Course Syllabus
Ecological Background for Resilience and Adaptation (Fall 2016)

Course Number: NRM 616 / BIOL 616
Class time: Tu. & Th. 9:45 – 11:15 am
Module dates: 8/30/2016 - 9/29/2016
Room: Murie 230

Instructor: Katie Villano Spellman, PhD
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Office hours: Directly following class or by appointment
Office location: Akasofu 207

Learning Goals of the Course:
• Develop an understanding of the basics of ecology concepts and methodologies.
• Learn to "speak" ecology and effectively communicate with ecologists.
• Address ecological concepts that will help RAP students with their interdisciplinary research.

Background: RAP provides training to help students with diverse academic backgrounds to communicate across disciplines and address complicated research problems that often require an integrated approach. The ecology module will be designed to foster this process. More specifically, this course will help students without advanced education in ecology to focus their learning on key ecological concepts that may accelerate their capacity to communicate and collaborate with ecologists. For students in with an ecology background, this will be an opportunity to "fine-tune" their understanding of concepts used during their research. Also, this will be an opportunity for ecology students to help their peers, with hopes that the favor will be reciprocated during other modules and throughout their RAP career.

Tasks and grading:

1. Assigned readings, participation, and discussion (50% of grade): Students will be expected to complete assigned readings and actively participate in discussions. Also, each student will be required to lead the discussion of one of the assigned readings during a portion of one class. The student will "break down" the paper to lead discussion on the core concepts, methodologies, and key findings presented in the paper. The presenter will have 30 minutes to present the paper and guide group discussion.

3. Learning Assessment (20% of grade): We will use pre- and post-course concept maps to assess the change in understanding of the concepts covered in this course. Grades for this assessment activity will be assigned using a standardized evaluation rubric to quantify pre-to post- changes in the concept maps, as well as a two page self-reflection on student learning using the concept maps to identify strong and weak learning areas during the course.

4. Field Excursion (25% of grade): Saturday, Sept. 24. In place of two of the regular class periods, we will make a field excursion to Bonanza Creek Long Term Ecological research area in the Caribou-Poker Creeks Research Watershed to explore concepts of spatial and temporal dynamics in ecosystems in a setting where these are dynamically on display. We will get our hands dirty

conducting a field study on post-fire successional trajectories. **Meet at 9:30 am in the parking lot between the Arctic Health Bldg and the museum.**

5. Brainstorm Session (5% of grade): We will use the concepts covered in prior classes during the course to brainstorm ways to fine tune the natural science aspects of the research being conducted by each student enrolled in the course. This will be an opportunity for students to:1) identify an ecological topic that they will need to address during their research, and/or 2) collect feedback from others on effective ways to incorporate an ecological component into their own research. Prior to the brainstorm session on September 29, students will send the instructor a brief email addressing the following topics:

1. Describe the natural sciences component of your research. What are the key concepts and methodologies?
2. Identify the different disciplines that you will need to become familiar with to complete the natural science component of your research.
3. Identify some UAF faculty or local experts who may provide key insights to help you develop the natural science aspects of your research.
4. How can we help? What areas could you use some help thinking about in the natural science component of your research?

Grading Scheme: >90 = A; 80-89 = B; 70-79 = C; 60-69 = D; <60 = F

Online Course Material Access: UAF Blackboard system will have required articles posted

Disabilities Services: The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. Students and the instructor of this course may work with the Office of Disabilities Services to provide reasonable accommodation to students with disabilities.

Course Outline:

Date	Topic	Assignment Due (Student presenting paper in parentheses)
Aug. 30 (Tues)	• Course pre-assessment concept mapping • Approve Syllabus • Introductions and identifying natural science components of each student's research • History and Dimensions of Ecology	• N/A
Sept. 1 (Thurs)	• Scientific method, quantitative research, and communicating with ecologists	Readings: • Norton 1998 (Allen), • Pace et al. 2010 (Lindsey)
Sept. 6 (Tues)	• No class (to make up for field day)	
Sept. 8 (Thurs)	• No class (to make up for field day)	
Sept. 13 (Tues)	• Fundamental Concepts: Ecosystem ecology and the carbon story	Readings: • Shetler et al. 2008 (Kendall)
Sept. 15 (Thurs)	• Fundamental Concepts: Community ecology and biodiversity • Ecological foundations of resilience theory	Readings: • McCann 2000 (Helen), Chapin et al. 2000 (Odin)
Sept. 20 (Tues)	• Fundamental Concepts: Population ecology and trophic dynamics	Reading: • Stewart and Konar 2012 (Yoko)
Sept. 22 (Thurs)	• Fundamental Concepts: Disturbance and temporal dynamics • Prep for field study	Reading: • Johnstone et al. 2010 (Tessa)
Sept. 24 **(SATURDAY)**	• Field Excursion to Caribou Poker Creeks Research Watershed LTER site (Meet at 9:30 am) • Citizen science field study on succession, permafrost, and ecosystem services	
Sept. 27 (Tues)	• Data analysis and synthesis from field study • Brainstorm session on student natural science component of student research-questions, methods, and networking	• Bring your laptop to class with your field data entered into an excel spreadsheet • Brainstorm Session Email sent to Katie prior to the day before class with answers to the questions detailed above
Sept. 29 (Tues)	• Finish brainstorm session • Post-assessment concept mapping and self-reflection • Course evaluations	