

NRM 111 INTRODUCTION TO SUSTAINABILITY SCIENCE
SPRING 2022; CRN: 38935
Prerequisites: NRM 101, Placement in English 111

Course Information

Meeting time and location: Online asynchronous

Instructor: Dr. Tsitsi McPherson.

Phone: 907-474-7188 (note: this is the department phone)

email: tmcpherson2@alaska.edu

Office Hours: by appointment

Course type: Online asynchronous. What is an asynchronous course? An asynchronous course is one that allows students the flexibility to self-pace weekly online course content including assignment. This asynchronous course has submission deadlines, but students can connect with materials and peers according to their schedule.

Readings: You are responsible for reading all assigned readings and expected to engage with the material through feedback comments in PowerPoint presentations and/or posting on discussion boards.

Nissenbaum, Richard, A. 2019. Sustainable Solutions: Problem Solving for Future Generations, 1st edition. Oxford University Press

Paul, R. and Elder, L. 2016. The Miniature Guide to Critical Thinking. Foundation for Critical Thinking. 7th Edition. Available at www.criticalthinking.org.

Other assigned readings will be made available on Canvas.

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. Students are expected to enter the course with basic knowledge and understanding of contemporary sustainability challenges such as climate change, biodiversity loss, pollution and solid waste management, over-fishing, and ecosystem degradation. The class emphasizes principles and practices for sustainable solutions to these challenges.

Course Goals Develop an understanding of conceptual frameworks for analyzing and understanding sustainability

- Develop core skills in critical thinking, writing, listening, and oral presentation
- Develop knowledge of tools and methods for analyzing and solving real-world issues related to sustainability
- Apply these principles and methods through student led projects, focusing on sustainability problems

Learning Objectives

- Familiarity with terms and concepts used in sustainability science
- The ability to identify social, economic, and ecological aspects of sustainability
- Development of critical thinking skills
- Knowledge to integrate social, economic, and ecological aspects of sustainability to create solutions for 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
- Critically assess arguments related to societal actions for sustainability
- 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.

Technical Requirements

Students must have regular access to a computer and the Internet to access online materials in Canvas. Students will be expected to download course material as well as upload/enter text for assignments, engage in discussion forums and provide feedback through lecture feedback, discussion boards, and Flipgrid.

Instructional Methods

This class will engage lectures with integrated feedback commenting, readings, quizzes and exams, self-reflection, and written and oral assignments.

Assignments/Requirements

- 1) Lecture Feedback: Students are required to read/listen to Power Point class lectures in VoiceThread and provide comment/feedback. 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.
- 2) Learning Activity: These activities allow students to engage in activities to explore course learning objectives and goals. Activities include exploration of effective communication about sustainability.
- 3) Critical Thinking Exercise and Essays: Students will work to develop skills to facilitate critical assessment of solutions related to societal actions for sustainability.
- 4) Self-Reflection Papers: Understanding student motivation and learning needs is evaluated in these exercises/essays.
- 5) Sustainability Portfolio: - Sustainability in Practice: The goal of this assignment is to become knowledgeable about examples of sustainability in practice. Students will be tasked with exploring Sustainability from scales: UAF or Fairbanks, a city located along the 64th parallel, and a topic narrowed down by the student and selected by the instructor. Students are expected to research examples of sustainability in practice, give a presentation on one example, and write accompanying one page fact sheets.
- 6) Discussion Boards and Flip Grids: Discussion Boards and Flip Grids represent virtual class discussions and one-on-one student interactions. This class is interactive, relying on strong student contribution through discussion boards and Flip Grids. The atmosphere in these forums will be respectful and productive and one that encourages the joint class exploration of course themes. The discussion board and flip grids will work best if everyone participates. Expect to see these forums as a place to address comments posed by your course instructor and feedback from your peers.
- 7) Quizzes: Quizzes occur throughout the semester and may cover lecture material, content from readings, or videos.
- 8) Exam: You will have three exams including the final exam. The final exam for the course will draw heavily from homework assignments, in-class exercises, and class lectures. **The final exam is scheduled for Friday, April 29.** The exam will be opened for a specified amount of time with students completing at their own pace.

Grades

Your grade will be calculated as follows:

		Percentage of Final Course Grade
1)	Lecture Feedback (VoiceThread)	15%
2)	Learning Activity	10%
3)	Critical Thinking Exercises and Essay	10%
4)	Self-Reflection Papers	10%
5)	Sustainability Portfolio	20%
6)	Discussion Boards and Flip Grids	15%
7)	Quizzes	5%
8)	Exams	20%
	Total	100%

Consult the course schedule and related updates and messages on Canvas for due dates.

Students are expected to complete all the assigned readings and on-line modules and to turn in the assignments by the due dates. If you fall behind it is your responsibility to contact the instructor with a work plan for catching up.

Assignments handed in after the due dates will receive reduced credit. Assignments more than 1 week late will receive a zero unless prior arrangements have been made with the instructor.

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

Each assignment and requirement will be evaluated based on the [UAF grading system](#):

A: 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.

B+: 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.

B-: 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.

C: 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.

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

F: 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.

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 schedule based on availability of student preferences for presentation topics and other related factors. **You are responsible for reading update messages on Canvas for course schedule updates.** Final grades may also take into account 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 instructor.

Backup policy:

Students are strongly advised to save backup copies of their assignments on Google Drive or your personal computer. Do not store your projects only on the lab computers. Please save often and backup your files.

Academic Integrity/ Student Code of Conduct

As described by UAF, scholastic dishonesty constitutes a violation of the university rules and regulations and is punishable according to the procedures outlined by UAF. Scholastic dishonesty includes, but is not limited to, cheating on an exam, plagiarism, and collusion. Cheating includes providing answers to or taking answers from another student. Plagiarism includes use of another author's words or arguments without attribution. Collusion includes unauthorized collaboration with another person in preparing written work for fulfillment of any course requirement. Scholastic dishonesty is punishable by removal from the course and a grade of "F." For more information go to [Student Code of Conduct](#).

Instructional Methods

The course will use a combination of lectures, student discussions, student projects and a student presentation. 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.

Class policy:

Students are expected to spend at least 6-9 hours/week working on course content. Students must save and backup files. Do not store your projects only on the lab computers. Please save often and backup your files.

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).

Canvas

Canvas as a learning management system (LMS)

UAF is currently adopting the learning management system (LMS) Canvas. Over the next few semesters, more and more of your UAF courses will use Canvas instead of Blackboard. 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.

Canvas offers 24/7 student support via email, phone or live chat. Canvas student support is available using the following links with further details available at <https://www.uaf.edu/uaf/current/canvas.php>

Email: support@instructure.com

Student hotline: 1-844-683-6439

Student live chat: [Live chat](#)

Class Schedule: This class schedule is subject to revision and update. Check Canvas for updates.
The outline below provides a weekly timetable of how to work on class material. As an asynchronous class, this schedule is intended to assist you in providing a structure on how to proceed through the course.

January 2022						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
Suggested work order for a typical week: Monday: Review course work for the week AND/OR Exam submission date Tuesday: Activity due and Course lecture and Course reading Wednesday: Course reading and Videos Thursday: Course lecture and Course reading Friday: Activity due Sat: catch up/get ahead/relax Sun: catch up/get ahead/relax						1
2	3	4	5	6	7	8
9 MODULE 1 WEEK 1 What is sustainability science	10 UAF starts	11 Class introduction Orient yourself to course website * What is sustainability science (pptx 1)	12 <i>Sustainability in the Arctic</i> * Towards a Sustainable Arctic (Arctic Council May 2021) Recap of the Arctic Council's Ministerial Meeting 2021 in Reykjavik	13 <i>Sustainability in the Arctic</i> * Alaska's Changing Environment	14 DUE: - Syllabus quiz - Personal introduction on Flipgrid - Self-reflection #1 - Complete by end of week, lecture feedback (THIS IS A TRIAL OF THE SOFTWARE)	15
16 WEEK 2 Humans and Sustainability Science	17 No classes – Alaska Civil Rights Day	18 What is sustainability science cont. (pptx2) About Sustainability Portfolio (pptx) DUE: - Discussion Board	19 READ: - Nissenbaum Ch.1: The Problem we must solve Nissenbaum Ch. 2: Sustainable solutions Video: A Conversation With....F. Stuart Chapin – Social ecological systems	20 READ - Clark 2007 - Kates 2011	21 DUE: - Learning Activity – Communicating about Sustainability DUE - Lecture feedback - Sustainability Portfolio topic submission	22
23 WEEK 3 Critical Thinking and Ecosystem Services	24	25 To Understand – Critical Thinking-what is it? What is the benefit? Why is it Important? (pptx)	26 READ: - Critical thinking pages (7-21) - Theis et al. Ch4. Biosphere. 4.1 Biosphere Introduction. Pgs 117-119	27 How do we explore sustainability – Ecosystem Services and Forms of Capital (pptx) READ: - eds. Chapin et al. Principles of Ecosystem Stewardship". "Introduction" to Chapter 2. "Managing Ecosystem Sustainably: The Key Role of Resilience"	28 DUE - Critical thinking exercise (Clark 2007) - Learning Activity: Ecosystem Services activity - Discussion	29

December January 2022 February						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
30 WEEK 4 System Dynamics	31 Critical Thinking Essay Assigned (Due April 15)					

January February 2022 March						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	System Dynamics	1 How do we explore sustainability – System Dynamics (pptx) READ Miller & Spoolman Excerpt (pgs. 44-47)	2 READ Chapin et al (eds). Principles of Ecosystem Stewardship. Pgs. 3-12) Excerpt - Chapin et al. Principles of Ecosystem Stewardship, Ecosystem Services. Pgs 29-31	3 Why civilizations collapse (pptx) READ J. Diamond, Collapse, 2007: Ch 14: Why Do Some Societies Make Disastrous Decisions?	4 DUE - Lecture feedback - Flip Grid on Ecosystem Services - Week 4 lecture quiz	5
6 WEEK 5 Sustainability Framework and Limits to Growth	7	8 Limits to Growth (pptx) Critical Thinking Analysis: J. Diamond. Why Civilizations Collapse. Ch.14	9 READ: Limits to Growth – Meadows 30yr Update	10 Sustainability Framework (pptx) READ -Chapin et al. (2009) Ecosystem stewardship: sustainability strategies for a rapidly changing planet	11 DUE - Critical Thinking Analysis: Limits to Growth 30yr Update - Learning Activity – Communicating about Sustainability DUE	12
13 MODULE 2 WEEK 6 Levels of Interaction	14 EXAM 1 DUE BY 11:59PM	15 Levels of interaction: Governance, Environment and Sustainability (pptx)	16 READ Nissenbaum, Ch. 9: Sustainability at the Most Local Level – The Individual Video: Jimmy discussion about the process, goal and future of FNSB sustainability plan	17 READ Nissenbaum, Ch.10: Organizations, Institutions and Sustainability UAF Sustainability Plan	18 DUE - Lecture feedback - Quiz: Week 6 content quiz - Discussion Boards	19
20 WEEK 7 Sustainability Planning and Development	21	22 Sustainability and governance (pptx)	23 READ Nissenbaum, Ch. 11: Sustainable Communities, Cities, and Regions Video: Hroon, Iceland discussion	24 READ Nissenbaum, Ch. 12: Sustainable Development and Global Sustainability FNSB Sustainability Plan	25 DUE - Quiz: Week 7 content quiz - Lecture feedback - Discussion Boards - Part I Draft for Sustainability Portfolio	26
27 WEEK 8 Environmental Justice	28					

March 2022						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 <i>Environmental Justice (pptx)</i> READ Agyeman Ch. 11 – <i>Environmental Justice and Sustainability in Handbook of Sustainable Development.</i>	2 READ Theis et al. Ch10 <i>Sustainability: Ethics, Culture and History.</i> 10.8 <i>Sustainability Ethics Pgs</i> 503-509	3 <i>Sustainability in Indigenous Rural Communities (pptx)</i> READ Magni-2017-Indigenous knowledge and implications for the sustainable development agenda <i>Indigenous knowledge and implications for the sustainable development agenda</i>	4 DUE - Lecture feedback - Discussion Boards - Critical Thinking Analysis: <i>Environmental Justice Ch.11</i> DUE - Flip Grids - Self-reflection #2	5
6 WEEK 9	SPRING BREAK 7-11					12
13 WEEK 10 Sustainability Toolbox	14	15 <i>Sustainability Toolbox, Concept Review (pptx)</i>	16 <i>Sustainability Toolbox, Concept Review (pptx)</i>	17 <i>Sustainability Toolbox, Concept Review (pptx)</i>	18 DUE - Sustainability Portfolio. Draft of Part 2 - Discussion Boards - Learning Activity	19
20 WEEK 11 Sustainability – Human Landscapes	21 EXAM 2 DUE BY 11:59PM	22 <i>Nissenbaum, Ch. 3: The Air We Breathe</i> READ <i>Disparities in the Impact of Air Pollution _ American Lung Association</i>	23 READ <i>Health Effects of Ozone and Particle Pollution _ State of the Air _ American Lung Association</i> <i>With No Response From EPA, Fairbanks Community Groups File Suit to Force EPA to Address Pollution</i>	24 <i>Nissenbaum, Ch. 4: Water (pptx)</i> READ Magni-2017-Indigenous knowledge and implications for the sustainable development agenda	25 DUE - Learning Activity - Discussion Boards - Lecture Feedback - Week 11 quiz content quiz	26
27 WEEK 12 Sustainability – Human Landscapes	28	29 <i>Nissenbaum, Ch. 5: Food and Agriculture (L)(pptx)</i>	30 Watch video: Video from In the Alaska Garden series with Heidi Rader (Terry Reichardt) (52min)	31 <i>Nissenbaum, Ch. 8: Solving Our Garbage Problem (pptx)</i>		

April 2022						
◀ March						May ▶
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 DUE - Lecture Feedback - Discussion Boards - Flip grid	2
3 WEEK 13 Sustainability – Human Landscapes	4	5 Nissenbaum, Ch.6: Energy from Fossil Fuels to a Sustainable Future (pptx)	6 Video: Solarize Alaska Video: Fairbanks Carbon Reduction Fund	7 Nissenbaum, Ch.7: Forest and Mineral Resources (pptx)	8 DUE - Lecture/Video Feedback - Discussion Boards - Week 13 quiz content quiz	9
10 WEEK 14 Presentations	11	12 Sustainability and Indigenous Peoples	13 Review Sustainability in Portfolio Presentations - post questions and feedback to classmates (all presentations updated by April 11....and feedback through April 20 \)	14	15 DUE - Critical Thinking Essay DUE - Discussion Boards	16
17 WEEK 15 Presentations and Course Wrap-Up	18 Course Review – post questions on discussion board for feedback by April 22	19	20	21	22 Self-Reflection Essay DUE	23
24	25 LAST DAY OF INSTRUCTION	26	27	28	29 FINAL EXAM	30