

Course info [tentative – subject to minor changes]**Dates:** May 20-June 28, 2019**Credits:** 3**Times:** MWF 6-7:30 pm (in-person, classroom), Sat. 9am-5pm (in-person, field trips)**Location:** Murie 105, IAB Greenhouse & field trips around Fairbanks**Prerequisites:** BIOL 115X and 116X

By petition, fulfills upper level major requirements: List C for Biology; vegetation class for Wildlife

Instructor info**Instructor: Dr. Mel Durrett**

I received my PhD from UAF in 2014, and I've been a professor in Memphis, TN and Lafayette, LA since then. I've taught many different classes for UAF, including Fundamentals of Biology (BIOL 116X) and this summer class. I'm an ecologist but I love plants the most; I researched plant/soil relationships for over 10 years in Wyoming, Alaska, and New Zealand. I'm a total sucker for willows and sedges. I'm currently the IAB Greenhouse manager.

Email: msdurrett@alaska.edu *best contact!**Office:** IAB Greenhouse (below museum)**Phone:** x5792**Office hours:** 12-1pm TR & anytime by appointment. I love to talk shop!**Course description**

This course, designed for students with a solid foundation in biology, provides a basic understanding of wetland ecology and natural history, as well as practical skills in wetland delineation and classification. Students will visit different wetland types in order to practice field-based skills, focusing on wetland hydrology, soils, and plants. We will pay particular attention to the collection and identification of plant specimens and their use as wetland indicators.

Course goals. This course will provide students with:

- Understanding of wetland indicators, focusing on wetland hydrology, soils, and plants, and the processes that influence them
- Field experience in the process of wetland delineation and classification
- Experience in plant collection and identification
- Exposure to many different types of Alaskan wetland, including those disturbed by human impacts and wetlands under restoration
- Understanding of the ecosystem services provided by wetlands and the need to restore wetlands when ecosystem services are compromised

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

- Determine a site's wetland status, applying field data on soils, vegetation, and hydrology, according to the Alaskan Regional Supplement to the Corps of Engineers Wetland Delineation Manual.
- Judge the extent of a particular wetland type in the field, and draw boundaries between wetland types and wetlands/uplands based on aerial photos and GIS data such as soil maps.
- Interpret regenerating vegetation communities or disagreements between wetland indicators as the product of a particular ecological disturbance.
- Classify wetlands and their plants and soils according to several of the most common classification systems.
- Assess the importance of ecosystem services provided by wetlands, explain how various disturbances can reduce a wetland's ability to provide these services, and suggest ways that function might be restored.

Course Structure

- **Class** (3x 1.5hr/wk): We will discuss ecosystem processes and identifying features of wetland hydrology, soils, and plants, as well as disturbance & restoration. Class will usually involve minimal lecturing with some kind of group activity, and the occasional quiz. We will also identify specimens collected in the field and classify the sites we have visited.
- **Field trips** (~7 hrs. Sat., plus a lunch break): We will practice wetland determination and collect plants from a variety of wetland types in the Fairbanks area. Both exams will be field-based, and you should use these opportunities to work on class projects as well.

Course Materials

Texts to purchase –Required.

Johnson, D., Kershaw, L., MacKinnon, A., Pojar, J. 2009. **Plants of the Western Forest: Alaska to Minnesota Boreal & Aspen Parkland**. Lone Pine Publishing: Edmonton, Alberta. 392pp. *This is a decent plant field guide with photos. If you have another one that's appropriate, you may bring it instead.*

Texts to download –Required, BUT please, don't print them unless you need to!

They're very long—read on your screen-of-choice if at all possible.

Several hard copies will be available for use in class.

- Wetlands Regulatory Assistance Program. 2007. **Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0)**. ERDC/ EL TR-07-24. Available online: http://www.usace.army.mil/cecw/pages/reg_supp.aspx
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. **Classification of Wetlands and Deepwater Habitats of the United States**. U.S. Fish & Wildlife Service. FWS/OBS-79/31. 103pp. Available online: http://www.charttiff.com/WetlandMaps/WL_Cowardin.html
- Viereck, L.A.; Dyrness, C.T.; Batten, A.R.; Wenzlick, K.J. 1992. **The Alaska vegetation classification**. Gen. Tech. Rep. PNW-GTR-286. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 278 p. Available online: http://www.fs.fed.us/pnw/publications/pnw_gtr286/

Texts we'll use in class only –NOT required. I will supply hard copies in class.

- Hulten, E. 1968. **Flora of Alaska and Neighboring Territories**. Stanford UP: Stanford, CA.
- Cody, W. J. 2000. **Flora of the Yukon Territory, 2nd Edition**. NRC-CNRC: Ottawa.
- Tande, G. and R. Lipkin. 2003. **Wetland Sedges of Alaska**. Alaska Natural Heritage Program, Environment and Natural Resources Institute, University of Alaska Anchorage.
- Collet, D.M. 2004. **Willows of Interior Alaska**. US Fish and Wildlife Service.
- Reed, Jr., Porter B. 1988. **National List of Plant Species That Occur in Wetlands: National Summary**. U.S. Fish & Wildlife Service. Biol. Rep. 88 (24). 244 pp. *I will hand out a filtered version with only the species present in Alaska. You may need to laminate the pages—it will get a lot of use.*
- Wetland Training Institute, Inc. 1995. **Field Guide for Wetland Delineation**. 1987 Corps of Engineers Manual, Glenwood, NM. WTI 02-1, 143 pp. *(small orange book for reference)*

Other Things to Bring on Field Trips

Required

- Tall rubber boots (XtraTufs work great, but you can find cheaper ones)
- Bug spray & sunblock
- Personal survival kit kept with you at all times
- Pencils with erasers (no pens in the field!)
- Waterproof bag or case for all personal electronics

Optional: Personal GPS, video camera, binoculars, additional field guides, drybag, snacks

Course policies

Students with Disabilities

The Office of Disability Services implements the Americans with Disabilities Act, ensuring that all UAF students have equal access to campus and course materials. (The ODS is located in 208 Whittaker; phone 474-5655). ***This course involves an important field component***, and all students must be capable of carrying 10-20 lbs. while hiking 1-2 miles across uneven terrain to complete the course requirements. If you require special accommodations of any kind, please see me as soon as possible at the beginning of the course. Some special accommodations require a letter from ODS.

Attendance & Participation Policy

- All communication pertaining to absences should happen by **email**. This gives us both 1) a record of the conversation and 2) a timestamp.
- **Two types of absences deserve make-up work:**
 1. **Excused:** means you have contacted me *at least a day before* the absence by email.
 2. **Emergencies.** I'll work with you if you provide a good reason for your absence, preferably with documentation. I prefer that you contact me immediately, rather than the following class period. Email is best.
- **Make up work.**
 - Work must be made up within 2 class meetings of the absence, or the absence will be treated as unexcused and you will lose the opportunity to make up work.
 - If an activity cannot be readily re-created for you, I will decide how to address this, which may mean "alternative" assignments.
 - If you miss a field trip, you will be expected to make it up at an alternative site (okayed by me) if necessary. You must fully document your field trip, providing data sheets, photos, plant collections, etc. For safety, please don't go alone.
- **Unexcused absences—you will NOT be allowed to make up the work. It earns a zero.**
 - 4 unexcused absences = an automatic F in the course. You simply cannot learn the necessary concepts and skills to pass if you miss 1/6th of the class.

Academic Honesty

- I expect you to follow the UAF Student Code of Conduct.
http://www.uaf.edu/catalog/current/academics/regs3.html#Student_Conduct
- **You must always accurately represent what work you did, and what ideas were someone else's.** Collaboration with other students and sharing of ideas is *expected* in this class. Some projects require lots of creative input. If someone has significantly assisted you, you should acknowledge his or her assistance in writing. Be specific, e.g., "C. Mulder helped collect soil moisture data." Group work must always include a written list of who did what.
- **Plagiarism:** All assignments (e.g. quizzes, projects) must be your own ideas, presented in your own words.
- **Falsification or "manufacturing" of data** is dishonest, undermines the scientific method, and undermines the learning process. *It is grounds for an automatic F in this course.*

Student protections and services statement

Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: www.uaf.edu/handbook/

Assessments

Homework and in-class group activities (1-2 per week)

Low-risk, learning-centered activities turned in during class. For in-class activities, I anticipate giving full points to all groups that participate fully. The success of these activities will greatly depend upon whether members of your group have done the required reading. I may also assign a small task outside of class as homework, to be turned in during the following class. 10 pts. each = 70 pts. total.

Wednesday Quizzes (3)

Multiple choice and short answer questions, ~20 minutes, testing your retention of previous topics and comprehension of required reading. We will discuss them immediately afterwards to clear up misconceptions before we move on. 25 pts. each = 75 pts. total.

Exams (2)

Field-based exams covering wetland determination field skills and understanding of principles. Grades will be based on your performance of particular assigned tasks—for instance, you may be asked to texture out a soil or identify several common plants. The grading rubric will be provided at least one day ahead. 100 pts. each = 200 pts. total.

Projects (3)—*Further details & grading rubrics will be provided for each.*

Our Saturday field trips will allow you to collect most of the material you need! You will have to spend some time outside of class organizing, keying, etc., but this shouldn't be excessive if you have used your field trips wisely.

1. **Soil Key:** a flow chart, checklist, table, or dichotomous key for use in the field during wetland determination (25 pts. for draft & 25 pts. for final key). 50 pts.
2. **Individual Wetland Study** testing a simple hypothesis about wetland plants, soil and/or hydrology (wildlife could also be included, so long as you relate them directly to plants/soil/hydrology). 100 pts.
 - a. You have a lot of options, but start thinking about it early. I will need to approve your study & hypothesis in advance.
 - b. You will collect data on one field trip or several (or on your own), analyze it, and present your results to the class.
3. **Plant collection** consisting of multiple plant species from each wetland indicator status, correctly identified, annotated and preserved (but not mounted). 250 pts.

Participation / Extra credit

My assessment of your contribution to class. A perfect score reflects...

- Perfect attendance / all absences excused and all work made up,
- Excellent preparedness as evidenced by answering my questions correctly in class and posing informed questions of your own, and
- Active contribution to all group activities.

Also, this 3.8% "cushion" also allows me to assign extra credit activities for deserving students, or to reward those who turn in an especially great project. 30 pts. total.

Total Course points = 70 activ.+ 75 qu.+ 200 ex.+ 400 proj.+ 30 particip.= 775 pts. total

Grading

- All late assignments/ assessments lose 10% per day.
- Make up work (if allowed) must be turned in within 2 class meetings of the absence or it will not be graded. Any exceptions require exceptional circumstances and communication with me, by email.
- I will provide rubrics to communicate my expectations for exams and projects. Use these as a resource to pre-grade yourself. My goal is for you to always know what to expect and to be able to get the grade that you deserve.
- Final course grades are based on your total percentage of points in the course:
90%=A; 80%=B; 70%=C; 60%=D; <60%=F.

Resources

- **Plant Collections.** Ask me if you want to use these, and I can get you access.
 - **Herbarium** (in the basement of the museum). Plants identified to species by experts, and many more plant keys than in the classroom.
 - **Teaching Collection - Botany.** Plants (mostly unmounted) identified to various taxonomic levels, not organized to the same level of detail as the Herbarium.
- **Rasmuson Library** (Main Campus). Computers and other audiovisual equipment available for checkout, and there's a whole room on Alaska and polar regions.

What this course doesn't cover

- **Jurisdiction.** This is not a law, policy, or management course. We will decide what areas are wetlands, and what kind of wetlands they are. We will not discuss the process of deciding who is in charge of, or what can happen to, or what laws apply to, any particular wetland. That subject requires a whole training course in itself.
- **Wildlife.** We will discuss wetlands in terms of habitat for wildlife, but this course is not about animals, their ecology or their populations. We won't spend a lot of time on moose or ducks. Not because I don't like them, but just because there isn't time!
- **Certification.** I do not represent any certificate-granting training agency. I can teach you skills and explain the science behind them, but if you become a wetland professional, you will eventually need further training. I *can*, however, provide a job recommendation once the course is over. Former students have used me as a reference and have been hired as wetland technicians. Some have even become career wetland professionals.

Course Schedule

Wk.	Mon.	Wed.	Fri.	Sat. Field Trip
1 (35)	5/20 Intro to Wetlands	5/22 Hydric veg. indicators <i>Plant indic. (10)</i>	5/24 Hydric soil indicators	5/25 Black & white spruce Focus: datasheets Soil key due-D (25)
2 (70)	5/27 Hydrology indicators Soil key due-F (25)	5/29 Quiz 1 (25) Intro to Plant ID	5/31 Willows & sedges Plant list (10)	6/1 Rivers & floodplains Collect inverts <i>Determ. (10)</i>
3 (135)	6/3 Invertebrates	6/5 Quiz 2 (25) Viereck classif.	6/7 Maps & boundaries <i>Map activity (10)</i>	6/8 Ponds & meadows Collect plants Field Exam 1 (100)
4 (110)	6/10 Redox & CEC	6/12 C & N cycling	6/14 Permafrost & peat accum. Article (10)	6/15 Peatlands Indiv. Study due, present results (100)
5 (145)	6/17 Cowardin classif. <i>Classif. activ. (10)</i>	6/19 Quiz 3 (25) Wetland assessmt.	6/21 Ecosystem svcs Report (10)	6/22 Functional assessment Field Exam 2 (100)
6 (250)	6/24 Disturbance	6/26 Wetland mitig. & restoration Plant coll. due (250)	6/28 Wetland/upland mosaics	6/29 [Optional] Restoration project

Total Course points = 70 activ.+ 75 qu.+ 200 ex.+ 400 proj.+ 30 particip.= 775 pts. total

Bold= prepare before class