

2012 University of Alaska Fairbanks (UAF) Summer School in Scenario Development and Analysis with a Focus on Arctic Social-Environmental Systems

A North by 2020 Forum Activity

Seminar title

Planning for Arctic Futures: Introduction to interdisciplinary scenario modeling and analysis 1 Credit Seminar (PS/GEOS 492/692).

Lead instructors

Hajo Eicken, International Arctic Research Center/Geophysical Institute and Department of Geology and Geophysics, UAF; hajo.eicken@gi.alaska.edu
Amy Lauren Lovecraft, Department of Political Science, UAF; alovecraft@alaska.edu

The permission of one of the two instructors is required to enroll, it is a simple process, please email one of us before you register.

Contributors

Nancy Fresco, Network Coordinator, SNAP, UAF
Axel Meisen, Chair of Foresight, Alberta Innovates - Technology Futures and Lois Macklin, Principal Business Advisor-Foresight, Alberta Innovates - Technology Futures, Edmonton, Alberta, Canada
Marc Mueller-Stoffels, Developer, ScenLab Scenario Software and Robustness Analysis/Post-Doc , Alaska Center for Energy and Power
Scott Rupp, Director, Scenarios Network for Alaska and Arctic Planning (SNAP), UAF
John Walsh, Chief Scientist, International Arctic Research Center, UAF

Seminar dates

Part A – for registered students and interested professionals (Introduction, scenario development, policy and management implications): August 7-9, 2012

Part B – for registered students (Scenario analysis research): August 6 and 10, 2012 [requires use of participants' laptops as available]

Those taking the undergraduate or graduate courses must attend August 6-10.

Seminar Goals

This course provides an overview of key approaches used in anticipating the evolution of social-environmental systems over timescales of years to decades. Participants will be introduced to the development and analysis of scenarios as a tool for strategic decision making and planning, and policy development. Scenarios are carefully crafted portraits of plausible futures, developed by experts and used by key decision makers from the public and private sectors, tasked with setting long-term strategic directions, under conditions of high uncertainty. In conjunction with other tools, such as climate models, scenarios provide insight on plausible future outcomes. Course

participants will develop and analyze a set of scenarios, focusing on topics of interest in the context of energy production and use in Alaska. These scenarios will be evaluated and synthesized to demonstrate their use in policy setting and management. The second (optional) part of the course will take participants through an in-depth consistency analysis to develop a more refined scenarios product and demonstrate more advanced uses of scenario modeling as a research tool. Course participants will develop a product that may lead to presentations or follow-on research in the context of information needs and research priorities identified by Arctic Council Working Groups (with further information to be provided as part of course package).

Student Learning Outcomes

At the end of this course students will be able to:

(1) understand the evolution of social-environmental systems on timescales of years to decades, (2) understand the characteristics and applicability of the principal foresight methods used for exploring long-term future issues, (3) understand the key aspects of developing and using scenarios as a decision-making tool, (4) perform the creation and analysis of basic scenarios, exemplified by energy production and use in Alaska, (5) apply the basic scenarios to the development of policy proposals and further individual and group research projects, (5) inform, by using the learnings from the course, the needs and research priorities of the Arctic Council Working Groups.

Seminar Structure and Requirements

The instructional methods include reading assignments, lecture attendance, discussion groups, guided computer modeling, and critical reflection.

There is no text for this workshop to purchase. A reading packet will be distributed prior to the course and it will be different for the undergraduate and graduate students to appropriately target their educational levels. Both graduate and undergraduates are expected to have read the materials in advance.

The graduate and undergraduate versions of the seminar will be differentiated by two key pieces of work.

- In the *graduate course*, students will be responsible for theoretical rigor and applied analysis, making the link to their own research interests and projects. They will achieve this through (1) working in a group (or groups depending on enrollment) to examine and synthesize their own disciplinary interests in relation to scenarios; (2) submission of a short written essay about their own research interests, knowledge of scenarios, and a response to a reading that will be assigned prior to the course start; (3) a capstone project, completed as a group, designed to reflect a National Science Foundation style proposal to fund a multi-person interdisciplinary scenario research project based on the principles and practices covered in the course.

- The undergraduates will be responsible for active participation throughout the course and their “pass” is dependent on the requirement below.

The seminar will be offered as a Pass/Fail grade. No students may pass without attending Days 1 through 5; participating in the planning exercises and breakout groups, participating in the computer modeling exercises, and proposing pertinent recommendations for the relevant Arctic Council Working Groups.

*Schedule ***Note a one hour lunch break is included Days 1-4*

Day 1: 9am- 5pm

- Introduction of course participants and instructors
- Brief overview of course for student registrants (Lovecraft and Eicken)
- Introduction to Arctic social-environmental systems (Lovecraft)
- Tracking and anticipating changes in Arctic social-environmental systems in relation to scenarios and climate modeling (Eicken)
- Introduction to student course projects (Lovecraft and Eicken)
- Review and refinement of key drivers and uncertainties and background material relevant to the course - Break-out groups
- Presentation and review of information compiled by break-out groups, discussion of student course projects

Day 2: 9am- 5pm

- Brief introduction to core course (Eicken, Lovecraft)
- Climate models and environmental prediction: Key concepts and links to futures planning (Walsh)
- Introduction to upscaling and downscaling of model output for planning and research purposes (Rupp, Fresco)
- Development of Narrative Scenarios: Introduction and overview (Meisen & Macklin)
- Scenario creation and planning exercise (Meisen & Macklin):
 - Step 1: identifying the problem / focal question
 - Step 2: identifying key factors, forces, constraints and uncertainties
 - Step 3: identifying the two most impactful critical uncertainties
 - Step 4: identifying key characteristics of the four main scenarios
- Break-out groups: Detailed scenarios development (Break-out group leaders: Fresco, Mueller-Stoffels, Macklin & Meisen, Eicken & Lovecraft)

Day 3: 9am- 5pm

- Break-out groups: Detailed scenario development continued
- Presentation and review of ‘raw scenarios’ from break-out groups (Meisen & Macklin)
- A brief introduction to advanced scenarios analysis (Mueller-Stoffels)

Day 4: 9am – 5pm

- Advanced scenario analysis approaches: Background and computer tools (Mueller-Stoffels)

- Scenario development and analysis exercise – Step 1, refinement of raw scenarios and use of ScenLab software
- Scenario development and analysis exercise: Input from subject matter experts

Day 5: 9am – 12 noon

- Synthesis of subject matter input and outcomes of consistency analysis
- Conclusions and recommendations for pertinent Arctic Council Working Groups

Disabilities Services

The instructors will work with the Office of Disabilities Services to provide reasonable accommodation to students with disabilities. UAF has a Disability Services office that operates in conjunction with the College of Rural and Community Development (CRCDC) campuses and UAF Center for Distance Education (CDE). Disability Services, a part of UAF Center for Health and Counseling, provides academic accommodations to enrolled students who are identified as being eligible for these services. If you believe you are eligible, please visit the Office of Disability Services at <http://www.uaf.edu/disability> or contact a student affairs staff person at your nearest local campus. You can also contact Disability Services on the Fairbanks Campus at (907) 474-5655, fydso@uaf.edu.

Target audiences

- Graduate students and advanced undergraduates in environmental and social sciences
- Planners with federal or state agencies and the private sector
- Community leaders
- Legislative staff
- Agency staff tasked with addressing some aspect of environmental or socio-economic change in Alaska (or Arctic) marine settings
- Educators

Sponsors and Partners

- International Arctic Research Center, UAF and North by 2020 – University of Alaska Forum for Local and Global Perspectives on the North
- Institute of the North, Anchorage, Alaska