic monitoring, field research, and management of wetlands.

Course Objectives:

By the end of this course, students will be able to:

Identify important plants, animals and biotic communities in southeastern wetlands
Identify wetland soil types and what they tell about wetland history

Understand components of hydrological budgets and how to measure them
Be familiar with standard wetland delineation techniques
Recommend appropriate sampling techniques for tracking spatial and temporal biotic parameters in wetlands
Recommend different wetland management and restoration techniques for specific goals.

Prerequisites or concurrency: SWS 4244, or other basic wetland ecology courses are recommended but not required.

Course requirements: Class attendance, field trip attendance, 7 lab practical quizzes, 5 lab practical exercises, and two written exams.

Course requirements for WIS 6934 that differ from WIS 4934: In addition to the regular course requirements above, graduate students enrolled in this class will also write a management and monitoring plan for a wetland in consultation with the manager.

Contributions to final grade for WIS 4934:

Participation and attendance:	10%
Lab quizzes	15%
Field trips and exercises	10%
Mid Term	30%
Final exam	35%
Total	100%

Contributions to final grade for WIS 6934:

Participation and attendance:	10%
Lab quizzes	5%
Field trips and exercises	5%
Mid Term	30%
Final exam	30%
Management/monitoring plan	20%
Total	100%

Grading: A (94% or greater), A- (90%-93%), B+ (87%-89%), B (84%-86%), B- (80%-83%), C+ (77%-79%), C (74%-76%), C- (70%-73%), D+ (67%-69%), D (64%-66%), D- (60%-63%), E (<60). See https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx for UF grading policy.

Course Materials and Readings.

This course is heavily based on identification and hands on field experience, which will be supplemented with readings, and a combination of field guides and online material. This course relies considerably on material presented in class and encountered in the field – **this is definitely not a class where you can miss classes and catchup by reading the materials on the Canvas site.**

Required Materials:

General: Anderson, J.T. and C.T. Davis (eds). 2014. Wetland Techniques, Volumes 2 – 3. Springer Science Press, Dortrecht. *Note this book is available free to UF students*, see the Canvas site (under Files>Reference Materials) for downloads. The two chapters (below) must be finished BEFORE the lectures that they pertain to. The goal is to supplement information from lectures and build general knowledge about commonly accepted techniques for monitoring and assessing wetland biota and condition.

Material in these chapters will be on Mid-term and Final exams, and we will discuss much of the reading and situations in which different methodologies are used, and the ability to name and identify what is generally involved in each technique. For example, I might ask an exam question about the situation in which a funnel net might be used to capture turtles, or the most likely method to sample amphibians emerging from a pond postbreeding. These readings will also build your knowledge for more synthetic questions that involve designing a monitoring study for a particular purpose, that involves multiple forms of biota and wetland response. These are also likely to be on the tests.

Reading schedule:

Date due	Assignment	Folder (Canvas>Files…)
August 22, field trip	Lightning Safety (be prepared to answer questions)	>Unit I>Wetland Plant ID lab
September 17, class	Chapter 7 in Wetland Wildlife Monitoring and Assessment (vol 2)	>Reference material>Wetland Techniques
September 17, class	Chapter 7 in Wetland Wildlife Monitoring and Assessment (vol 2)	>Reference material>Wetland Techniques
September 26, field trip	Methods section in the Florida Wetland Delineation Manual	>Unit II>Wetland classification and delineation lab
October 10, lab	Updated Wetland Plant Sampling Protocol	>Unit II > Wetland Plant quantification Lab

October 31, class	Chapter 2 in Management of Wetlands for Wildlife (vol 3)	>Reference material>Wetland Techniques
October 29, class	Chapter 2 in Management of Wetlands for Wildlife (vol 3)	>Reference material>Wetland Techniques
October 17, field trip	Payne's Prairie Sheetflow project pdf	
November 14, class	Kellogg paper (Kellog et al 2013) Mann and Powell paper (2007) Plus one other paper of your choice	>Unit III >Shellfish restoration
November 20, class	Chapter 2 in Management of Wetlands for Wildlife (vol 3)	Reference material>Wetland Techniques
November 19, class	Sklar paper (Sklar et al 2005) Smith paper (Smith et al 2011)	>Unit III>Everglades and Chesapeake

Bird identification: Sibley Field Guide to Birds –book or the eguide app (recommended). https://play.google.com/store/apps/details?id=com.coolideas.eproducts.sibleybirds&feature=search_result. Other field guides such as Audubon guides or National Geographic guides are also acceptable, but you will need to find a source for calls (which are in the app).

Wetland Soil identification: Field Indicators of Hydric Soils in the United States. A Guide for Identifying and Delineating Hydric Soils, Version 7.0, 2010. Available on the Canvas site under Files>Unit 1>Labs>Hydric Soils Lab materials.

Wetland Plant identification: Tobe, J. et al. 1998. *Florida Wetland Plants: an identification manual*. Florida Department of Environmental Protection and UF/IFAS Publications.The manual is no longer available in print, but the pdf is available on the Canvas site under Files>Unit 1>Labs>Wetland Plant Identification Lab. **Download to your phone or tablet ahead of the first lab**!

Frogs and toads identification:
Johnson, S. A. and M.E. McGarrity. Identification Guide to the Frogs of Florida. University of Florida. SP 468, available from from the University of Florida/The Institute of Food and Agricultural Sciences (UF/IFAS) Publications, P.O.Box 110011, Gainesville, Florida, 32611. The cost is $16.00 plus $7.00 shipping and handling. Note the book can be purchased without shipping and handling charge 9:00 – 5:00 pm at the IFAS bookstore, Building 440, 1371 Sabal Palm Drive on the UF campus (1-800-226-1764).

Frog calls: Use the Florida Frog Calls lookup
https://www.pwrc.usgs.gov/Frogquiz/index.cfm?fuseaction=main.lookup&CFID=6366850&CFTOKEN=288034ba03db9883-0B5283B7-D5D5-4EA0-BD3B20F30FA9B4A6

Wetlands Delineation: Florida Wetlands Delineation Manual: on the Canvas site Files>Unit II.Labs>Weltnad delineation lab materials.

Wetland habitat classification: Florida Natural Areas Inventory: below, or on the Canvas site Files>Unit I>Lectures>FNAI Wetland Communities.
http://fnai.org/naturalcommguide.cfm http://fnai.org/natcom_accounts.cfm

Other resources:

Wetland Plants:

Godfrey, R.K. and J.W.Wooten 1981. Aquatic and Wetland Plants of Southeastern United States: Vol. 1. Monocots, Vol 2. Dicotyledons. University of Georgia Press. This is the authoritative book for wetland flora complete with keys and detailed descriptions.

Tiner, R. 1993. Field guide to coastal wetland plants of the southeastern United States. U niversity of Massachusetts Press.

Aquatic and Wetland Plants in Florida – Plant management
http://plants.ifas.ufl.edu/manage/why-manage-plants/aquatic-and-wetland-plants-in-florida/

Links to information and research on frogs and toads:
http://ufwildlife.ifas.ufl.edu/frogs/links.shtml

Waterfowl Management: Baldassare G.A. and E. G. Bolen. 2006. Waterfowl ecology and management. Krieger Publishing. Second edition.

Attendance policy: Attendance is expected for all class sessions and factored into your overall course grade. Students who miss class for any reason assume complete responsibility for all information missed. **Absence is not an excuse for ignorance!** Further, absence is not an excuse for not submitting assignments on time. Also, arriving late to class without prior approval of the instructor will result in a deduction of participation points for that class period. *If you are going to miss class for any reason, it is a great idea to email the instructor!*

Late assignments: For all assignments not received by the instructor on the specified date (as noted on the syllabus or in class), points will be deducted from the student's total score for each day past the assignment due date.

Policy for missed assignments: For missed assignments without student-initiated communication to the instructor, the assignment will receive a grade of zero; exceptions may be made in cases of demonstrated, appropriate, and verifiable emergencies or tragedies or where the student has ***prior*** approval from or communicated in a timely manner with the instructor.

Technology: Cell phones should be turned to silent for the duration of the class period. If you are expecting a call during class that you must take, please notify the instructor prior to class and sit near the exit with your phone on vibrate to take the call in the hallway.

Cultural Accommodation: While I do my best to be cognizant of religious and cultural observations when creating our course syllabus, I may not always hit the mark. As you look through the course syllabus, if you have a religious or cultural observance conflict, contact me at the beginning of the semester and we will make appropriate arrangements.

Safe Space & Mutual Respect: My classroom and my office are safe spaces. What that means for you, as a student, is that while in class or in my office you have the right to express yourself freely and openly (and appropriately), and have me, your TA and your classmates respect your expression. In these safe spaces, mutual respect is expected; this means that both parties have respect for one another (note: this does not mean we always agree). In order to foster this environment conducive of learning and growth experiences, please join me in treating your classmates with respect.

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 are expected 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 https://evaluations.ufl.edu. 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. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results.

Academic Honesty: In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor 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.** On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."** Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office. *(Source: 2015-2016 Undergraduate Catalog)*
It is assumed all work will be completed independently unless the assignment is defined as a group project in writing by the instructor.

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/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.

Expectations for online usage – please see "Netiquette document) at http://teach.ufl.edu/syllabus-templates/

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. Both the Counseling Center and Student Mental Health Services provide 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 Counseling Center is located at 301 Peabody Hall (next to Criser Hall). Student Mental Health Services is located on the second floor of the Student Health Care Center in the Infirmary.

•University Counseling Center, 301 Peabody Hall, 392-1575, www.counsel.ufl.edu

•Career Resource Center, CR-100 JWRU, 392-1601, www.crc.ufl.edu/

•Student Mental Health Services, Rm. 245 Student Health Care Center, 392-1171, www.shcc.ufl.edu/smhs/

Alcohol and Substance Abuse Program (ASAP)

Attention Deficit Hyperactivity Disorder (ADHD)

Center for Sexual Assault / Abuse Recovery & Education (CARE)

Eating Disorders Program

Employee Assistance Program

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. 0001 Reid Hall, 392-8565, www.dso.ufl.edu/drc/

Student Complaints: see https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

Wetlands Management and Restoration

WIS 4934 section 1630
WIS 6934 section 3B4D
Lecture and Lab schedule Fall 2019

Unit I. Wetland ecology, communities, and indicators for management.

Week 1. Wetland Ecology basics and Wetland Plants
8/20/2019 Course introduction, wetland ecology overview
8/22/2019 Wetland Plants identification- (meet at NATL, see map at Canvas under Files>Reference Material)

Week 2. Hydric Soils
8/27/2019 Wetland ecology, Hydric Soils - Dr. Mark Clark
8/29/2019 Hydric soils identification lab – (Meet at NATL)

Week 3. Wetland Communities I
9/3/2019 FNAI community types I, typical and impaired
9/5/2019 **Soils and plants quiz**, FNAI Community types, Herp and fish id (NZ 219)

Week 4. Wetland Communities II
9/10/2019 **Wetland communities quiz,** Herps as indicators
9/12/2019 Wetland Community types field trip – (meet NZ breezeway)

Unit II. Monitoring Wetlands

Week 5. Herp and fish monitoring
9/17/2019 Herp and fish monitoring techniques
9/19/2019 Wetland fish and herp field monitoring exercise – (meet in NZ breezeway)

Week 6. Wetland Classification and Delineation
9/24/2019 **Fish and Herp ID quiz**, Wetland Classification and delineation
9/26/2019 Wetland delineation field exercise – (meet in NZ breezeway)

Week 7. Agriculture and wetlands
10/1/3018 **Test I**
10/3/2019 Agriculture and wetland management, Bird ID lab (NZ 219)

Week 8. Quantifying wetland vegetation

10/8/2019 **Wetland Delineation quiz.** Monitoring vegetation

10/10/2019 Field exercise- quantifying wetland vegetation – (meet at NATL)

Week 9. Aquatic birds and wetlands

10/15/2019 Avian monitoring techniques. **Wetland Vegetation exercise due**

10/17/2019 field trip to Sweetwater Wetlands Park (Meet in NZ breezeway)

Week 10. Measuring hydrology

10/22/2019 Monitoring wetland hydrology – Dr. David Kaplan

10/24/2019 Cedar Key and coastal areas (meet in NZ breezeway)

Unit III. Managing and restoring wetlands

Week 11. Wetland fire ecology, field logistics

10/29/2019 Wetland fire ecology

10/31/2019 Field safety & logistics (NZ 219)

Week 12. Hydrological management

11/5/2019 Managing Hydrology. **Reports from logistics exercise due**

11/7/2019 **Field Logistics quiz,** Waterfowl and wetland management (NZ 219)

Week 13. Mosquito management, wetland restoration

11/12/2019 Vector control

11/14/2019 Shellfish and Seagrass restoration, **Aquatic bird ID quiz** (NZ 219)

Week 14. Wetland restoration

11/19/2019 **Wetland hydrology quiz**. Chesapeake restoration

11/21/2019 Kissimmee and Everglades restoration, review (NZ 219)

Week 15. Graduate project presentations

11/26/2019 **Graduate Presentations**

11/28/2019 Thanksgiving Break, no class

Week 16. 12/3/2018 **Test II**