ENVS-1001: Introduction to Developing Environmental Solutions

Fall 2020

Course Description and Learning Objectives

This course is the second part of the undergraduate introductory series in the Environmental Studies Program. It will provide students (you!) interested in continuing in Environmental Studies with an introduction to the skill set they need and will develop in the major to address multi-dimensional environmental issues. We will do this through learning about four environmental topics over the course of the semester that will provide context for learning quantitative approaches—from dimensional analysis to "back-of-the-envelope" calculations to data analysis, visualization, and interpretation. Much of our lecture time will be spent doing activities in small groups to build these skills; recitation sections will provide additional support for these activities or go into more depth on a specific challenge problem. By the end of the course, students will have mastered the following course learning objectives:

- Converting between units, and setting up unit conversion problems
- Approaching and completing word problems
- Using evidence as the basis for developing decisions about environmental issues
- Making evidence-based claims
- Conducting exploratory data analysis and visualization
- Accessing, analyzing, and interpreting long-term data
- Working effectively in small groups to evaluate an environmental issue

Class Meetings

Lecture T/Th, 3:55-5:10PM on Zoom: https://cuboulder.zoom.us/j/91355014943

Recitations

Section	Day	Time	Location	TA	LAs
011	M	9:40-10:30am	SEEC C120	Margaret	Cliff
015	T	8:55-9:45am	Zoom	Emily	Amalia, Sam
012	W	9:40-10:30am	SEEC C120	Margaret	Cliff, Sophie
016	Th	8:55-9:45am	Zoom	Steve	Amalia
018	F	9:10-10:00am	Zoom	Steve	Sophie
017	F	4:10-5:00pm	Zoom	Emily	Sam

Teaching Team & Office Hours

Name	Role	Contact	Office hours	Location
Steve Miller	Prof	steve.j.miller@colorado.edu	W 1-3 or by appointment	Zoom
Emily Beam	TA	emily.beam@colorado.edu	M 8-9, W 10:30-11:30	Zoom
Margaret Hegwood	TA	margaret.hegwood@colorado.edu	Th 10-12	Zoom
Cliff Adamchak	LA	clifford.adamchak@colorado.edu	M/W 8:30-9:30	Zoom
Sam Angelides	LA	samuel.angelidesjr@colorado.edu	T/Th 1-2	Zoom
Sophie Friedman	LA	sophie.friedman@colorado.edu	M/F 12:30-1:30	Zoom
Amalia Kamlet	LA	amalia.kamlet@colorado.edu	T 9:45-11:45	Zoom

We are all here to help you! Please make use of office hours.

Class Expectations

- We show up for one another. This means that *you* have done the reading and assessments, completed assigned exercises, and are ready to engage in the classroom. If you need extra help, please come to office hours or the support sessions during recitations. This means that *your teaching team* is ready to work with and support you during each class period.
- We create and maintain a respectful class environment. Honest inquiry, persistence, and dialogue are encouraged.
- We abide by all university and public health rules. You and your classmates have a right to learn safely, and your teaching team has the right to be safe when helping you.
- You come to the lecture and recitation sections for which you are registered. We will be working in small groups; planning group work just won't be possible if you don't.
- We look out for one another. Wrestling with environmental challenges can be stressful. For a lot of people, math can too. Then there's the pandemic. Beyond offering respect, let's support one another, embrace the positive focus of the class (solutions and practical skills), and even try to have a little fun.

Class Materials

Many of our readings will come from A Changing Planet, by Jason Neff. This is an online textbook for which you'll need to purchase access.

- If you purchased the book within the last 18 months, you should still have access. If you think you should still have access but don't, please email a teaching team member and we'll get you sorted.
- If you didn't, you will need to purchase it. If you are purchasing for the first time, you can buy it through the bookstore OR (recommended) click on the Pearson Revel link in the navigation bar. You'll need to create a Pearson account if you don't have one, then link your Pearson account with your Canvas account.

All reading assignments will appear as assignments in Canvas —you can view them as a calendar, so you know what is required for each class. The reading assignments marked with dates only come from the textbook. To access them, click on the Pearson Revel link in the navigation bar.

For some of the topics we will cover, we will provide texts, handouts, and assessments on Canvas. Please check our Canvas page frequently!

You need to bring a laptop to every class for data analysis exercises, writing, and research. Please install Microsoft Office (Word, Excel). You can get the software through OIT; please don't use the online version.

Requirements and Grading

The class is 4 credits and letter grade only. Students must have completed ENVS-1000.

Reading assessments and reflections: 15%

You must complete the online assessments in *A Changing Planet* or on Canvas (see Canvas for due dates). Sometimes you will be asked to write a short reflection. *Reading and assessments/reflections must be completed by 11:59PM the date they are due.*

Lecture and recitation exercises: 25%

You are expected to attend all classes, recitations, and engage in exercises, many of which will be graded for credit. During the semester, you will also sign up for two "Explain to an LA" sessions. A top grade in participation requires clear demonstration of effort and engagement by completing all in-class exercises. Due to this semester's unique circumstances, you will not be graded on verbal participation during lecture sessions. If you miss lecture or recitation, please watch recordings and/or connect with a classmate to learn the material; the TAs and LAs are also your resources.

Infographic Project: 10%

In the middle of the semester, you will complete an in-depth exercise to give you the opportunity to practice and apply the skills that you are learning.

Midterm exam: 15%

The midterm exam will be a take-home exam released at the end of lecture on 10/6 (5:10pm MST) and due by the end of lecture on 10/8 (5:10pm MST). The exam will be based on readings, concepts, and skills learned to date; there will be a review in class on 10/6. We will not provide alternative scheduling *except* in the case of (1) documented disability or (2) religious observance. *If you qualify for either case, please speak to us and provide the required documentation as soon as possible.*

Final project: 20%

You will work in small teams to conduct a final project related to one of the issues introduced during the semester. Your team will gather information, conduct data analysis, and write a report. You will submit the report and make a brief oral presentation during the final week of classes.

Final exam: 15%

Like the midterm exam, the final exam will be a take-home exam. You will have approximately 6 days to work on it; it will be due at the end of the regularly-scheduled time assigned by the registrar (December 9 at 7PM MST). The same stipulations exist as for the midterm exam.

Extra Credit

There will be two extra credit opportunities during the class; if both are completed, you can raise your final grade by 1%. These will be short surveys or written assignments that I'll announce during the semester.

Late Assignments

For every day that an assignment is late, we will reduce the grade by 5 points or the equivalent of one step in the letter grade scale (i.e., a B becomes a B-). If there is an emergency that prevents you from getting an assignment in, be prepared to provide written documentation.

Grades are as follows: 93 and greater = A, 90-92.9 = A-, 87-89.9 = B+, 83-86.9 = B, 80-82.9 = B-, 77-79.9 = C+, 73-76.9 = C, 70-72.9 = C-, 67-69.9 = D+, 63-66.9 = D, 60-62.9 = D-, 60 and below = F. We may curve grades upward at the end of the semester when all work is complete. We will not curve grades down.

All grades will be posted on Canvas and we try to keep these grades up to date through the semester. Please check your grades frequently so you can let us know if there are any issues. We are willing to discuss grades and go through any of your assignments or exams with you. However, we don't discuss grades over email so either come to office hours or set up an alternative time to meet and go over your grade.

Email Etiquette

Please email your TA first with respect to course matters; if they need Steve's input they will relay your message. When you email anyone on the Teaching Team regarding a question or to schedule an appointment, please:

- Include the course number "ENVS-1001" in your email subject line.
- Please address all members of the teaching team appropriately and with respect; we promise to do the same for you. You can use our first names, and you can address Steve as "Professor," or "Dr. Miller". The following are unacceptable: "Hey", "Yo", "Teach", etc. Above all, if a TA, LA, or any of your other professors asks to be addressed a particular way, please respect their wishes.

Zoom Etiquette

Keep it professional. At a minimum, this means being fully clothed, not doing anything illegal or inappropriate, and not disrupting class. The semester's already going to be weird. Don't make it weirder. In addition, please:

- Keep your microphones off unless otherwise instructed (e.g., invited to ask or answer a question)
- Use the chat for class-related topics only.

Professional doesn't have to be boring. But be reasonable and respectful.

CU policies that this course will uphold

Requirements for COVID-19

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible,
- wear a cloth face covering (over nose and mouth), especially when unable
- to maintain a distance of at least 12 feet,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and
    - you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or
    - you live on-campus, please alert CU Boulder Medical Services.

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policies on COVID-19 Health and Safety and classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the "Accommodation for Disabilities" statement on this syllabus.

Before returning to campus, all students must complete the COVID-19 Student Health and Expectations Course. Before coming on to campus each day, all students are required to complete a Daily Health Form.

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID19 must stay home and complete the Health Questionnaire and Illness Reporting Form remotely. In this class, if you are sick or quarantined, please email Steve to come up with an individual plan.

Accommodation for Disabilities

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the Disability Services website. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition or injury, see Temporary Medical Conditions under the Students tab on the Disability Services website.

Classroom Behavior

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and the Student Code of Conduct.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu); 303-492-5550). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the Honor Code Office website.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (including sexual assault, exploitation, harassment, dating or domestic violence, and stalking), discrimination, and harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or cureport@colorado.edu. Information about the OIEC, university policies, anonymous reporting, and the campus resources can be found on the OIEC website.

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please see me to make arrangements ASAP at the start of the semester if you have a conflict.
See the campus policy regarding religious observances for full details.

Fall 2020 – Course Schedule

If the course schedule changes, you will be given advanced warning in class and/or on Canvas.

Week	Period	Topic	Skills
1	Lecture (8/25) Lecture (8/27) Recitation	Welcome to ENVS-1001 Pre-course assessment, Intro to Excel No recitation this week	 Excel literacy
2	Lecture (9/1) Lecture (9/3) Recitation	**Introduction: Farming and Food** Nutrients, soils, and water in ag Intro to Excel support; group work contracts	 Units, unit conversions, scaling Excel practice; small group work
3	Lecture (9/8) Lecture (9/10) Recitation	How much fertilizer do we really need? Estimation: people & poultry Group work contracts	Quantifying tradeoffs Estimation and BOE calcs Small group work
4	Lecture (9/15) Lecture (9/17) Recitation	Agricultural water use **Introduction: Waste Management** Precision Agriculture	Forecasting through data analysis Data analysis, visualization, interpretation Excel, Applying BOE calculations
5	Lecture (9/22) Lecture (9/24) Recitation	Microbial communities and applicable functions Composting, recycling, and rebounding Box models and waste flux	Mathematical functions and visualization Evaluating claims with evidence
6	Lecture (9/29) Lecture (10/1) Recitation	GMO case study GMO case study GMO project: Creating an infographic	Differentiating evidence and claims Differentiating evidence and claims Data presentation; small group work
7	Lecture (10/6) Lecture (10/8) Recitation	Midterm review MIDTERM EXAM due by 5:10pm MST on 10/8 No recitation this week	
8	Lecture (10/13) Lecture (10/15) Recitation	**Introduction: Air pollution** Market-based policies European emissions market: what happened?	Calculating rates in Excel Data analysis, visualization, interpretation Data analysis, visualization, interpretation
9	Lecture (10/20) Lecture (10/22) Recitation	Pollution policies & equity How do we know if a policy works? EPA environmental justice screening	Metric choice, quantifying tradeoffs Counterfactual thinking Data analysis, visualization, interpretation
10	Lecture (10/27) Lecture (10/29) Recitation	**Introduction: Rivers and coastal water** Making evidence-based claims Simplifying complex figures	 Differentiating evidence and claims Data analysis, visualization, interpretation
11	Lecture (11/3) Lecture (11/5) Recitation	Analyzing fisheries data Analyzing the impacts of climate on fisheries Rapid assessment and analysis exercise	Data analysis, visualization, interpretation Data analysis, visualization, interpretation Data interpretation
12	Lecture (11/10) Lecture (11/12) Recitation	**Introduction: Final group projects** Group projects: work time Group projects: Q&A and TA/LA feedback	Data analysis, visualization, interpretation Small group work
13	Lecture (11/17) Lecture (11/19) Recitation	Group projects: work time Group projects: work time Group projects: Q&A and TA/LA feedback	Small group work Small group work Small group work
14	Lecture (11/24) NO CLASS 11/26 Recitation	Asynchronous activity: data in practice **No class 11/26 – Thanksgiving** **No recitations during Thanksgiving week**	Small group work
Note: All recitations will be remote from this point on.			
15	Lecture (12/1) Lecture (12/3) Recitation	Group projects: work time Final exam review Group projects: brief oral presentations	Small group work Small group work
16	Study Day (12/8) Final Exam (12/9)	 FINAL EXAM due by 7pm MST on 12/9	