

Syllabus for ERSC 250 Introduction to the Arctic (SCON)



Discussion: TR 9-10:15 a.m.

Office hours: T/W/R by appointment on [Calendly.com/edwardsb](https://calendly.com/edwardsb)
edwardsb@dickinson.edu

Professor: Ben Edwards
 142 Kaufman Bldg (x8934)
 twitter: [lava_ice](#)

Course Learning Objectives

The focus of this course is the Arctic region of planet Earth as shown above. I have three broad goals for each of you to achieve in ERSC 250:

- **First**, to develop a basic but holistic knowledge-base and understanding of what the Arctic is, including its main components: physical geography, geology, climate, ecology and human citizenry, and how all of these have interacted in the past;
- **Second**, to be able to reason through how these components and their interactions may change as global warming accelerates, and through that framework to be able to assess which of the economic opportunities that global warming will bring to the Arctic can be done in a socially, ecologically and environmentally sustainable way; and,
- **Third**, to further develop your skills of spatial reasoning and analysis while building interest and enthusiasm for one of Earth's most remarkable areas☺

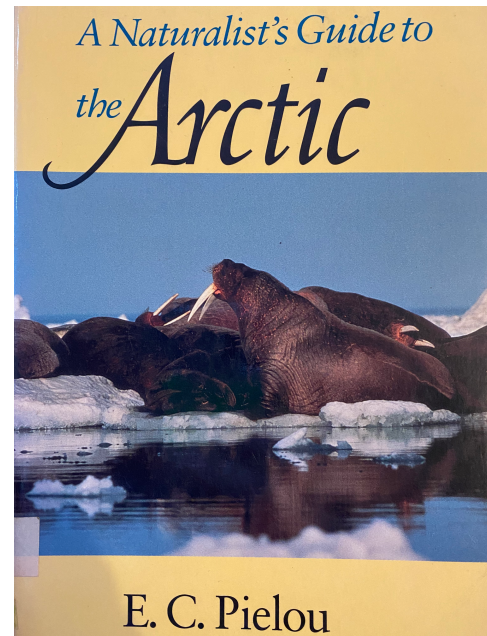
Pathways for achieving specific Course Learning Objectives

The pathways we will use to achieve the course learning objectives will include:

- Knowledge quizzes that will require you to be able to rapidly identify map- and diagram-based features that are the basic components of the Arctic knowledge-base;
- Short writing assignments and/or discussions to practice seeing connections between Arctic components, reasoning through how they will change as global warming intensifies, and assessing whether those connections will be resilient to different levels of increased human use of the Arctic; and
- Assignments and projects that will improve your powers of **spatial thinking** and analysis through using a variety of tools including Google Earth (download or use web version here: <https://www.google.com/intl/en-GB/earth/versions/>) and QGIS (download here: <https://qgis.org/en/site/forusers/download.html>)/ArcPRO (access on campus);

Textbooks/Other Materials

The main text we will use seems to be out-of-print, so I will put copies of selected chapters on Moodle for you to use during the class if you are not able to obtain a copy. The book is *A Naturalist's Guide to the Arctic* by E.C. Pielou (1994), and we will use several chapters as introductions to topics that we will explore further through peer-reviewed literature available on Moodle, online, or through LIS. ***I will expect that you have read or at least skimmed each of the readings listed in the course schedule and that you know the major concepts and key terms for each chapter, even if we have not discussed/defined the concepts/terms in class.*** Note that some weeks we will cover two chapters between discussion/lecture and lab; *please make sure to schedule your time to take into account the additional reading during these weeks.* I will also post a variety of pdf files, link to websites and to videos on moodle for you. Some of this information will be non-required but simply in case you want to get more information about a specific topic. Please always feel free to ask if you are unsure about whether a reading is required or not, and also let me know if you would like help finding more information about a particular topic.



Lecture/Discussion

We will meet in-person from 9-10:15 a.m. on Tuesday and Thursday (zoom link is posted to course Moodle site just in case). Your on-time attendance is expected unless otherwise instructed. IF you need to miss a class for whatever reason please let me know in advance when possible, or as soon as possible after class so that I know you are all right☺! We will do a variety of things in class, including listening and taking notes, participating in discussions and by answering questions, watching videos, and completing short exercises.

Electronic Communication

We will use 'Moodle' for electronic communication, accessible through the Dickinson Gateway;

you are (or will soon be) all listed as users in Moodle. I will post weekly events on Moodle, interesting websites, electronic copies of assignments/discussion/lecture materials, and will also post your grades. Please let me know ASAP if you have trouble logging into the site.

Assessment

We will assess the progress of your learning as follows:

In-class discussions and assignments, out-of-class speakers (20 %)

Fundamental Knowledge Quizzes (20 %); 8 total during course of semester, to be held weekly on Thursdays at the start of class

Individual Project (30 %); see below

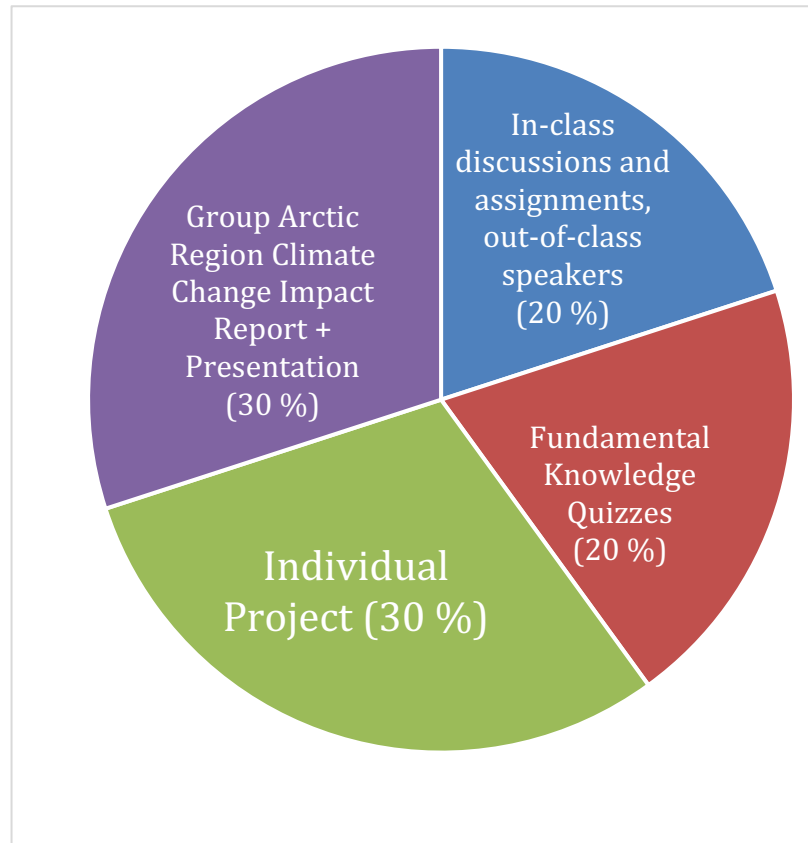
Group Arctic Region Climate Change Impact Report + Presentation (30 %); see below

Late assignments

I will deduct 10 percent per weekday off all late assignments, and 5 percent each for Saturday and Sunday. So, if an assignment is due Friday and you turn it in Monday before 9 a.m., 10 percent will be deducted. If an assignment is due Monday and you turn it in the following Monday before 9 a.m., 50 percent will be deducted.

In-class discussions and assignments

Your grade will be based on completed daily assignments (in- and out-of-class), preparation for class (doing reading beforehand), and participation in class. Make-up assignments for missed classes are assigned at my discretion, and will generally only be allowed for documented medical absences.



TENTATIVE 2023 Course Schedule

A **tentative** schedule of class topics, readings, and laboratory assignments follows on the next two pages. I reserve the right to alter any and all parts of the syllabus due to unforeseen circumstances. I will do my best to give advance notice before changing assignment due dates.

Tentative ERSC 250 Course Schedule				
Week No.	Date	Topics (green = spatial learning focus; blue = policy focus)	Background Readings	Due Dates
1	24/26 Jan	First Class: syllabus, expectations, overview of DC Arctic Studies program Defining the Arctic <i>Overview of spatial analysis tools</i>	In class ppt summarizing Arctic definitions; Pielou Chap 1; Arctic Year	Weekly Quiz: example quiz
	27 Jan (Fri)	Add/Drop Deadline (4 pm)		
2	31 Jan/2 Feb	Overview of Earth's Climate System, Paleoclimatology, and Arctic Climate <i>Introduction to QGIS</i>	Pielou Chap 2	FK Quiz 01: countries + other geography Groups announced and location selection
3	7/9 Feb	Arctic Terrain 1: Earth System Science (plate tectonics, geologic history) <i>Spatial analysis and Qgreenland</i>	Pielou Chap 3-4	FK Quiz 02: capitals
4	14/16 Feb	Arctic Terrain 2: the modern Arctic Cryosphere (land ice, sea ice, permafrost) <i>Spatial analysis and the cryosphere</i>	Pielou Chap 3-4	FK Quiz 03: glaciers 1 page proposal for Individual Project (14 Feb)
5	21/23 Feb	Arctic Ecology 1: ecosystem typology & arctic biomes <i>Spatial analysis and the ecosphere</i>	Pielou Chap 5-9	FK Quiz 04: seas and sea basin geography
6	28 Feb/1 Mar	[28th BE in Buffalo, guest speaker? KS] Arctic Ecology 2: plants, birds, mammals, fish, insects <i>Spatial analysis and the ecosphere</i>	Pielou Chap 5-9	FK Quiz 05: ecosystem components Revised/Approved Proposals
7	7/9 Mar	Initial Reports from groups and updates on Individual projects <i>Spatial analysis and other data for group projects</i>	(none)	FK Quiz 06: geography review Initial Group Report Update to class
	10-20 Mar	No Class – SPRING BREAK		
8	21/23 Mar	Arctic Human Ecology 1: ancient migrations and people <i>Spatial analysis and the human arctic</i>	Moodle reading	

9	28/30 Mar	Arctic Human Ecology 2: modern peoples <i>Review of Major Arctic Policy-making Bodies</i>	Moodle reading	<i>FK Quiz 07: arctic peoples</i>
10	4/6 Apr	Changing Arctic 1: evidence for modern and future change <i>Review of Major Arctic Policy-making Bodies</i>	Moodle reading	
11	11/13 Apr	Changing Arctic 2: ecological changes <i>How will global warming require revisions to existing Arctic policies?</i>	Moodle reading	<i>FK Quiz 08: geography summary</i>
12	18/20 Apr	Changing Arctic 3: social and political changes <i>How will global warming require revisions to existing Arctic policies?</i>	Moodle reading	Individual Project Update
	21 April	<i>Last day withdraw from a course with a 'W'</i>		
13	25/27 Apr	Changing Arctic 4: issues of Arctic security <i>How will global warming change Arctic strategic policies?</i>	Moodle reading	
14	2/4 May	Course Summary, Presentations on Individual Projects		Individual Projects Due
15	12 May 2 p.m.	<i>Group Presentations During Scheduled Final</i>		

Individual Projects (see detailed instructions separately)

Everyone comes to this type of seminar with very different interests, so to encourage you to pursue a topic about which you are passionate, the Individual Project will have lots of flexibility. See the posted handout on this for specific ideas and requirements. *Everyone will present an overview of their project to the rest of the class towards the end of the semester.*

Group Arctic Region Climate Change Impact Report + Presentation

You will also collect into groups of 3-4 to produce an overview report on the area around one of the following arctic communities (community plus the surrounding area with 50 km radius). The list of communities from which to choose will be posted during the second week of class.

The reports will provide overviews of the following within a 50 km radius of the community:

- physical and human geography,
- a summary of the terrain features and geology,
- an assessment of potential resources to be developed,
- an overview of the area's main terrestrial and marine ecosystems,
- a summary of evidence and future predictions for the area's response to global warming to date, and
- a plan for best practices for sustainable development.

Your final product will be a group presentation to the class that touches on all of the above. You will need to find reliable resources for information to answer these questions as well as to use

spatial tools to illustrate and analyze your area (we will have a number of in- and out-of-class tutorials for Google Earth and QGIS).

For synchronous class recordings:

If we have to move to virtual classes at some point, this class will be video recorded and the recording will be posted to Moodle. If you encounter barriers to being able to attend a synchronous class (either due to illness, care for a sick family member, an inability to access the internet, etc.), please email me and (depending on a number of factors) I will provide you with either the video recording, the audio recording, or a transcript of the class.

For any asynchronous class recordings:

Students may not share, send, post, publish, make public, or duplicate any recordings without the written authorization of those recorded. Failure to abide by these rules is a breach of privacy and a violation of copyright laws. It is furthermore considered a serious violation of Dickinson College Community Standards and subject to disciplinary action. Unless informed otherwise, students are to destroy any recordings shared by their professors at the end of the semester. Thank you for your compliance.

Use of student's computer cameras:

Active participation is an important and valued expectation for this class. To promote a positive class community as well as meaningful and engaging exchanges of ideas, I'd like us all to have our Zoom cameras on during synchronous classes, whenever possible, but I understand that this may not always be possible. If you believe having your camera on will be problematic for you, please schedule a time to connect with me about it in the first week of classes.

For extenuating circumstances:

If you're unable to attend class due to illness or extenuating circumstances, please notify me in advance. I will alert the CARE team and your advisor of multiple or extended absences at my discretion.

Accommodating Students with Disabilities

Dickinson values diverse types of learners and is committed to ensuring that each student is afforded equitable access to participate in all learning experiences. If you have (or think you may have) a learning difference or a disability – including a mental health, medical, or physical impairment – that would hinder your access to learning or demonstrating knowledge in this class, please contact Access and Disability Services (ADS). They will confidentially explain the accommodation request process and the type of documentation that Dean and Director Marni Jones will need to determine your eligibility for reasonable accommodations.

To learn more about available

supports, go to www.dickinson.edu/ADS or email access@dickinson.edu.

If you've already been granted accommodations at Dickinson, please follow the guidance at www.dickinson.edu/AccessPlan for disclosing the accommodations for which you are eligible and scheduling a meeting with me as soon as possible so that we can discuss your accommodations and finalize your Access Plan. If test proctoring will be needed from ADS, remember that we will need to complete your Access Plan in time to give them at least one week's advance notice.

SOAR: Academic Success Support and More

Students can find a wealth of strategic guidance by going to www.dickinson.edu/SOAR. This website for SOAR: Strategies, Organization, and Achievement Resources, includes apps, tips, and other resources related to time management, study skills, memory strategies, note-taking, test-taking, and more. You'll also find guidance aimed to help students "SOAR Through Remote Learning," as well as a schedule of academic success workshops offered through Academic Advising. If you'd like to request one-on-one assistance with developing a strategy for a manageable and academically successful semester, email SOAR@dickinson.edu.

Academic integrity will be taken very seriously in this course. Students who violate College rules on scholastic dishonesty will be subject to disciplinary action, which include the possible failure of the course and/or dismissal from the College. For a brief take on this complicated issue, follow these guidelines: 1) do your own work; clear any collaborations ahead of time and give full credit; 2) cite your sources fully and explicitly; and 3) for quotations, use quotation marks and cite fully; for summary or paraphrase, cite fully and explicitly at the end of the relevant paragraph or sentence. For further details, please read carefully and be familiar with the Community Standards on the Dickinson College website https://www.dickinson.edu/download/downloads/id/963/community_standards

The Dickinson College Plagiarism Policy:

To plagiarize is to use without proper citation or acknowledgment the words, ideas or original research of another. Whenever one relies on someone else for phraseology, even for only two or three words, one must acknowledge indebtedness by using quotation marks and giving the source, either in the text or in a footnote. When one borrows facts which are not matters of general knowledge--including all statistics--one must indicate one's indebtedness in the text or footnote. When one borrows an idea or the logic of an agreement, one must acknowledge indebtedness either in a footnote or in the text. When in doubt--footnote.

Most plagiarism is unintentional, the result of ignorance or inaccurate note-taking. Your paper, however, cannot be evaluated by guesses about your intention; it can only be evaluated as it exists. Whether the plagiarism is intentional or inadvertent, the penalty is severe. Read the discussion and examples carefully; if you have questions, consult with your instructor.

Quantitative Reasoning Center

Dickinson College provides additional support for students taking quantitative reasoning courses across the curriculum through the Quantitative Reasoning (QR) Center. The QR Center offers tutoring for ERSC 250 in addition to general quantitative support. **Click here** to make an appointment on WCONLINE. **Then, access the drop-down menu under "limit to" at the top of the scheduler and select ERSC 250.** This will restrict the tutor list and schedule to only those tutors approved for this course. The QR Center is located on the Main Floor of the Waidner-Spahr Library, directly across from the Norman M. Eberly Multilingual Writing Center.

Accommodating Students with Disabilities

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Jones will need to determine your eligibility for reasonable accommodations. To learn more about available supports, go to www.dickinson.edu/access, email access@dickinson.edu, call (717) 245-1734, or go to ADS in Room 005 of Old West, Lower Level (aka "the OWLL").

If you've already been granted accommodations at Dickinson, please let me know as soon as possible so that we can meet soon to review your Accommodation Letter and complete your Blue Forms. If you will need test proctoring from ADS, remember that you will need to provide them with at least one week's notice.

SCON Course A course that should introduce students to sustainability, sustainable development or related concepts; help students build knowledge and competencies in a field that is relevant to understanding one or more dimensions of sustainability (earth materials are the foundation of modern society!); and help students understand how the knowledge and methods that are the subject of the course can be applied or made relevant to inquiries about sustainability (identifying materials that are of societal importance and understanding the conditions under which they form). Sustainability need not be a major emphasis of an SCON course. SCON courses should expose students to the idea that sustainability has social, economic and environmental dimensions, but the course does not need to explore each of these dimensions.)

This course satisfies Dickinson College's sustainability graduation requirement. Sustainability has multiple and contested meanings. Most definitions reflect concerns for the wellbeing of people and living systems in a rapidly changing world, now and into the future. A working definition of sustainability adopted at Dickinson is the ability to improve human wellbeing equitably in this generation while protecting the environment and creating the conditions necessary for future generations to sustain a world that is environmentally healthy, socially just and economically robust. This framing of sustainability encompasses and emphasizes interdependencies among issues of human security, social justice, economic development, and science and technology, as well as many others, in relation to environmental systems.