

G352U- Energy, Minerals, and the Environment

Fall 2022- 4 credits

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Drop-in / Office Hours: MW 11:30 AM - 12:30 PM
& By appointment

Class Times & Room Numbers: MWF 10:15-11:20 AM in CH-53

Course Texts (optional): *Energy, Environment, and Climate* by Wolfson
Minerals Resources, Economics, and the Environment by Kesler and Simon

Over-arching Goals

1. You will be able to understand the earth energy system and potential impact of human activity.
2. You will be able to characterize key minerals (ore) extracted globally and their environmental impact.
3. You will be able to gather and quantitatively analyze data regarding energy generation, efficiency, and environmental impacts.

Ancillary Goals

1. You will experience energy generation first hand.
2. You will be able to express an idea in a well-structured, coherent paragraph.
3. You will be able to take a data set, make a complete plot with it, and interpret the results.

Grading Policy

This is an “Attend Anywhere” class so that you may attend either in-person OR remotely. Attendance is expected at all class meetings. That said, I understand life can get in the way at times, so if you miss a class, I will archive class videos so you can watch at another time. If you need more time to complete an assignment or other accommodations, please don’t hesitate to reach out during drop-in (office) hours or via email. I am dedicated to ensuring that ALL students can succeed in this class.

Exams 35% - a mid-term and final exam will be given. The final exam is cumulative, but emphasizing later material. *Exams must be taken at scheduled dates and times. If you need accommodation, please contact the DRC (disability resource center).*

Homework and In-class: 30% – Homework assignments will be given periodically. Homework will be discounted 5% per day late to a maximum of 40% off. The last day I will accept work is the last day of class.

Energy Project: 25% - you will measure the electricity usage of a machine or appliance and determine the environmental effects. You will then need to research efficiency options and determine the impact of implementation on a local and global scale.

Quizzes: 10% - There will be three short quizzes given during the beginning of class. These will be based on the assigned reading.

Dates and Topics (*tentative, subject to change*)

Date	Topic
1-3	Introduction
1-5	Overview of Earth System
1-7	Ore / Minerals - Crust
1-10	Ore / Minerals - Hydrothermal
1-12	Ore / Minerals - Iron
1-14	Placers / Soil
1-17	NO CLASS
1-19	Environmental Impacts of Ore Extraction / Processing
1-21	Energy and Society
1-24	Forms of Energy
1-26	Electricity and Distribution
1-28	NO CLASS
1-31	Fossil Fuels
2-2	Petroleum Systems
2-4	Coal
2-7	Environmental Impacts of Fossil Fuels
2-9	Nuclear Power
2-11	Geothermal and Tidal (Earth and Moon)
2-14	Solar and RPS
2-16	Solar
2-18	Wind
2-21	Hydro and Wind
2-23	Biomass (and Competition with Food)
2-25	Hydrogen: Fact and Myth
2-28	Climate Science
3-2	Climate Forcing and Carbon
3-4	Paleoclimate
3-7	Is Climate Changing?
3-9	New Solutions
3-11	Final review – last day of class
3-16	FINAL EXAM

...AND OTHER DETAILS YOU NEED TO KNOW:

In-Class Behavior:

I expect you to treat your fellow classmates, the class space, and me with respect. Derogatory or harassing language is not acceptable in this class, whether shared with the entire class directly or told as a joke a bit too loudly with your neighbor. I expect you to come to every class on time, to stay awake, and to participate in class as the situation requires. Please show your respect for the class by placing your cell ringers, text announcements, email alerts, and alarms on silent during class time, and only use your tech devices for class-related activities during class time.

Sexual Harassment and Discrimination:

Please be aware that PSU's policies require faculty members to report any instance of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would like to share information about these experiences with an employee who does not have these reporting responsibilities and can keep the information confidential, please contact:

- Confidential Advocates (503-725-5672) or psuwrc.youcanbook.me (for matters regarding sexual harassment and interpersonal/sexual violence)
- Center for Student Health and Counseling (SHAC): 1880 SW 6th Ave, (503) 725-2800
- Student Legal Services: 1825 SW Broadway, (SMSU) M343, (503) 725-4556

Access and Inclusion for Students with Disabilities:

PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your participation or learning, please notify me. The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment.

If you have, or think you may have, a disability that may affect your work in this class and need accommodations, contact the Disability Resource Center to schedule an appointment. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, <https://www.pdx.edu/drc>.

If you already have accommodations, please contact me to make sure that I am aware. Students who need accommodations for tests and quizzes are expected to schedule their tests to overlap with the time the class is taking the test.

PSU Resources:

- Financial insecurity: <https://www.pdx.edu/student-finance/emergency-fund>
- Food insecurity: <https://www.pdx.edu/student-access-center/food-assistance>
- Mental and physical health: <https://www.pdx.edu/health-counseling/>
- Discrimination: <https://www.pdx.edu/diversity/equity-compliance>
- Sexual harassment: <https://www.pdx.edu/diversity/equity-compliance>
- Women's Resource Center: 725-5672, <http://www.pdx.edu/wrc/>
- Global Diversity and Inclusion, 725-5919, <http://www.pdx.edu/diversity/>
- C.A.R.E Team: <http://www.pdx.edu/dos/care-team>
- Additional resources available to PSU students: <https://www.pdx.edu/dos/student-resources>

Classroom Requirements for All Students and Faculty Due to Covid-19

The University has established rules and policies to make the return to the classroom as safe as possible. It is required for everyone to follow all the Return to Campus rules and policies. To participate in this class, PSU requires students to comply with the following.

Masks Required at all Times in Classroom

- [Wear a mask or face covering indoors](#) at all times. Your mask or face covering must be properly worn (fully covering nose and mouth and tight fitting). Mesh masks, face shields, or face covering that incorporates a valve designed to facilitate easy exhalation are not acceptable. **Because a mask must be worn in the classroom, there should be no eating or drinking in the classroom.** If you have a medical condition or a disability that prevents you from wearing a mask or cloth face covering, you must obtain an accommodation from the [Disability Resource Center \(DRC\)](#) to be exempt from this requirement.
- CDC, State, and County guidance does not limit class size for in-person instruction or require physical distancing.

Vaccination

- Be vaccinated against COVID-19 and complete the [COVID-19 vaccination attestation](#) form. Those students with medical or nonmedical exemptions or who will not be on campus at all must complete the process described on “COVID-19 Vaccine Exemption Request Form” to establish those exemptions.

Health Check, Illness, Exposure or Positive Test for COVID-19

- Complete the [required self-check for COVID-19 symptoms before coming to campus each day.](#)
- If you are feeling sick or have been exposed to COVID-19, do not come to campus. Call SHAC to discuss your symptoms and situation (503.725.2800). They will advise you on testing, quarantine, and when you can return to campus.
- If you test positive for COVID-19, [report your result to SHAC](#) and do not come to campus. SHAC will advise you on quarantine, notification of close contacts and when you can return to campus.
- Please notify me, (i.e. your instructor), should you need to miss a class period for any of these reasons so that we can discuss strategies to support your learning during this time.
- If I become ill or need to quarantine during the term, either I or the department chair will notify you via PSU email about my absence and how course instruction will continue.

Failure to Comply with Any of these Rules

As the instructor of this course, the University has given me the authority to require your compliance with these policies. If you do not comply with these requirements, I may ask you to leave the classroom or I may need to cancel the class session entirely.

In addition, failure to comply with these requirements may result in a referral to the Office of the Dean of Student Life to consider charges under PSU’s Code of Conduct. A student found to have violated a university rule (or rules) through the due process of student conduct might face disciplinary and educational sanctions (or consequences). For a complete list of sanctions, see Section 14 of the [Student Code of Conduct & Responsibility.](#)