

NRM 111X INTRODUCTION TO SUSTAINABILITY SCIENCE

SPRING 2025; CRN: 32370

3 credits

Course Description

Sustainability is a decision-making framework applied throughout history and the world. To make better decisions, scientists refine sustainability principles and methods. This course explores some of the principles of sustainability science including systems thinking, governance, resilience theory, ecological economics, vulnerability analysis, and adaptive governance. This course will challenge students to understand individual principles through their impacts on one or more of the sustainability E's (economics, environment, education, equity etc.). Course content will focus largely on Alaska.

To sustain the health, wellbeing and productivity of the regional environment, more than one way of knowing is required. This interdisciplinary approach can bring light to unanticipated consequences. To be effective, sustainability solutions often begin with research, understanding, and planning before new policies can be implemented and facilitate behavioral change.

Students are expected to have knowledge of contemporary sustainability challenges such as climate change, biodiversity loss, pollution and solid waste management, social inequality, urbanization, over-fishing, and ecosystem degradation. The class emphasizes the interdisciplinary nature of sustainability challenges and their solutions.

Students are expected to spend at least 6-9 hours/week working on course content.

Course Information

- **Meeting location and time:** FS982 103/105 Murie on Tuesday/Thursday at 2:00-3:30 pm
- **Office Hours:** Tuesday/Thursday at 11:00-12:00, or by appointment
- **Instructor:** Kelsey Aho
- **Email:** kaho3@alaska.edu

Readings: Students are responsible for reading, listening and watching assigned materials before class. Class time will be used to discuss the assignments and develop novel insights.

- Chapin III, F. Stuart. (2020). Grassroots Stewardship: Sustainability within our reach. Oxford University Press.
- Other assigned readings, audio and films will be made available on Canvas.

Course Goals

- Develop core skills in critical thinking, writing, listening, and oral presentation.
- Develop knowledge of the principles and methods that can be used to analyze and solve sustainability challenges.
- Understand how to use conceptual frameworks to analyze sustainability.
- Apply principles and methods to sustainability challenges through presentation and writing.

Learning Objectives

- Familiarity with terms and concepts used in sustainability science.
- Ability to identify social, economic, and ecological aspects of sustainability challenges.
- Development of critical thinking skills.
- Knowledge of how to integrate social, economic and ecological aspects of sustainability to create durable solutions.

Skills Development

The following skills are important for understanding and possibly solving sustainability challenges:

- Ability to paraphrase literature, audio, and videos from a variety of sources, including peer-reviewed literature.
- Ability to assess arguments made for/against sustainability.
- Ability to clearly and logically present one's perspective through oral presentation.
- Ability to write to a variety of audiences, to be able to clearly communicate information, to be able to use APA citation, to use and cite best available science, to use proper grammar, and to have fun!

APA Guidelines

- **Paper:** Standard (8.5" x 11")
- **Font:** 11pt Calibri
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- **Sections:** Title page, Essay, References
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- a. **Roles:** Before class, each person will pick up a “role” card. Cards include tasks such as: scribe, architect, tech specialist, timekeeper. Chose a different card each day, and complete the task as described on the other side of the card.
- b. **Discussion:** Students are required to read, listen, watch the assignments before class and participate in class activities such as small group discussions and roleplaying.
- c. **Presenting:** Each student will provide a 5-minute presentation on a natural resource. The presentation is part of the “Critical thinking project”.

3) **Critical thinking presentation:** Students will choose to focus on one of the “resources of the week”. The first task is to identify a sustainability challenge of that resource. For the **Critical thinking presentation**, students will provide an overview of the resource in Alaska (1 minute), a sustainability challenge of that resource (2 minutes), and at least one economic, environmental and social impact of the sustainability challenge (2 minutes).

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Activity and the percentage of the final course grade

1)	Reading, listening, watching assignments	25%
2)	Class participation	25%
3)	Critical thinking presentation	10%
4)	Critical thinking fact sheet	10%
5)	Critical thinking essay	30%
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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

	C: 70 to 79 (C- 70-71; C+ 78-79)
A: 90 to 100 (A- 90-91; A+ 99-100)	D: 60 to 69 (D- 60-61; D+ 68-69)
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Adaptation

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Disability services statement: I will work with the Office of Disability Services to provide reasonable accommodation to students with disabilities.

ASUAF advocacy statement: The Associated Students of the University of Alaska Fairbanks, the student government of UAF, offers advocacy services to students who feel they are facing issues with staff, faculty, and/or other students specifically if these issues are hindering the ability of the student to succeed in their academics or go about their lives at the university. Students who wish to utilize these services can contact the Student Advocacy Director by visiting the ASUAF office or emailing asuaf.office@alaska.edu.

Student Academic Support:

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- Writing Center (907-474-5314, uaf-writing-center@alaska.edu, Student Success Center, 6th Floor Room 677 Rasmuson Library)
- UAF Math Services (907-474-7332, uaf-traccloud@alaska.edu)
Drop-in tutoring, Student Success Center, 6th Floor Room 677 Rasmuson Library
1:1 tutoring (by appointment only), Chapman 210
Online tutoring (by appointment only) available
<https://www.uaf.edu/dms/mathlab/>, available at the Student Success Center
- Developmental Math Lab (Gruening 406, <https://www.uaf.edu/deved/math/>)
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, <https://www.ctc.uaf.edu/student-services/student-success-center/>)
- For more information and resources, please see the Academic Advising Resource List <https://www.uaf.edu/advising/students/index.php>

Student Resources:

- Disability Services (907-474-5655, uaf-disability-services@alaska.edu, 110 Eielson Building)
- Student Health & Counseling [free counseling sessions available] (907-474-7043, <https://www.uaf.edu/chc/appointments.php>, Whitaker Building, Room 206, Health, Safety & Security Bldg - same building as Fire and Police)

- Office of Rights, Compliance and Accountability (907-474-7300, uaf-orca@alaska.edu, 3rd Floor, Constitution Hall)
- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.edu, Wood Center 119)

Nondiscrimination statement: The University of Alaska is an affirmative action/equal opportunity employer, educational institution and provider. The University of Alaska does not discriminate on the basis of race, religion, color, national origin, citizenship, age, sex, physical or mental disability, status as a protected veteran, marital status, changes in marital status, pregnancy, childbirth or related medical conditions, parenthood, sexual orientation, gender identity, political affiliation or belief, genetic information, or other legally protected status. The University's commitment to nondiscrimination, including against sex discrimination, applies to students, employees, and applicants for admission and employment. Contact information, applicable laws, and complaint procedures are included on UA's statement of nondiscrimination available at www.alaska.edu/nondiscrimination.

For more information, contact:

UAF Office of Rights, Compliance and Accountability
 1692 Tok Lane
 3rd floor, Constitution Hall, Fairbanks, AK 99775
 907-474-7300
uaf-orca@alaska.edu

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.....”

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.

Artificial intelligence

Generative artificial intelligence (AI) tools and large language models (LLMs), such as ChatGPT, are designed to assist in creating and analyzing text, code, video, audio, and other multimedia. Use of these resources in your coursework comes with benefits and risks. In this course, the rules for usage are as follows:

- Do not use AI unless the assignment explicitly allows for it in the instructions and/or rubric. If you are unsure if your use of AI on an assignment is acceptable, ask the instructor and ensure you have documentation of permissions as appropriate.
- Identify Contributions: Any work you submit that has incorporated AI-generated content should indicate which parts of the work are yours and which parts were generated or informed by AI. AI contribution should be no more than 25% of assignment content.
- Provide Attribution: All use of AI tools (such as ChatGPT and others) must be explicitly cited with an explanation of how the AI tool was used and which prompts were given. This may be lengthy. Consider including as an appendix. Correct formats for attribution can be found at: [Citing ChatGPT - UAF Elmer E. Rasmuson Library](#).
- Include Reflection: Any use of AI tools must include a brief reflection on what you learned by using the tool. For example, did you identify incorrect elements within generated work? How will you refine future prompts to address similar problems?

Any use of AI within the course that does not meet these rules may be considered a breach of the [UAF Code of Conduct](#) and carry substantial penalty. While exercising responsible and ethical engagement with AI is a skill you may hone over time, your unique human insights, critical thinking, and creative contributions remain pivotal to your learning experiences and success.

The course outline is below. For assignments, see the course page on Canvas.

Date		Tuesday	Thursday
Week 1: Welcome to "Introduction to Sustainability Science"			
• Resource of the week: People			
Jan 14, 16	In class	Introductions (identity and biography); Review syllabus; Course expectations; Polls	Discuss: What is sustainability? Activity: Reflect on Chapin and Kantner readings
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 2: What is "Sustainability Science"?			
• Resource of the week: Wisdom			
Jan 21, 23	In class	Discuss: sustainability principles including complex systems and growth limits Activity: resource small groups Possible guest: Terry Chapin	Discuss: sustainability principles including governance, abundance vs. scarcity
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 3: Sustainability science in our lives			
• Resource of the week: Minerals			
Jan 28, 30	In class	Small group: present visited locations Possible guest: UAF's Office of Sustainability Activity: design resource challenge	Fieldtrip: the Mill at Bunnel 131
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 4: Governance ("top down" on Tuesday and "bottom-up" on Thursday)			
• Resource of the week: Water			
Feb 4, 6	In class	Discuss: scale, paradigm shifts Activity: How are we each involved in top-down governance?	Discuss: permits, NEPA, recycling, certificate programs Possible guests: Robert Orttung, Jackson Fox
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 5: Critical thinking			
• Resource of the week: Air			
Feb 11, 13	In class	Discuss: Green washing. How are we each involved in governance? If population increases, should resource use decrease?	Discuss: Critical thinking; Is it ethical to make decisions for future generations? Activity: resource groups develop talking points for 4 audiences
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 6: System limits (Tuesday) and ecological economics (Thursday)			
• Resource of the week: Forests			
Feb 18, 20	In class	Discuss: amplification, tipping points/thresholds; path dependence	Discuss: forms of "capital"; circular economy Possible guest: Alaska Brewing
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 7: Risk/vulnerability (Tuesday) and resilience theory (Thursday)			

<ul style="list-style-type: none"> Resource of the week: Fire 		
Feb 25, 27	In class	<p>Discuss: risk; vulnerability; net positive and net negative activities and use of time</p> <p>Discuss: How can a resource system collapse?</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 8: Scale (Tuesday) and speed (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Fisheries 		
Mar 4, 6	In class	<p>Discuss: Which causes and impacts of sustainability challenges are local? Which are global?</p> <p>Discuss: Adaptive management; If our systems are more efficient, why aren't workdays shorter?</p>
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<p>Spring break</p>		
<p>Week 9: Critiques</p> <ul style="list-style-type: none"> Resource of the week: Land 		
Mar 18, 20	In class	<p>Discuss: Ecosystem services. What is being invested in? Increasing wealth inequality. Expansion vs. stability. Critical ecology.</p> <p>Possible guest: Alaska Venture</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 10: Environmental Justice (Tuesday) and public engagement (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Wildlife 		
Mar 25, 27	In class	<p>Discuss: Equity and equality; Just transition</p> <p>Possible guest: Heather Sayak Gordan</p> <p>Discuss: land restoration</p>
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<p>Week 11: Building Sustainability with toolboxes, plans, and infrastructure</p> <ul style="list-style-type: none"> Resource of the week: Energy 		
April 1, 3	In class	<p>Possible activity: Energy audit of the classroom</p> <p>Discuss: How to implement plans?</p> <p>Possible guest: Vanessa Raymond, Creative Director of ACEP</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 12: Applied week: Sustainability on campus (instructor accessible by appointment)</p>		
April 8, 10	In class	<p>Possible field trip to Museum of the North. How does the museum and makers sustain relics over the last 10,000 years?</p> <p>Possible field trip to Exotic Tree Plantation and T-Field. Land management. Science trash. Long-term ecological studies.</p>
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<p>Week 13: Solutions – focus on final papers - instructor accessible by appointment</p>		
April 15, 17		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 14: Where do we go from here?</p>		
April 22, 24		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 15: Final Paper is due on 1 May 2025 at 12:59pm Alaska</p>		

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<https://www.uaf.edu/dms/mathlab/>, available at the Student Success Center
- Developmental Math Lab (Gruening 406, <https://www.uaf.edu/deved/math/>)
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, <https://www.ctc.uaf.edu/student-services/student-success-center/>)
- For more information and resources, please see the Academic Advising Resource List <https://www.uaf.edu/advising/students/index.php>

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- Do not use AI unless the assignment explicitly allows for it in the instructions and/or rubric. If you are unsure if your use of AI on an assignment is acceptable, ask the instructor and ensure you have documentation of permissions as appropriate.
- Identify Contributions: Any work you submit that has incorporated AI-generated content should indicate which parts of the work are yours and which parts were generated or informed by AI. AI contribution should be no more than 25% of assignment content.
- Provide Attribution: All use of AI tools (such as ChatGPT and others) must be explicitly cited with an explanation of how the AI tool was used and which prompts were given. This may be lengthy. Consider including as an appendix. Correct formats for attribution can be found at: [Citing ChatGPT - UAF Elmer E. Rasmuson Library](#).
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The course outline is below. For assignments, see the course page on Canvas.

Date		Tuesday	Thursday
Week 1: Welcome to "Introduction to Sustainability Science"			
• Resource of the week: People			
Jan 14, 16	In class	Introductions (identity and biography); Review syllabus; Course expectations; Polls	Discuss: What is sustainability? Activity: Reflect on Chapin and Kantner readings
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 2: What is "Sustainability Science"?			
• Resource of the week: Wisdom			
Jan 21, 23	In class	Discuss: sustainability principles including complex systems and growth limits Activity: resource small groups Possible guest: Terry Chapin	Discuss: sustainability principles including governance, abundance vs. scarcity
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 3: Sustainability science in our lives			
• Resource of the week: Minerals			
Jan 28, 30	In class	Small group: present visited locations Possible guest: UAF's Office of Sustainability Activity: design resource challenge	Fieldtrip: the Mill at Bunnel 131
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 4: Governance ("top down" on Tuesday and "bottom-up" on Thursday)			
• Resource of the week: Water			
Feb 4, 6	In class	Discuss: scale, paradigm shifts Activity: How are we each involved in top-down governance?	Discuss: permits, NEPA, recycling, certificate programs Possible guests: Robert Orttung, Jackson Fox
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 5: Critical thinking			
• Resource of the week: Air			
Feb 11, 13	In class	Discuss: Green washing. How are we each involved in governance? If population increases, should resource use decrease?	Discuss: Critical thinking; Is it ethical to make decisions for future generations? Activity: resource groups develop talking points for 4 audiences
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 6: System limits (Tuesday) and ecological economics (Thursday)			
• Resource of the week: Forests			
Feb 18, 20	In class	Discuss: amplification, tipping points/thresholds; path dependence	Discuss: forms of "capital"; circular economy Possible guest: Alaska Brewing
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 7: Risk/vulnerability (Tuesday) and resilience theory (Thursday)			

<ul style="list-style-type: none"> Resource of the week: Fire 		
Feb 25, 27	In class	<p>Discuss: risk; vulnerability; net positive and net negative activities and use of time</p> <p>Discuss: How can a resource system collapse?</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 8: Scale (Tuesday) and speed (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Fisheries 		
Mar 4, 6	In class	<p>Discuss: Which causes and impacts of sustainability challenges are local? Which are global?</p> <p>Discuss: Adaptive management; If our systems are more efficient, why aren't workdays shorter?</p>
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Spring break		
<p>Week 9: Critiques</p> <ul style="list-style-type: none"> Resource of the week: Land 		
Mar 18, 20	In class	<p>Discuss: Ecosystem services. What is being invested in? Increasing wealth inequality. Expansion vs. stability. Critical ecology.</p> <p>Possible guest: Alaska Venture</p>
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<p>Week 10: Environmental Justice (Tuesday) and public engagement (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Wildlife 		
Mar 25, 27	In class	<p>Discuss: Equity and equality; Just transition</p> <p>Possible guest: Heather Sayak Gordan</p> <p>Discuss: land restoration</p>
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<p>Week 11: Building Sustainability with toolboxes, plans, and infrastructure</p> <ul style="list-style-type: none"> Resource of the week: Energy 		
April 1, 3	In class	<p>Possible activity: Energy audit of the classroom</p> <p>Discuss: How to implement plans?</p> <p>Possible guest: Vanessa Raymond, Creative Director of ACEP</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 12: Applied week: Sustainability on campus (instructor accessible by appointment)</p>		
April 8, 10	In class	<p>Possible field trip to Museum of the North. How does the museum and makers sustain relics over the last 10,000 years?</p> <p>Possible field trip to Exotic Tree Plantation and T-Field. Land management. Science trash. Long-term ecological studies.</p>
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<p>Week 13: Solutions – focus on final papers - instructor accessible by appointment</p>		
April 15, 17		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 14: Where do we go from here?</p>		
April 22, 24		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 15: Final Paper is due on 1 May 2025 at 12:59pm Alaska</p>		

NRM 111X INTRODUCTION TO SUSTAINABILITY SCIENCE

SPRING 2025; CRN: 32370

3 credits

Course Description

Sustainability is a decision-making framework applied throughout history and the world. To make better decisions, scientists refine sustainability principles and methods. This course explores some of the principles of sustainability science including systems thinking, governance, resilience theory, ecological economics, vulnerability analysis, and adaptive governance. This course will challenge students to understand individual principles through their impacts on one or more of the sustainability E's (economics, environment, education, equity etc.). Course content will focus largely on Alaska.

To sustain the health, wellbeing and productivity of the regional environment, more than one way of knowing is required. This interdisciplinary approach can bring light to unanticipated consequences. To be effective, sustainability solutions often begin with research, understanding, and planning before new policies can be implemented and facilitate behavioral change.

Students are expected to have knowledge of contemporary sustainability challenges such as climate change, biodiversity loss, pollution and solid waste management, social inequality, urbanization, over-fishing, and ecosystem degradation. The class emphasizes the interdisciplinary nature of sustainability challenges and their solutions.

Students are expected to spend at least 6-9 hours/week working on course content.

Course Information

- **Meeting location and time:** FS982 103/105 Murie on Tuesday/Thursday at 2:00-3:30 pm
- **Office Hours:** Tuesday/Thursday at 11:00-12:00, or by appointment
- **Instructor:** Kelsey Aho
- **Email:** kaho3@alaska.edu

Readings: Students are responsible for reading, listening and watching assigned materials before class. Class time will be used to discuss the assignments and develop novel insights.

- Chapin III, F. Stuart. (2020). Grassroots Stewardship: Sustainability within our reach. Oxford University Press.
- Other assigned readings, audio and films will be made available on Canvas.

Course Goals

- Develop core skills in critical thinking, writing, listening, and oral presentation.
- Develop knowledge of the principles and methods that can be used to analyze and solve sustainability challenges.
- Understand how to use conceptual frameworks to analyze sustainability.
- Apply principles and methods to sustainability challenges through presentation and writing.

Learning Objectives

- Familiarity with terms and concepts used in sustainability science.
- Ability to identify social, economic, and ecological aspects of sustainability challenges.
- Development of critical thinking skills.
- Knowledge of how to integrate social, economic and ecological aspects of sustainability to create durable solutions.

Skills Development

The following skills are important for understanding and possibly solving sustainability challenges:

- Ability to paraphrase literature, audio, and videos from a variety of sources, including peer-reviewed literature.
- Ability to assess arguments made for/against sustainability.
- Ability to clearly and logically present one's perspective through oral presentation.
- Ability to write to a variety of audiences, to be able to clearly communicate information, to be able to use APA citation, to use and cite best available science, to use proper grammar, and to have fun!

APA Guidelines

- **Paper:** Standard (8.5" x 11")
- **Font:** 11pt Calibri
- **Line spacing:** double
- **Sections:** Title page, Essay, References
- **In-text citations:**
 - Paraphrase (author, year)
 - Quote on 1 page (author, year, p. #)
 - Quote on more than 1 page (author, year, pp. #s)
- **Reference list:** see https://owl.purdue.edu/owl/research_and_citation/apa_style/

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 before class.

Assignments

1) **Reading/listening/watching:** These materials are available on Canvas. Students are expected to read/listen/watch the materials and complete a short reflection on Canvas before class.

2) **Class participation:** This class is interactive and relies on strong student contribution through large and small group activities. If you may have trouble participating in class, please speak to the instructor at the beginning of the course. The atmosphere in class will be respectful and productive, and one that encourages the joint class exploration of a different natural resource each week. We expect everyone to challenge themselves. Class participation will take three forms:

- a. **Roles:** Before class, each person will pick up a “role” card. Cards include tasks such as: scribe, architect, tech specialist, timekeeper. Chose a different card each day, and complete the task as described on the other side of the card.
- b. **Discussion:** Students are required to read, listen, watch the assignments before class and participate in class activities such as small group discussions and roleplaying.
- c. **Presenting:** Each student will provide a 5-minute presentation on a natural resource. The presentation is part of the “Critical thinking project”.

3) **Critical thinking presentation:** Students will choose to focus on one of the “resources of the week”. The first task is to identify a sustainability challenge of that resource. For the **Critical thinking presentation**, students will provide an overview of the resource in Alaska (1 minute), a sustainability challenge of that resource (2 minutes), and at least one economic, environmental and social impact of the sustainability challenge (2 minutes).

4) **Critical thinking fact sheet:** Students will also write a **one-page fact sheet** about the 1) resource, 2) sustainability challenge, and 3) impacts. The fact sheet can be used as an outline for the in-class presentation.

5) **Critical thinking essay:** Using the factsheet as an outline, students will write a paper on the topics presented (resource, sustainability challenge, impact) and a possible solution. Papers have a 10-page minimum. A recommended structure includes: an introduction of the resource (1 page), an overview of the sustainability challenge (2 pages), impacts of the challenge (2 pages), possible solution(s) (1-3 pages), and discussion (1-3 pages). The final paper is due on May 1 at 11:59pm Alaska time.

Activity and the percentage of the final course grade

1)	Reading, listening, watching assignments	25%
2)	Class participation	25%
3)	Critical thinking presentation	10%
4)	Critical thinking fact sheet	10%
5)	Critical thinking essay	30%
	Total	100%

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.

The activities listed above 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

	C: 70 to 79 (C- 70-71; C+ 78-79)
A: 90 to 100 (A- 90-91; A+ 99-100)	D: 60 to 69 (D- 60-61; D+ 68-69)
B: 80 to 89 (B- 80-81; B+ 88-89)	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. Students are responsible for reading update messages on Canvas. 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. 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.”

Student protections statement: UAF embraces and grows a culture of respect, diversity, inclusion, and caring. Students at this university are protected against sexual harassment and discrimination (Title IX). Faculty members are designated as responsible employees which means they are required to report sexual misconduct. Graduate teaching assistants do not share the same reporting obligations. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site: <https://catalog.uaf.edu/academics-regulations/students-rights-responsibilities/>.

Disability services statement: I will work with the Office of Disability Services to provide reasonable accommodation to students with disabilities.

ASUAF advocacy statement: The Associated Students of the University of Alaska Fairbanks, the student government of UAF, offers advocacy services to students who feel they are facing issues with staff, faculty, and/or other students specifically if these issues are hindering the ability of the student to succeed in their academics or go about their lives at the university. Students who wish to utilize these services can contact the Student Advocacy Director by visiting the ASUAF office or emailing asuaf.office@alaska.edu.

Student Academic Support:

- Communication Center (907-474-7007, uaf-commcenter@alaska.edu, Student Success Center, 6th Floor Room 677 Rasmuson Library)
- Writing Center (907-474-5314, uaf-writing-center@alaska.edu, Student Success Center, 6th Floor Room 677 Rasmuson Library)
- UAF Math Services (907-474-7332, uaf-traccloud@alaska.edu)
Drop-in tutoring, Student Success Center, 6th Floor Room 677 Rasmuson Library)
1:1 tutoring (by appointment only), Chapman 210
Online tutoring (by appointment only) available
<https://www.uaf.edu/dms/mathlab/>, available at the Student Success Center
- Developmental Math Lab (Gruening 406, <https://www.uaf.edu/deved/math/>)
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, <https://www.ctc.uaf.edu/student-services/student-success-center/>)
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April 22, 24		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 15: Final Paper is due on 1 May 2025 at 12:59pm Alaska</p>		

NRM 111X INTRODUCTION TO SUSTAINABILITY SCIENCE

SPRING 2025; CRN: 32370

3 credits

Course Description

Sustainability is a decision-making framework applied throughout history and the world. To make better decisions, scientists refine sustainability principles and methods. This course explores some of the principles of sustainability science including systems thinking, governance, resilience theory, ecological economics, vulnerability analysis, and adaptive governance. This course will challenge students to understand individual principles through their impacts on one or more of the sustainability E's (economics, environment, education, equity etc.). Course content will focus largely on Alaska.

To sustain the health, wellbeing and productivity of the regional environment, more than one way of knowing is required. This interdisciplinary approach can bring light to unanticipated consequences. To be effective, sustainability solutions often begin with research, understanding, and planning before new policies can be implemented and facilitate behavioral change.

Students are expected to have knowledge of contemporary sustainability challenges such as climate change, biodiversity loss, pollution and solid waste management, social inequality, urbanization, over-fishing, and ecosystem degradation. The class emphasizes the interdisciplinary nature of sustainability challenges and their solutions.

Students are expected to spend at least 6-9 hours/week working on course content.

Course Information

- **Meeting location and time:** FS982 103/105 Murie on Tuesday/Thursday at 2:00-3:30 pm
- **Office Hours:** Tuesday/Thursday at 11:00-12:00, or by appointment
- **Instructor:** Kelsey Aho
- **Email:** kaho3@alaska.edu

Readings: Students are responsible for reading, listening and watching assigned materials before class. Class time will be used to discuss the assignments and develop novel insights.

- Chapin III, F. Stuart. (2020). Grassroots Stewardship: Sustainability within our reach. Oxford University Press.
- Other assigned readings, audio and films will be made available on Canvas.

Course Goals

- Develop core skills in critical thinking, writing, listening, and oral presentation.
- Develop knowledge of the principles and methods that can be used to analyze and solve sustainability challenges.
- Understand how to use conceptual frameworks to analyze sustainability.
- Apply principles and methods to sustainability challenges through presentation and writing.

Learning Objectives

- Familiarity with terms and concepts used in sustainability science.
- Ability to identify social, economic, and ecological aspects of sustainability challenges.
- Development of critical thinking skills.
- Knowledge of how to integrate social, economic and ecological aspects of sustainability to create durable solutions.

Skills Development

The following skills are important for understanding and possibly solving sustainability challenges:

- Ability to paraphrase literature, audio, and videos from a variety of sources, including peer-reviewed literature.
- Ability to assess arguments made for/against sustainability.
- Ability to clearly and logically present one's perspective through oral presentation.
- Ability to write to a variety of audiences, to be able to clearly communicate information, to be able to use APA citation, to use and cite best available science, to use proper grammar, and to have fun!

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- **Paper:** Standard (8.5" x 11")
- **Font:** 11pt Calibri
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- a. **Roles:** Before class, each person will pick up a “role” card. Cards include tasks such as: scribe, architect, tech specialist, timekeeper. Chose a different card each day, and complete the task as described on the other side of the card.
- b. **Discussion:** Students are required to read, listen, watch the assignments before class and participate in class activities such as small group discussions and roleplaying.
- c. **Presenting:** Each student will provide a 5-minute presentation on a natural resource. The presentation is part of the “Critical thinking project”.

3) **Critical thinking presentation:** Students will choose to focus on one of the “resources of the week”. The first task is to identify a sustainability challenge of that resource. For the **Critical thinking presentation**, students will provide an overview of the resource in Alaska (1 minute), a sustainability challenge of that resource (2 minutes), and at least one economic, environmental and social impact of the sustainability challenge (2 minutes).

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Activity and the percentage of the final course grade

1)	Reading, listening, watching assignments	25%
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4)	Critical thinking fact sheet	10%
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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

	C: 70 to 79 (C- 70-71; C+ 78-79)
A: 90 to 100 (A- 90-91; A+ 99-100)	D: 60 to 69 (D- 60-61; D+ 68-69)
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- UAF Math Services (907-474-7332, uaf-traccloud@alaska.edu)
Drop-in tutoring, Student Success Center, 6th Floor Room 677 Rasmuson Library)
1:1 tutoring (by appointment only), Chapman 210
Online tutoring (by appointment only) available
<https://www.uaf.edu/dms/mathlab/>, available at the Student Success Center
- Developmental Math Lab (Gruening 406, <https://www.uaf.edu/deved/math/>)
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, <https://www.ctc.uaf.edu/student-services/student-success-center/>)
- For more information and resources, please see the Academic Advising Resource List <https://www.uaf.edu/advising/students/index.php>

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- Disability Services (907-474-5655, uaf-disability-services@alaska.edu, 110 Eielson Building)
- Student Health & Counseling [free counseling sessions available] (907-474-7043, <https://www.uaf.edu/chc/appointments.php>, Whitaker Building, Room 206, Health, Safety & Security Bldg - same building as Fire and Police)

- Office of Rights, Compliance and Accountability (907-474-7300, uaf-orca@alaska.edu, 3rd Floor, Constitution Hall)
- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.edu, Wood Center 119)

Nondiscrimination statement: The University of Alaska is an affirmative action/equal opportunity employer, educational institution and provider. The University of Alaska does not discriminate on the basis of race, religion, color, national origin, citizenship, age, sex, physical or mental disability, status as a protected veteran, marital status, changes in marital status, pregnancy, childbirth or related medical conditions, parenthood, sexual orientation, gender identity, political affiliation or belief, genetic information, or other legally protected status. The University's commitment to nondiscrimination, including against sex discrimination, applies to students, employees, and applicants for admission and employment. Contact information, applicable laws, and complaint procedures are included on UA's statement of nondiscrimination available at www.alaska.edu/nondiscrimination.

For more information, contact:

UAF Office of Rights, Compliance and Accountability
 1692 Tok Lane
 3rd floor, Constitution Hall, Fairbanks, AK 99775
 907-474-7300
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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.....”

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.

Artificial intelligence

Generative artificial intelligence (AI) tools and large language models (LLMs), such as ChatGPT, are designed to assist in creating and analyzing text, code, video, audio, and other multimedia. Use of these resources in your coursework comes with benefits and risks. In this course, the rules for usage are as follows:

- Do not use AI unless the assignment explicitly allows for it in the instructions and/or rubric. If you are unsure if your use of AI on an assignment is acceptable, ask the instructor and ensure you have documentation of permissions as appropriate.
- Identify Contributions: Any work you submit that has incorporated AI-generated content should indicate which parts of the work are yours and which parts were generated or informed by AI. AI contribution should be no more than 25% of assignment content.
- Provide Attribution: All use of AI tools (such as ChatGPT and others) must be explicitly cited with an explanation of how the AI tool was used and which prompts were given. This may be lengthy. Consider including as an appendix. Correct formats for attribution can be found at: [Citing ChatGPT - UAF Elmer E. Rasmuson Library](#).
- Include Reflection: Any use of AI tools must include a brief reflection on what you learned by using the tool. For example, did you identify incorrect elements within generated work? How will you refine future prompts to address similar problems?

Any use of AI within the course that does not meet these rules may be considered a breach of the [UAF Code of Conduct](#) and carry substantial penalty. While exercising responsible and ethical engagement with AI is a skill you may hone over time, your unique human insights, critical thinking, and creative contributions remain pivotal to your learning experiences and success.

The course outline is below. For assignments, see the course page on Canvas.

Date		Tuesday	Thursday
Week 1: Welcome to "Introduction to Sustainability Science"			
• Resource of the week: People			
Jan 14, 16	In class	Introductions (identity and biography); Review syllabus; Course expectations; Polls	Discuss: What is sustainability? Activity: Reflect on Chapin and Kantner readings
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 2: What is "Sustainability Science"?			
• Resource of the week: Wisdom			
Jan 21, 23	In class	Discuss: sustainability principles including complex systems and growth limits Activity: resource small groups Possible guest: Terry Chapin	Discuss: sustainability principles including governance, abundance vs. scarcity
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 3: Sustainability science in our lives			
• Resource of the week: Minerals			
Jan 28, 30	In class	Small group: present visited locations Possible guest: UAF's Office of Sustainability Activity: design resource challenge	Fieldtrip: the Mill at Bunnel 131
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 4: Governance ("top down" on Tuesday and "bottom-up" on Thursday)			
• Resource of the week: Water			
Feb 4, 6	In class	Discuss: scale, paradigm shifts Activity: How are we each involved in top-down governance?	Discuss: permits, NEPA, recycling, certificate programs Possible guests: Robert Orttung, Jackson Fox
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 5: Critical thinking			
• Resource of the week: Air			
Feb 11, 13	In class	Discuss: Green washing. How are we each involved in governance? If population increases, should resource use decrease?	Discuss: Critical thinking; Is it ethical to make decisions for future generations? Activity: resource groups develop talking points for 4 audiences
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 6: System limits (Tuesday) and ecological economics (Thursday)			
• Resource of the week: Forests			
Feb 18, 20	In class	Discuss: amplification, tipping points/thresholds; path dependence	Discuss: forms of "capital"; circular economy Possible guest: Alaska Brewing
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Week 7: Risk/vulnerability (Tuesday) and resilience theory (Thursday)			

<ul style="list-style-type: none"> Resource of the week: Fire 		
Feb 25, 27	In class	<p>Discuss: risk; vulnerability; net positive and net negative activities and use of time</p> <p>Discuss: How can a resource system collapse?</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 8: Scale (Tuesday) and speed (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Fisheries 		
Mar 4, 6	In class	<p>Discuss: Which causes and impacts of sustainability challenges are local? Which are global?</p> <p>Discuss: Adaptive management; If our systems are more efficient, why aren't workdays shorter?</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
Spring break		
<p>Week 9: Critiques</p> <ul style="list-style-type: none"> Resource of the week: Land 		
Mar 18, 20	In class	<p>Discuss: Ecosystem services. What is being invested in? Increasing wealth inequality. Expansion vs. stability. Critical ecology.</p> <p>Possible guest: Alaska Venture</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 10: Environmental Justice (Tuesday) and public engagement (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Wildlife 		
Mar 25, 27	In class	<p>Discuss: Equity and equality; Just transition</p> <p>Possible guest: Heather Sayak Gordan</p> <p>Discuss: land restoration</p>
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<p>Week 11: Building Sustainability with toolboxes, plans, and infrastructure</p> <ul style="list-style-type: none"> Resource of the week: Energy 		
April 1, 3	In class	<p>Possible activity: Energy audit of the classroom</p> <p>Discuss: How to implement plans?</p> <p>Possible guest: Vanessa Raymond, Creative Director of ACEP</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 12: Applied week: Sustainability on campus (instructor accessible by appointment)</p>		
April 8, 10	In class	<p>Possible field trip to Museum of the North. How does the museum and makers sustain relics over the last 10,000 years?</p> <p>Possible field trip to Exotic Tree Plantation and T-Field. Land management. Science trash. Long-term ecological studies.</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 13: Solutions – focus on final papers - instructor accessible by appointment</p>		
April 15, 17		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
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SPRING 2025; CRN: 32370

3 credits

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Online tutoring (by appointment only) available
<https://www.uaf.edu/dms/mathlab/>, available at the Student Success Center
- Developmental Math Lab (Gruening 406, <https://www.uaf.edu/deved/math/>)
- The Debbie Moses Learning Center at CTC (907-455-2860, 604 Barnette St, Room 120, <https://www.ctc.uaf.edu/student-services/student-success-center/>)
- For more information and resources, please see the Academic Advising Resource List <https://www.uaf.edu/advising/students/index.php>

Student Resources:

- Disability Services (907-474-5655, uaf-disability-services@alaska.edu, 110 Eielson Building)
- Student Health & Counseling [free counseling sessions available] (907-474-7043, <https://www.uaf.edu/chc/appointments.php>, Whitaker Building, Room 206, Health, Safety & Security Bldg - same building as Fire and Police)

- Office of Rights, Compliance and Accountability (907-474-7300, uaf-orca@alaska.edu, 3rd Floor, Constitution Hall)
- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.edu, Wood Center 119)

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For more information, contact:

UAF Office of Rights, Compliance and Accountability
 1692 Tok Lane
 3rd floor, Constitution Hall, Fairbanks, AK 99775
 907-474-7300
uaf-orca@alaska.edu

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.....”

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.

Artificial intelligence

Generative artificial intelligence (AI) tools and large language models (LLMs), such as ChatGPT, are designed to assist in creating and analyzing text, code, video, audio, and other multimedia. Use of these resources in your coursework comes with benefits and risks. In this course, the rules for usage are as follows:

- Do not use AI unless the assignment explicitly allows for it in the instructions and/or rubric. If you are unsure if your use of AI on an assignment is acceptable, ask the instructor and ensure you have documentation of permissions as appropriate.
- Identify Contributions: Any work you submit that has incorporated AI-generated content should indicate which parts of the work are yours and which parts were generated or informed by AI. AI contribution should be no more than 25% of assignment content.
- Provide Attribution: All use of AI tools (such as ChatGPT and others) must be explicitly cited with an explanation of how the AI tool was used and which prompts were given. This may be lengthy. Consider including as an appendix. Correct formats for attribution can be found at: [Citing ChatGPT - UAF Elmer E. Rasmuson Library](#).
- Include Reflection: Any use of AI tools must include a brief reflection on what you learned by using the tool. For example, did you identify incorrect elements within generated work? How will you refine future prompts to address similar problems?

Any use of AI within the course that does not meet these rules may be considered a breach of the [UAF Code of Conduct](#) and carry substantial penalty. While exercising responsible and ethical engagement with AI is a skill you may hone over time, your unique human insights, critical thinking, and creative contributions remain pivotal to your learning experiences and success.

The course outline is below. For assignments, see the course page on Canvas.

Date		Tuesday	Thursday
Week 1: Welcome to "Introduction to Sustainability Science"			
• Resource of the week: People			
Jan 14, 16	In class	Introductions (identity and biography); Review syllabus; Course expectations; Polls	Discuss: What is sustainability? Activity: Reflect on Chapin and Kantner readings
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 2: What is "Sustainability Science"?			
• Resource of the week: Wisdom			
Jan 21, 23	In class	Discuss: sustainability principles including complex systems and growth limits Activity: resource small groups Possible guest: Terry Chapin	Discuss: sustainability principles including governance, abundance vs. scarcity
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 3: Sustainability science in our lives			
• Resource of the week: Minerals			
Jan 28, 30	In class	Small group: present visited locations Possible guest: UAF's Office of Sustainability Activity: design resource challenge	Fieldtrip: the Mill at Bunnel 131
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 4: Governance ("top down" on Tuesday and "bottom-up" on Thursday)			
• Resource of the week: Water			
Feb 4, 6	In class	Discuss: scale, paradigm shifts Activity: How are we each involved in top-down governance?	Discuss: permits, NEPA, recycling, certificate programs Possible guests: Robert Orttung, Jackson Fox
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 5: Critical thinking			
• Resource of the week: Air			
Feb 11, 13	In class	Discuss: Green washing. How are we each involved in governance? If population increases, should resource use decrease?	Discuss: Critical thinking; Is it ethical to make decisions for future generations? Activity: resource groups develop talking points for 4 audiences
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 6: System limits (Tuesday) and ecological economics (Thursday)			
• Resource of the week: Forests			
Feb 18, 20	In class	Discuss: amplification, tipping points/thresholds; path dependence	Discuss: forms of "capital"; circular economy Possible guest: Alaska Brewing
		<i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i>	
Week 7: Risk/vulnerability (Tuesday) and resilience theory (Thursday)			

<ul style="list-style-type: none"> Resource of the week: Fire 		
Feb 25, 27	In class	<p>Discuss: risk; vulnerability; net positive and net negative activities and use of time</p> <p>Discuss: How can a resource system collapse?</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 8: Scale (Tuesday) and speed (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Fisheries 		
Mar 4, 6	In class	<p>Discuss: Which causes and impacts of sustainability challenges are local? Which are global?</p> <p>Discuss: Adaptive management; If our systems are more efficient, why aren't workdays shorter?</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
Spring break		
<p>Week 9: Critiques</p> <ul style="list-style-type: none"> Resource of the week: Land 		
Mar 18, 20	In class	<p>Discuss: Ecosystem services. What is being invested in? Increasing wealth inequality. Expansion vs. stability. Critical ecology.</p> <p>Possible guest: Alaska Venture</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 10: Environmental Justice (Tuesday) and public engagement (Thursday)</p> <ul style="list-style-type: none"> Resource of the week: Wildlife 		
Mar 25, 27	In class	<p>Discuss: Equity and equality; Just transition</p> <p>Possible guest: Heather Sayak Gordan</p> <p>Discuss: land restoration</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 11: Building Sustainability with toolboxes, plans, and infrastructure</p> <ul style="list-style-type: none"> Resource of the week: Energy 		
April 1, 3	In class	<p>Possible activity: Energy audit of the classroom</p> <p>Discuss: How to implement plans?</p> <p>Possible guest: Vanessa Raymond, Creative Director of ACEP</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 12: Applied week: Sustainability on campus (instructor accessible by appointment)</p>		
April 8, 10	In class	<p>Possible field trip to Museum of the North. How does the museum and makers sustain relics over the last 10,000 years?</p> <p>Possible field trip to Exotic Tree Plantation and T-Field. Land management. Science trash. Long-term ecological studies.</p>
		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 13: Solutions – focus on final papers - instructor accessible by appointment</p>		
April 15, 17		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 14: Where do we go from here?</p>		
April 22, 24		<p><i>Assignments (readings, audio pieces, and films) will be shared on the course page on Canvas. Make sure to answer the follow-up questions before class.</i></p>
<p>Week 15: Final Paper is due on 1 May 2025 at 12:59pm Alaska</p>		

