Syllabus
Adaptive Management 2005
(Spring Semester)

Course Title: Adaptive Management
Course Number: NRM 694/ BIOL694/ ECON 694/ ANTH 694
Class time: Tu. Th. 9:45 – 11:15
Room: 208 Irving 1
Web page: See Blackboard

Course Co-Instructors

<table>
<thead>
<tr>
<th>Name</th>
<th>Department affiliation</th>
<th>Phone numbers</th>
<th>Office</th>
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<tr>
<td>Gary Kofinas</td>
<td>Resources Management/SNRAS and Institute of Arctic Biology</td>
<td>O: 474-7078, H: 457-5725</td>
<td>Arctic Health 212</td>
<td><a href="mailto:gary.kofinas@uaf.edu">gary.kofinas@uaf.edu</a></td>
</tr>
<tr>
<td>Terry Chapin</td>
<td>Biology and Wildlife and Institute of Arctic Biology</td>
<td>O: 474-7922, H: 455-6408</td>
<td>Arctic 195</td>
<td><a href="mailto:terry.chapin@uaf.edu">terry.chapin@uaf.edu</a></td>
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Prerequisites: (A) Participation in Resilience and Adaptation Program with good standing, or (B) approval of instructional team based on potential to function effectively in a graduate-level interdisciplinary environment.

Selected Readings from:

Electronic course reader will be posted at the beginning of class

The Focus of the Course:
This course is an exploration of the theoretical and practical considerations of adaptive management as related to achieving sustainable social, economic, and ecological systems. We survey a broad set of conceptual foundations for societal and professional-level decision-making, using the case-study method in our analysis.
Background: The outcome of contemporary issues related to sustainability is determined by the interaction of multiple user and societal goals and values, legal mandates, resource production capabilities, impacts to and condition of ecosystems, cultural perspectives on risk, and direct and indirect costs and benefits. In many situations, a decision must be made. Even the inability to select and implement a particular decision amounts to a default decision to accept certain consequences. Because of the controversial nature of decisions and the complexity of the system (ever changing and integrating complex social and biological elements), inputs from many foundational areas must be integrated if decisions are to be efficient and to gain a minimal level of acceptance that will allow for implementation. A system's capacity to adapt to change in ways that account for these problems is critical to its sustainability.

Adaptive management is an approach or framework developed for dealing with decision making in complex systems. Ideally, adaptive management strives towards intentional learning by comparing the outcomes of past decisions to previously predicted outcomes or goals and desires, followed by systematic analysis of that experience in order to improve current and future decision making. The adaptive management approach attempts to develop a holistic appreciation of the inherent dynamics of ecosystems, changing markets, and evolving public conceptions and values. Consequently, adaptive management suggests a need to apply the principles of scientific experimentation, while focusing on institutional drivers of decision making, culture and history, underlying management assumptions, and the practical implications of uncertainty. Adaptive management also requires the consideration at several scales of space and time to address problems in a comprehensive manner. Given these objectives, when and how do systems adapt to change? What are the impediments to adaptation of system and for achieving the ideals of adaptive management? What are the conditions in which players are successful?

Curriculum / Schedule of Topics
This course has two concurrent objectives:
1) the provide a foundation on theoretical and applied aspects of Adaptive Management and
2) develop skills in conducting single and comparative case study research.

The presentation of basic principles and theory of adaptive management is interspersed with meetings with decision makers who provide first-person accounts of management situations in action. Students work as individuals and in small teams to undertake in depth case studies with relevance to adaptive management. Collectively, the class builds a portfolio of case studies that are used in a final overview analysis. Topics to be addressed include:

- History, paradigms, cultures of resource and environmental management.
- Diagnostic tools for single and multiple case study analysis
- Elements of successful Adaptive Management systems
- Perspectives on knowledge from philosophy of science
- Problems and opportunities in integrating local knowledge and science in management
- Method of accounting for uncertainty in decision making
- Management as experimental process

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- Organizational and institutional dimensions of adaptive management
- Processes of Social learning
- Collective Action and Collaboration Theory
- Self-organizing and self regulating systems
- Alternatives to Cost/Benefit Analysis
- Environmental Impact Assessment
- The interface of science and politics in adaptive management
- Public participation in public decision making
- Ecological monitoring for Adaptive Management
- Intro to the use of models in the management of dynamic systems
- Chaos Theory, reductionism, and emergence

Examples of cases we hope to include in our study of adaptive management and sustainability decision making.

- Northwest Forest Old Growth and the spotted owl
- Columbia River restoration programs
- Learning sobriety in small indigenous communities
- The interagency North Slope Alaska Science initiative
- NEPA and adaptation of environmental legislation
- British Petroleum initiatives for adaptive management of Prudhoe Bay
- The Challenger and Columbia accidents
- The North Pacific Fisheries Management Council
- Co-Management of North American caribou herds
- Everglades Ecosystem Management Process
- Mega and micro-scale development projects in the Third World

The Individual Case Study
Apply adaptive management thinking / approach to your own thesis research – For example: How do these principles apply? Do they? What would you need to happen for the system to be more adaptively managed? Select one dimension of AM and study it as related to your own research project.

Group Case Studies Research:
Case study research represents an important part of our course curriculum. Students will work as individuals and in teams to identify and undertake an in-depth case study analysis that focuses on the adaptive and or maladaptive qualities of a decision making. Teams will be selected by instructors and will be heterogeneous (i.e. interdisciplinary) in composition. Case study analyses will be undertaken in the following steps:
1. **Identification of the case study:** Each team is to conduct background research and identify an appropriate case study, worthy of research. The criteria for case selection should include:
   - Merit of the case study to illustrate adaptive or maladaptive aspects of decision making.
   - Availability of resources (documentation and resource people) to provide necessary background information for the research.
   - Appropriateness of focus and scope to make the analysis manageable.
Once the case is selected, each team is to write a two to three page proposal justifying the selection of a topic and indicating the group’s proposed division of labor. The team
will also outline criteria it will use to evaluate individual team members' performance. Each team prospectus needs to be approved by the course instructors. Each team will be assigned a faculty advisor, with other course instructors serving as support to meet the needs of the group.

2. **Overview Brief:** After an initial review of case study resources, each team will present a briefing on facts of the case and what it identifies as relevant problem areas. Briefs will be presented in written and oral form to the class, allowing time for feedback from other teams and faculty.

3. **Research:** Student teams will then undertake their respective case study research, and produce an in-depth research paper. The analyses should consider the following basic questions:
   - What happened?
   - What are the issues?
   - Functional or dysfunctional, and why?
   - Why are they happening? Not clear. I take it to refer to the causes of function/dysfunction; and that’s above.
   - What needs to change?
   - How do you change them

Papers should relate theory to interpretation and should make recommendations by commenting both on the decision making process as well as the utility of theory in explaining the practice of adaptive management. Paper length should be no more than 30 pages in text length (double spaced/10 point Arial), plus figures and tables, and bibliography with proper citations. Papers should also be tailored to allow review for submission to a special issue of Conservation Ecology journal, focusing on challenges of adaptive management in Alaska.

4. **Colloquium:** Presentations of case study analyses will be made at a special Adaptive Management colloquium to be scheduled during class time at the end of the semester for students, faculty, and an invited management professionals. Presentations should be 25 minutes in length with 15 minutes for q and a.

   (Additional instructions of the case study analysis will follow)

**Grading Policy:** The final case study presentation will be evaluated as a team product, with team members noting individuals' respective contributions.

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<tr>
<td>20</td>
<td>Mid-term case study</td>
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<tr>
<td>30</td>
<td>3 - Short case study papers</td>
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<td>15</td>
<td>3 – (or more) reflection papers</td>
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<tr>
<td>30</td>
<td>Class preparation and participation</td>
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<tr>
<td>40</td>
<td>Individually completed case study</td>
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<tr>
<td>20</td>
<td>Group Oral presentation of Final Case Study</td>
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<td>45</td>
<td>Written Final Case Study---</td>
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<tr>
<td>160</td>
<td>Total points awarded</td>
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**NOTE:** This syllabus is subject to change by the instructors after discussion with the class. Students are not permitted to use wireless internet devices during class without the permission of an instructor.