Course Title: Adaptive Management (and Integrated Assessment)
Semester and year: Spring 2007
Course Number: NRM 694/BIOL 694/ECON 694/ANTH 694
Class time: Tu. Th. 9:45 – 11:15
Room: 165 Natural Science Building
Web page: See Blackboard site

Course Instructors:

<table>
<thead>
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<th>e-mail</th>
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Prerequisites: (A) Participation in the Resilience and Adaptation Program in good standing, or (B) approval of instructional team based on potential to function effectively in a graduate-level interdisciplinary environment.

Goals of the Course:

- Provide foundational understanding in the theory of adaptive management, co-management, and integrated assessment.
- Review case studies of adaptive management, co-management, and integrated assessment to understand the opportunities and limitations of these approaches.
- Explore methods for operationalizing the ideas of resilience thinking in adaptive co-management and integrated assessment.
- Undertake and complete an integrated assessment in cooperation with local decision makers.
- Develop the skills of working as an interdisciplinary research and assessment team.

Background: Today’s conditions of rapid directional change challenge society to sustain its desirable features while at the same time maintaining its adaptability. Methods for resilience-based resource governance are needed that view the environment as coupled social-ecological systems, and integrate knowledge production, scenario analysis, and policy making.

Meeting this challenge is far from simple. Today the outcomes of contemporary issues related to sustainability are determined by the complex political maneuvering actors with differing societal goals and values. These interactions occur in an environment of contested legal mandates, changing resource production capabilities, uncertain social-
ecological conditions, and differing perspectives on risk. Because of the controversial nature of many decisions and the complexity of social-ecological systems, many foundational areas must be integrated if decisions are to contribute to resilience.

**Adaptive management** (AM) is a management approach or framework for dealing with uncertainty and complexity in social-ecological systems. It has been called management based on the science of learning by doing. **Integrated assessment** (IA) is the process of drawing on interdisciplinary perspectives to inform the policy process. **Co-management** is the sharing of power between resource users and management agencies in the functions of resource management, and **adaptive co-management** (ACM) integrates all these ideas to represent a cross-scale process of social learning. How then do we realize the goals of ACM? We suggest that in an ideal system, ACM is implemented through governance that clearly articulates management goals and objectives, constructs and uses integrated models, conducts scenario analysis, and compares the outcomes of past decisions to previously predicted conditions.

Although these idealized objectives are commonly discussed in the literature, there is a shortfall in their implementation. Moreover, the implementation of these ideas is not well documented or understood in practice. This situation gives our class a unique opportunity to be critical and creative, to make new discoveries, and to push the current thinking in this field forward.

**Topics:**
- Working in groups
- Resource governance in conditions of change
- Ideals and realities of adaptive management
- Integrated assessment 101
- Planning and land-use management in the FNSB
- Managing uncertainty in adaptive management
- Systems thinking - mapping a problem
- Simulation modeling
- The policy-science interface
- Scenario analysis
- Decision support tools
- Integrating qualitative and quantitative data and analysis
- Project planning
- Valuing and modeling ecosystem services
- Spatial analysis
- Data management
- Scaling

**Format of the course**
The course will be organized around two basic activities. 1) The class will conduct a review of key topics related to AM, IA, co-management, and ACM through readings, lectures, discussions, student presentations, and assignments. 2) The class will work as a team to develop and complete its own integrated assessment working with local decision makers to inform policies and planning. We anticipate that the experiential approach of the course will demand a tremendous amount of work, including regular class activities as well as field work and project involvement. We expect students to delve deeply into the literature of AM and IA, while also working as an interdisciplinary
research team in and outside of class. The class project will culminate with one or more public presentations about our integrated assessment to members of the UAF and Fairbanks communities.

**Experimental Disclosure:** This is the first time we have attempted to teach the course with an experiential component, and therefore, we expect the unexpected. Enroll in the class knowing that much of the work of the project will be student driven and that there are likely to be frustrations and disappointments. If you are looking for a well-tuned class with step-by-step learning, this is not the one for you.

**How to review case studies?** As a part of the course we will be reviewing case studies of different approaches to adaptive management and integrated assessment. The case study method is well recognized in research and education for helping to provide lessons about the strengths and weaknesses of different approaches. When completing your case studies, here are some questions to consider:

- What happened? – know the facts
- Functional or dysfunctional, and why?
- What were the areas of conflict and the underlying interests?
- Why were they happening? (Multi-causality rules.)
- How does the case illustrate or question the aspect of adaptive co-management of interest?
- What needs to change?
- How does one change it?

**Grading Policy:**

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<tr>
<td>7%</td>
<td>Four reflection papers / mini assignments</td>
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<td>6%</td>
<td>Mini case study presentations</td>
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<td>10%</td>
<td>Mid-term</td>
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<tr>
<td>15%</td>
<td>Class attendance, preparation, and participation</td>
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<tr>
<td>45%</td>
<td>Contribution to the Group Project</td>
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<tr>
<td>17%</td>
<td>Final paper</td>
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**Four reflection papers / mini assignments** – Reflection papers will be assigned during the course to allow students to respond individually to case study presentations and class discussions. Reflection papers should be 3 to 5 pages in length, single spaced.

**Mini case study presentations** – Student teams (to be designated) will develop and present cases studies on specific examples of resource management. Case studies should be well researched with material (not just web-based references) and focus on the assigned topic area. Power points and notes used in the presentation of the case study are submitted to instructors for grading.

**Mid-term** – The mid-term exam will cover all readings, lectures, discussions, and cases of the class completed by the date of the test. Students are expected to work individually and not discuss any aspects of the test during the exam period. The mid-term will be a take-home exam due by March 10th at 12 AM.

**Class attendance, preparation, and participation** – You are expected to attend all classes. If you anticipate having to miss specific classes, please tell the instructors at the beginning of the semester or as soon as is possible.

**Contribution to the Group Project** – Students will work in teams to develop specific components of the class project. Each student may be assigned membership in more...
than one group. Subgroups will have team leaders who will be responsible for facilitating group activities and meeting deadlines. The success of the project depends on all members’ full contribution. Student contributions will be assessed both by instructors and class members. Criteria for student contributions include – quality of progress reports, quality of deliverables, creativity, depth of analysis, resourcefulness, and cooperation and teamwork. More details on what is expected will follow.

**Final paper** – Students will work in small teams to produce a report about their subgroups’ contribution to the IA. All students will collaborate with instructors to produce a summary report about the IA. Each of these papers should provide the basis for an article that can later be published in peer-reviewed journal.

**Ideas for the Group Project**
The decision of our focus in the integrated assessment should be student driven, with appropriate input from instructors. There are many opportunities in Alaska for this work. Whatever the choice, our IA should integrate social and natural dimensions, consider possible futures, make use of qualitative and quantitative data, and attempt to inform decision makers. Here are just a few project ideas to consider:

- How will growth and climate change in the Fairbanks North Star Borough affect its resilience?
- What is the future of remote Alaskan villages in the face of oil development and increasing energy costs?
- What are the prospects for sustainable development in the case of the Pebble Creek Mine proposal?
- How can the community of Ester maintain its cultural qualities while at the same time developing to take advantage of economic opportunities?
- Your ideas???

Remember that our project needs to be well defined and our project problem bounded.

**Course Policies/Expectations:**

- This is a small class that depends on your full participation; avoid missing classes. If you know ahead of time that you will not be attending, let the instructors know.
- Good participation means leaving time and space for encouraging ALL students to talk and share ideas.
- We will share many different perspectives. Make your points respectfully, while listening openly to the ideas of others. Seek ways beyond the dialectics of thesis - antithesis.
- You are expected to come to class having read assigned material. Come to class with one or two general questions about that material (or for the guest if we happen to have one).
- Assignments that are turned in late will be penalized.
- Use of internet and the writing of email messages during class are not permitted.
- 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. State that you will work with the Office of Disabilities Services (203 WHIT, 474-7043) and I will work with this office to provide reasonable accommodation to students with disabilities.
- You are expected to do your own work in accordance with the UAF Student Code of Conduct ([http://www.uaf.edu/catalog/current/academics/regs3.html](http://www.uaf.edu/catalog/current/academics/regs3.html)). Cheating
and plagiarism are very serious offenses, and will not be tolerated. Any exam or paper that contains plagiarized material will receive a grade of zero. Be sure you understand what constitutes plagiarism and cheating (see below for help on this). Any student who turns in a paper not written by him/herself (such as purchased from a company or downloaded from the Internet) will flunk the entire course. Rasmuson Library has prepared materials to help you understand how to cite sources properly. There are links to these on our Blackboard site. For an explanation of what constitutes plagiarism see:

http://www.uaf.edu/library/instruction/handouts/Plagiarism.html

For an explanation of how to properly cite sources see:

http://www.uaf.edu/library/instruction/handouts/Citing.html

This course is a work in progress; we all work together on change, and the syllabus is subject to change at the discretion of the instructors