NRM 111 INTRODUCTION TO SUSTAINABILITY SCIENCE
Prerequisites: NRM 101, Placement in English 111

Course Information
Meeting time and location: MWF, 10:30 – 11:30 a.m.; AHRB 183
Instructor: Dr. Sarah Trainor. Phone: 907 474 7878; email: sarah.trainor@alaska.edu

Course Description
Sustaining the health, wellbeing, and productivity of the global social- ecological system requires considerations from many disciplinary and cultural perspectives. Social, economic, and ecological assessment of sustainability challenges need to be considered in an integrated way to arrive at robust solutions that avoid unanticipated consequences. Meeting these challenges often requires action plans that move from understanding theory to the implementation of new policies and facilitation of behavioral change.

This course studies dimensions of achieving sustainability. It draws on several underlying principles, including systems thinking, resilience theory, ecological economics, vulnerability analysis, and adaptive governance. The class explores the roots of sustainability science as it has developed in various fields of study and through interdisciplinary inquiry, and explores ways of integrating these concepts, through lectures, student-led classes, and student group action projects that center on specific problem areas. Emphasis throughout the course will be on societal goals, tradeoffs, conditions affecting stability and change, thresholds or tipping points, feedbacks, human-environment relations, and their dynamics at various temporal and spatial scales.

Course Goals
- Develop an understanding of conceptual frameworks for understanding sustainability
- Develop core skills in writing, listening and presentation
- Develop knowledge of tools and methods for analyzing real-world issues related to sustainability
- Apply these principles and methods through student led projects, focusing on a sustainability problem

Learning Objectives
- Familiarity with terms and concepts used in sustainability science
- The ability to identify social, economic, and ecological aspects of sustainability
- Knowledge to integrate social, economic, and ecological aspects of sustainability to contemporary issues

Skills Development

The following skills are important for solving sustainability problems in the world. This course aims to help you develop and hone these skills.

- Read, understand, and interpret readings from a variety of sources, including peer-reviewed literature.
- Clearly, logically, and confidently present information and ideas in oral presentation.
- Write text to a variety of audiences in such a way that clearly conveys information, is based on the best available science, is grammatically correct, and is interesting to read.

Important dates:

- March 23: Decide final paper topic
- April 6: Final paper draft tile, abstract, outline and references due
- April 6 – 10: student presentations on paper ideas and outline
- April 13 – 29: student group presentations on sustainability in practice
- May 4: Final papers due

Assignments/Requirements

Homework Assignments: Homework will be assigned no more frequently than every two weeks.

Student Group Presentation - Sustainability in Practice: The goal of this assignment is to become familiar with examples of sustainability in practice. Topics and groups will be selected by the instructor. Students are expected to find and research an example of sustainability in practice, give a presentation on that example, and write a 1-page fact sheet.

Final Project Paper and Presentation: Student projects will focus on a problem area of sustainability. Students are encouraged, but not required to select a topic relevant to sustainability in Alaska. Students will submit a paper title, problem statement, and annotated outline approximately 4 weeks before the due date (see assignment dates) and present this to the class for feedback and discussion. The final paper will be 10 pages (double spaced, 12 point Times New Roman font) and have at least 5 scholarly references. Presentation of the final paper will occur during exam week.

Grades

Students are expected to complete all of the assigned readings in advance of the class for which they are assigned and to come to every class prepared to discuss these readings. You will be graded on a combination of:

- Contributions to class discussion - 15%
- Homework assignments – 20%
- Contribution to "Sustainability In Practice" presentation and fact sheet - 20%
- Paper abstract, annotated outline, and presentation – 15%
- Final paper and presentation – 30%

Each assignment and requirement will be evaluated on the following basis:

5 points: Is original, unique, ambitious and outstanding in concept, design and execution. Execution of work is considered excellent and demonstrated deep understanding and experimentation with materials and techniques. All work is finished on time and presented clearly and attractively. Technical challenges are actively tackled and overcome.

4 points: Work is well executed with a high degree of competency and range of techniques. Work meaningfully fulfills the criteria of the assignment and communicates the concept. Work is well presented and on time.

3 points: Work is complete but average in concept, design and technique. Work is limited by technical weakness and limited technique. Although satisfactory the work could use improvement.

2 point: Work is poor in design, concept and execution. Work is poorly presented or unfinished. Work is not innovative, creative or showing self-motivation. Technical skills are not mastered.

1 point: Work represents minimal effort, does not demonstrate understanding of material, is not well articulated or well organized.

0 points: The student did not hand in work. Work does not address the criteria of the assignment. Work fails to meet the minimum requirements of the professor in quality or quantity.

Participation Grading Standard in relationship to Grade Scale above:

5 points: Student is alert, focused, thoughtful, and responsive during class discussion and critiques. Student makes frequent supportive critical statements regarding classmates' work during critiques. Student enriches the classroom experience by demonstrating that s/he has done all required homework and research.

4 points: Student is thoughtful and responsive during class discussion and critiques. Student makes few supportive critical statements regarding classmates' work during critiques. Student adequately demonstrates that s/he has done all required homework and research.

3 points: Student occasionally contributes to class discussions and critiques. It is not readily apparent that s/he has done all required homework and research.

2 points: Student rarely contributes.

1 point: Student is silent during critiques. Student is unprepared for class, but does not detract from the discussion.

0 points: Student is unprepared for class. Student makes hurtful or thoughtless comments during critiques which detract from the discussion.

Grading:
The following grading scale will apply:
A - 90 to 100 (A- 90-91; A+ 99-100)
B - 80 to 89 (B- 80-81; B+ 88-89)
C - 70 to 79 (C- 70-71; C+ 78-79)
D - 60 to 69 (D- 60-61; D+ 68-69)
F - < 60

Adaptation
The instructor reserves the right to modify the course syllabus and final grade in consideration of notable progress demonstrated by an individual, or unforeseen and extenuating circumstances. In such cases, extra credit assignments and/or makeup work may be used at the discretion of the instructors. Assignments handed in after the due dates will receive reduced credit.

Instructional Methods
The course will use a combination of lectures, student discussions, and student presentations. This class is interactive, relying on strong student contribution. The class atmosphere will be respectful and productive and one that encourages the joint class exploration of course themes. This class will work best if everyone participates.

Classroom policy:
Checking e-mails, typing papers for other classes, playing games, browsing the Internet, instant messaging, using cell phones and other activities not related to the class should be done during breaks or outside of the class time. Typing, excessive clicking and listening to music or other disruptive activities are not allowed during presentations and lectures. Students are expected to spend at least several hours/week outside of the class to complete assignments. The lab will be available to students except during the time slots used by other classes.

Students must save and backup files. Do not store your projects only on the lab computers. Please save often and backup your files.

Attendance
Students are expected to attend all classes. If it is necessary to miss a class, contact the instructor beforehand to inform them of your plans and request guidance on how to make up missed classroom learning. We encourage students to join the class remotely (UAF video conferencing or via Skype) if on travel.

Student Code of Conduct

According to the UAF code of conduct "Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless the instructor of the course grants permission…. Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses, and other reports…. No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors……" Students are expected to abide by the UAF

An explanation of plagiarism and how to properly cite sources are available at the following two sites:
http://library.uaf.edu/ls101-plagiarism
http://library.uaf.edu/ls101-citing
Plagiarism is grounds for course failure.

UAF Policies Disabilities Services

The University of Alaska Fairbanks is committed to providing equal access for students with disabilities. 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. We will work with the Office of Disabilities Services (203 WHIT, 474-5655) to provide reasonable accommodation to students with disabilities. **If you have a physical or learning disability, please advise us in writing of any special consideration necessary by the beginning of the second class.** I will do everything possible to accommodate you in accordance with the Americans with Disabilities Act. Priority seating close to the board and screen is provided for students who need to be in close proximity to the board.

If you have a learning disability that may interfere with your ability to perform the work in this course, I am happy to make any necessary accommodations. However, it is the student's responsibility to obtain an Accommodation Letter from the Disabilities Office of the Health Center (ext.6158). This letter MUST be presented to the instructor within the first two weeks of class. No accommodations will be made until this letter is given to the professor. Accommodations will NOT be made retroactively (i.e. if you have a spelling disability, you must present the letter before any points are deducted for spelling).

Blackboard & Distance Delivery

We will use the UAF Blackboard site for this course to send emails and post readings, assignments and other materials. Blackboard can be accessed at http://classes.uaf.edu. Email notification through Blackboard will not work for a non-UAF email address. If you principally use a non-UAF email service, (such as yahoo) go to your UAF account and forward your UAF email to that address. **You are responsible for all emails sent to your UAF email account.** Blackboard resources, links and support information are available at the UAF Blackboard homepage.

Readings: **You are responsible for reading all assigned readings prior to the class meeting.**

Course Textbook: *Living in the Environment*. G. Tyler Miller and Scott E. Spoolman. Cengage Learning. 18th Edition. 2015. Abbreviated below as "Liv Env".

Other assigned readings will be made available on Blackboard.

Supplementary and additional readings will be drawn from *Sustainability Science.* Bert J.M. de Vries. Cambridge University Press. 2012. Abbreviated below as "Sus Sci".

Class Schedule (subject to revision)

Week	Session	Topic	Reading	Assignment
	1/ 16	No Class – Professor Trainor out of town	Review Syllabus from Blackboard	
1	1/19	Class introduction	Review Syllabus	Understand course policies
	1/21	State of the World	State of the World 2013, "Is Sustainability Still Possible?"	
	1/23	Humans and Sustainability	Liv Env Ch 1.	Top 3 choices for sustainability in practice group project
2	1/26	What is Sustainability Science?	Clark 2007, Kates 2001	
	1/28	Why civilizations collapse	Diamond 2004 Txt pg 34, Science In Focus	
	1/30	Natural, Social, Build Capital; Sustainability Framework	Chapin et al text pp. 18-22; Chapin et al 2009	Homework #1 Due
3	2/2	Limits to Growth	Meadows – 30 Yr Update	
	2/4	Guest Lecture: Steven Hunt, Reference Librarian RE Conducting Research		Read and understand course project requirements : student group presentations

				and final paper
	2/6	Environmentalist's Paradox	Raudesepp Et al	
4	2/9	Complex Systems, Resilience, Vulnerability, Adaptation	Liv Env Section -4, pgs 44-47; Sus Sci Ch 2	
	2/11	Continued	Chapin et al text pp. 20-26	
	2/13	Continued		Homework #2 Due
5	2/16	Environmental Hazards and Human Health	Liv Env Ch 17. Environmental Hazards and Human Health	
	2/18	Environmental Justice/Injustice – Alaska and the Arctic	Trainor et al Brubaker	
	2/20	Economics, Environment, and Sustainability	Liv Env Ch 23. Economics, Environment, and Sustainability	
6	2/23	Politics, Environment, and Sustainability	Liv Env Ch 24. Politics, Environment, and Sustainability	
	2/25	Energy Efficiency and Renewable Energy	Liv Env Ch 16.	
	2/27	Cold Climate Housing Research Center (CCHRC) Tour/Field Trip	TBD	Homework #3 Due Class will meet at the CCHRC
7	3/2	Review To Date		
	3/4	Arctic Climate Change and Sustainability	Clement et al Report 2013; NOAA Arctic Report Card: http://www.arctic.noaa.gov/reportcard/	
	3/6	Sea Ice	TBD	
8	3/9	Wildfire	TBD	

	3/11	Ocean Acidification	TBD	
	3/13	Indigenous Cultures	TBD	Homework # 4 Due
9	3/16 to 3/20 Spring Break, no class			
10	3/23	Pollution/Toxic waste/ Industrial ecology	Liv Env Ch 21. Solid and Hazardous Waste	Decide final paper topic.
	3/25	Sustainable Cities	Liv Env Ch 22. Sustainable Cities	
	3/27	Discussion of student group projects and final paper assignments		Schedule meeting for group presentation
11	3/30	Outlook on the Future	Sus Sci 15.2	
	4/1	Scenario Framework	Sus Sci 15.3	
	4/3	Indicator Framework	Sus Sci Ch 5.5	Homework #5 due
12	4/6	Student short presentation on final paper		Final paper abstract, outline, references due. Presentations
	4/8	Student short presentation on final paper		Presentation on final paper
	4/10	Student short presentation on final paper		Presentation on final paper
13	4/ 13	Sustainability In Practice - Student Presentations		Student Presentations
	4/15	Sustainability In Practice - Student Presentations		Student Presentations
	4/17	Sustainability In Practice - Student Presentations		Student Presentations
14	4/20	Guest Lecture – UAF Campus Sustainability - TBD	TBA	

	4/22	TBA -	TBA	Participate in Earth Day Activities
	4/24	No Class – Spring Fest		
15	4/27	Sustainability In Practice - Student Presentations	TBA	
	4/29	Sustainability In Practice - Student Presentations	TBA	
	5/1	Discussion of Sustainability in Practice Presentations – Sustainable Development	Sus Sci Ch 5.4	
16	5/4	Agenda for Sustainability Science - Class Wrap-Up	Sus Sci 15.4	Final papers due
	5/TBD (Final exam period 8 to 10 am)		Each student present for 10 minutes on their final paper.	