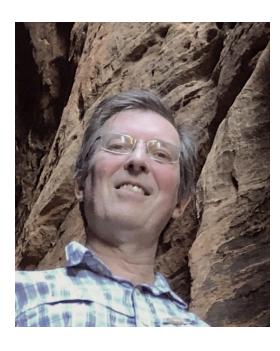


GEO/PHYS 3150

Energy in the 21st Century SYLLABUS



- Anthony R. (Tony) Lowry (he/him/his)
- Associate Professor of Geophysics

About Me/Why am I Teaching This Course?

Growing up in Wyoming, I was fascinated by Earth history and Earth processes. Along the way to Utah State University, I got a master's degree at the University of Wyoming, a Ph.D. at University of Utah, and held several temporary positions in industry (internships and consulting at major oil & gas companies) and academia (including hazards-related post-doctoral work in New Zealand, Indiana and Colorado, as well as atmospheric sensing at the National Center for Atmospheric Research). Much of my research has involved studying earthquakes, volcanoes and deep Earth processes, while my teaching centers

nd the geophysical tools and techniques for finding resources in the Earth and understanding Earth nazards. This is my first year teaching Energy in the 21st Century, and I look forward to sharing my knowledge of energy production while also learning from your varied perspectives.

Course Description

Despite its critical role in the development of human civilization and our global economy, most of us rarely think about the systems science and societal challenges posed by energy production. This course will address the basic chemistry, geology, and physics of humanity's current energy production, the economic and environmental costs, and issues related to renewable energy. All of us have an obligation to be literate about energy, and some of us may enter careers in which energy issues will be integral to our professional training. Energy in the 21st Century provides students with a science-based overview of energy resources. While a complex topic, the class can be subdivided into several distinct areas. We will use a variety of media and methods to demonstrate key concepts. Because some of these concepts are rather depressing, we'll spend time discussing sustainability and how we can effectively mitigate energy misuse and waste. Although most of the challenges are systemic in scale and require systemic solutions, we'll also highlight the personal budget implications of energy, and how efficient various energy systems are. Caveat: A foundation of this course is that anthropogenic (i.e. human-caused) global climate change is a fact. Starting the first day of class, everything we cover will build upon decades of peer-reviewed and published research from scientists, economists, and sociologists around the world. Our schedule is too full to devote time to debating a) whether or not global climate change is a thing, and b) whether it is indeed caused by human activities over the last 250 years. If you would like to engage in a discussion about alternative viewpoints, feel free to contact me... But do so consciously that the scientific consensus that has developed over a century, from millions of different types of observations by hundreds of thousands of scientists, is fairly impervious to debate-club sophistry.

This course fulfills the **DSC** and **QI** (**Depth Life and Physical Sciences** and **Quantitative Intensive**) graduation requirements, and it also satisfies course requirements for the <u>GeoWorkforce degree emphasis</u> (https://catalog.usu.edu/preview_program.php?
catoid=38&poid=37075&hl=geology&returnto=search#GeoWorkforceElectiveCourses15Credits) in the Geology major (College of Science) and the <u>Climate Change and Energy minor</u> (<a href="https://catalog.usu.edu/preview_program.php?catoid=12&poid=9358&returnto=25204) (College of Agriculture and Applied Sciences). Contact your advisor for more information about these degree options.

How to Contact Me/How I'll Contact You

and I will strive to respond to emails within 24 hours on weekdays. If you email me over the weekend, don't panic if you haven't heard from me within 48-72 hours. If you don't receive a response to your email in those timeframes, please contact me again, as sometimes emails slip through the cracks.

I will not have formal office hours for this course, but if you feel that a face-to-face interaction will be needed to resolve an issue, email me and we'll set up an appointment time for either an office visit or a zoom conference.

I'll contact you via Canvas Announcements (which automatically go to your email if your Canvas settings permit that), and for individual messages, directly via email. You can expect to see comments on your assignments or discussion posts during the week. Make sure to check for new announcements— these are usually posted early in the week and may include special information specific to the unit topic. Please check your email frequently— at least once every 24 hours— for updates and announcements.

Required Textbooks

<u>'Sustainable Energy— Without the Hot Air'</u> ⇒ (https://www.withouthotair.com/) David MacKay

<u>'Energy and Human Ambitions on a Finite Planet'</u> ⇒ (https://escholarship.org/uc/item/9js5291m)

Thomas W. Murphy Jr.

Both of these textbooks provide an introduction to energy concepts and calculations. The first is a bit dated but comprehensively covers energy production; we'll supplement with the second textbook. But, bonus, both texts are free! Other readings throughout the semester will provide additional perspectives on energy resources.

Grade Distribution

A note about grades: as your instructor, I do want you to succeed in this class. If you're not earning the grade that you'd like, please contact me so that we can discuss ways that you can improve it through extra credit or more effective studying. As with all things in this class (and your life?) procrastinating will not lead to a desired outcome, so be sure to email me early enough in the semester that I can help you. A good rule of thumb: the more unhappy you are with your grade, the earlier you should email me for help.

Grade Distribution



Outstanding

100-93% = A

Your work was **exceptional**: you have mastered the material. You consistently demonstrated an excellent understanding of all aspects of the

7/1/25,	10:17 AM	Syllabus for Fall 2025 GEO-3150-IO1 XL
	<93-90% = A-	course. You went above and beyond the requested outputs and offered unique insights and ideas. Your work exceeds my expectations for what I believe a student should demonstrate.
В	Good to very good <90-87% = B+ <87-83% = B <83-80% = B-	You have grasped the material . Your work was complete, clear and understandable, and you consistently showed a strong understanding of the material. Your work meets my expectations for what I want students to take away from this course.
С	Satisfactory <80-77% = C+ <77-73% = C <73-70% = C-	You completed the material . You were able to grasp the majority of the concepts in the course; and demonstrated some ability to apply those concepts.
D	### Satisfactory <70-67% = D+	Your work in the class was barely acceptable . Either you failed to complete some assignments, or your grasp of the course material was weak and incomplete.
F	Unsatisfactory <60-0% = F	Your work was unacceptable . You did not learn the material.

Evaluations

- 14 Discussions (lowest score will be dropped at end of semester): 10%
- 14 Quizzes (lowest score will be dropped at end of semester): 10%
- pblem Sets (lowest score will be dropped at end of semester): 20%
- 3 Exams (closed-book, lowest score will be dropped at end of semester): 40%

Cumulative Final Exam (closed-book, mandatory): 20%

Total: 100%

Assignment Scheduling and Criteria

Reading/Listening Assignments:

You will find information about reading and listening assignments (as well as quiz and problem sets) on the Unit page for each week. All reading and listening assignments are listed under the heading 'Learn'. Because this course is online, class engagement is a significant part of your experience. We will deliberate about the many issues in the Earth sciences without the benefit of face-to-face interaction, so keeping up with lectures and reading will be key to your success in the course. Completing the assignments enables you to be prepared to discuss the material with your fellow students.

Discussion Forum:

Discussion responses and quizzes are posted each Saturday and due on the following Sunday by 11:59PM. For discussions, post early and often! Each discussion requires one comment and at least two responses from you. Initial discussion posts are always (except in week 1) due Tuesdays at 11:59PM. Replies are due on Sunday at 11:59PM. Because discussion post scores are based on your participation in the forum, there is no make-up for missed discussion posts under any circumstances. *It is your responsibility to maintain a schedule that allows you to complete course materials on time.*

Discussion 'Rules of Engagement':

The most important rule of discussions is 'Be civil'. Our discussion forums are meant to be supportive conduits for learning and communication. Before submitting a question or response, consider whether the content or language of your comment would offend or upset a classmate, colleague, family member, or a member of the USU community. If the answer is 'yes', seek ways to adapt your post. Discussion topics are meant to lead to thought-provoking conversations where you'll use evidence-based arguments to support your posts, listen to the views of others, and question your own assumptions. There is no room for discrimination, intimidation, or harassment in discussion forums or in this course.

Because of the interrelatedness of energy, climate, and policy, the themes discussed in this course might sometimes have divisive undertones. Luckily, this is first and foremost a science class, and our knowledge of science relies upon evidence. Both understanding and persuasion rely on listening as well as expressing your perspective. Listening is hampered by hostility, so beware of making sweeping nouncements about groups of people, political parties or figures, and governments in your discussion without first compiling reputable evidence to support your argument. In other words, if you're going

to state that the Green New Deal banned cows or that fracking causes cancer, you'll need to cite the text

within the Green New Deal resolution where this ban is discussed or cite peer-reviewed journal articles where the link between fracking and cancer is identified.

Review <u>How to 'Discuss' (https://usu.instructure.com/courses/791747/pages/how-to-discuss)</u> for more information on discussion procedure and guides to crafting a successful post.

Quizzes and Exams:

Quizzes cover weekly course material, are open book, open note, open internet, and are due by Sunday at 11:59PM. The goal of this course is learning the material (and making mistakes is a tried-and-true method for learning!), so you'll have unlimited attempts to take each quiz before the due date. Over the course of the semester, three **closed-book** exams will be given. The final exam at the end of the semester will also be closed book. Unlike quizzes, you'll only have one attempt to take each exam. Since many of you have jobs or family responsibilities which may make scheduling difficult, all exams will be available to take for several days at any **USU Testing Center** (https://www.usu.edu/testing). Exams cover several weeks worth of material and may draw from quizzes with a mixture of multiple choice and short answer questions. It is your responsibility to schedule your exam at a USU Testing Center within the testing period. **If you are experiencing scheduling issues, you must contact me before the exam is due.** There is absolutely no make-up for missed exams.

The goal of this course is learning, so you'll have the opportunity to correct missed questions on Exams 1, 2, and 3 for *partial* credit. Corrections must follow the required format and include all required information (see assignment description for examples). If your corrections are not in the required format or your corrections are missing required information, you will not receive credit. Since this is an extra credit opportunity, you will not be able to resubmit your corrections. Exam corrections will be due one full week before the next exam testing period (e.g., if the Exam 2 testing period begins March 23rd, Exam 1 corrections will be due March 15th). Exam corrections will be not accepted after this date. Also, if you missed or chose not to take an exam, you will not be able to make corrections for that exam.

Problem Sets and the 'Chance' Card

You will be assigned four problem sets throughout the semester. Problem sets are meant to emphasize important concepts and allow you to exercise the quantitative parts of your brain and satisfy the QI (quantitative-intensive) requirements for this course. Several of the problem sets will require you to make calculations and conversions, and to explore chemical and physical processes. Problem set assignments are always due on Sundays three to four weeks after they are posted.

If you have an uneasy relationship with math— especially unit conversions— I suggest looking at the problem sets well ahead of their due date and identifying things that you may need more help understanding. As with all assignments, I'm able to offer assistance, but not immediately before an 'gnment is due. If you need help understanding math concepts, tutoring is available at all USU puses as well as online through Tutor.com (https://www.usu.edu/online/student_tutoring).

The goal of this course is learning, so you'll always have the opportunity to correct missed questions on Problem Sets for *partial* credit. Corrections will require shown work, an explanation of the mistake, and an explanation of how the answer should be calculated. Problem Set corrections will always be due before the next Problem Set deadline (e.g., if Problem Set 3 is due November 3rd, the Problem Set 2 corrections will be due November 2nd). Problem Set corrections will be not accepted after this date.



Good news! You are the beneficiary of a 'Chance Card' that will allow you to abstain from one of the four assigned problem sets or drop the lowest grade on a problem set. The lowest problem set score will be dropped at the end of the semester.

'Dig Deeper'

At the bottom of every module page, you'll find a 'Dig Deeper' section with several links to relevant material. Although the resources included in 'Dig Deeper' sections are not required, they do provide additional information should your curiosity be unsatisfied by the assigned reading/watching/listening material.

Late Work Policy

If you have issues completing assignments, or you foresee problems in your schedule, you must let me know as soon as you can so that we can find a solution. Emailing me after an assignment is due, no matter what the circumstance, is unacceptable except in very rare circumstances. However, late assignments (except discussion posts* and exams‡) will be accepted up to ten days beyond their due date with a penalty of 10% per day (including weekends). It is better to turn in something than turn in nothing, but in the real-world lateness means dollars lost, so you will be "fined" accordingly.

*Yes, there is a caveat: because discussion posts require real-time engagement with your classmates, late discussion posts are not accepted under any circumstances. Don't worry, the lowest discussion score is dropped from your final grade, which should provide you a bit of breathing room if you miss one.

‡All exams must be taken during their scheduled dates, but your lowest exam score will be dropped from their final grade. The final exam is required.

Extra Credit Policy

There are many opportunities during the semester to recoup lost points through exam and problem set make-ups, and because the lowest scores are dropped from your quiz, discussion, problem set, and exam grades, and because your grade in this course is mostly a reflection of your effort and time spent studying during the semester, there will be few or no opportunities to earn extra points at the end of the semester. If you're at all concerned about your grade, it's unwise to count on being able to complete a relatively easy assignment for lots of points. If they are offered at all, extra credit opportunities will require more effort and will be graded more rigorously than scheduled assignments.

(Tentative) Course Schedule

Schedule

Unit/Week	Topic	Reading	Assignment(s)	Important Dates
1	Course Introduction	EPA: What is your carbon footprint?; Course Syllabus	Unit 1 Discussion: First post due Thurs., follow-up posts due Sun. Unit 1 Quiz Due Sunday	First Post: 11:59PM, Thursday 1/9/2025; Follow- up Posts: 11:59PM, Sunday 1/12/2025 11:59PM, Sunday 1/12/2025
2	Introduction to Energy and Energy Distribution	Chapters 1 and 2 SEWTHA (MacKay); 'How the Electricity Grid Works'	Unit 2 Discussion: First post due Tues., follow-up posts due Sun. Unit 2 Quiz Due	First Post: 11:59PM, Tuesday 1/14/2025; Follow- up Posts: 11:59PM, Sunday 1/19/2025
			Sunday	11:59PM, Sunday 1/19/2025
		Chapter 8 §8.0–8.4	Unit 3 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 1/21/2025; Follow- up Posts: 11:59PM, Sunday 1/26/2025
3		EHAFP (Murphy)	Problem Set 1 Due Sunday	11:59PM, Sunday 1/26/2025
			Unit 3 Quiz Due Sunday	11:59PM, Sunday 1/26/2025
4	Global Impact of Hydrocarbons	Chapter 7 EHAFP (Murphy)	Unit 4 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 1/28/2025; Follow- up Posts: 11:59PM, Sunday 2/2/2025
•			Unit 4 Quiz Due Sunday	11:59PM, Sunday 2/2/2025

			•	veek. Schedule your exam at
	Energy Efficiency Measurement and Limitations	'The True Cost of Fossil Fuels' (Inman); Chapters 21 and 22, SEWTHA (MacKay)	a USU Testing Cente Exam 1 (Units 1-4) Opens Monday, Closes Friday	Opens Monday 2/3/2025; closes Friday 2/7/2025. USU Testing Centers ONLY
5			Unit 5 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 2/4/2025; Follow- up Posts: 11:59PM, Sunday 2/9/2025
			Unit 5 Quiz Due Sunday	11:59PM, Sunday 2/9/2025
	Nuclear Energy	'The Future of Fusion' (Ball); Chapter 15 EHAFP (Murphy)	Unit 6 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 2/11/2025; Follow- up Posts: 11:59PM, Sunday 2/16/2025
6			Unit 6 Quiz Due Sunday	11:59PM, Sunday 2/16/2025
			Problem Set 2 Due Sunday	11:59PM, Sunday 2/16/2025
7	Energy and Climate Change	Chapter 9 EHAFP (Murphy)	Unit 7 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 2/18/2025; Follow- up Posts: 11:59PM, Sunday 2/23/2025
			Unit 7 Quiz Due Sunday	11:59PM, Sunday 2/23/2025
0	Chapters 14 & 16.1 Geothermal EHAFP (Murphy) and Biofuels 'Geothermal Energy: Rocks'	,	Unit 8 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 2/25/2025; Follow- up Posts: 11:59PM, Sunday 3/2/2025
8		'Geothermal Energy: Hot Rocks'	Unit 8 Quiz Due Sunday	11:59PM, Sunday 3/2/2025
			Exam 2 opens next value a USU Testing Cente	veek. Schedule your exam at
9	Society	'What's New for Coal Country'; 'Uranium Pervades Homes on and Near Navajo Nation';	Exam 2 (Units 5-8) Opens Monday, Closes Friday	Opens Monday 3/3/2025; closes Friday 3/7/2025. USU Testing Centers ONLY
			Unit 9 Discussion: First post due Tues.,	First Post: 11:59PM, Tuesday 3/4/2025; Follow-

		'Utah Coal Country Strike Team'	follow-up posts due Sun.	up Posts: 11:59PM, Sunday 3/9/2025			
			Unit 9 Quiz Due Sunday	11:59PM, Sunday 3/9/2025			
	SPRING BREAK						
10	O. J. D.	'Solar Power for Everyone' (McKibbon); Chapter 13 EHAFP (Murphy)	Unit 10 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 3/18/2025; Follow- up Posts: 11:59PM, Sunday 3/23/2025			
	Colai i owoi		Unit 10 Quiz Due Sunday	11:59PM, Sunday 3/23/2025			
			Problem Set 3 Due Sunday	11:59PM, Sunday 3/23/2025			
11	Wind Power	'Rural Connections' nd Power (Stafford); Chapter 12 EHAFP (Murphy)	Unit 11 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 3/25/2025; Follow- up Posts: 11:59PM, Sunday 3/30/2025			
			Unit 11 Quiz Due Sunday	11:59PM, Sunday 3/30/2025			
40	Utah and 'The Rare Earths-Rolle 2 Renewable Coaster' (Gee); 'Four Energy Minerals' (Bittle)	, ,	Unit 12 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 4/1/2025; Follow- up Posts: 11:59PM, Sunday 4/6/2025			
12			Unit 12 Quiz Due Sunday	11:59PM, Sunday 4/6/2025			
			Exam 3 opens next value a USU Testing Center	veek. Schedule your exam at			
	Case Studies: The Geopolitics of Energy 'Energy: A Human History' (Columbia Energy Exchange Podcast)		Exam 3 (Units 9-12) Opens Monday, Closes Friday	Opens Monday 4/7/2025; closes Friday 4/11/2025. USU Testing Centers ONLY			
13		Unit 13 Discussion: First post due Tues., follow-up posts due Sun.	First Post: 11:59PM, Tuesday 4/8/2025; Follow- up Posts: 11:59PM, Sunday 4/13/2025				
•			Unit 13 Quiz Due Sunday	11:59PM, Sunday 4/13/2025			
			Problem Set 4 Due	11:59PM, Sunday 4/13/2025			

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		Solutions? Larger Problems?	Chapter 26 and 29 SEWTHA (MacKay)	First post due Tues.,	First Post: 11:59PM, Tuesday 4/15/2025; Follow- up Posts: 11:59PM, Sunday 4/20/2025
1	14			Unit 14 Quiz Due Sunday	11:59PM, Sunday 4/20/2025
				Final Exam opens next week. Schedule your exam at a USU Testing Center	
	15	What Now?	Review Notes and Lecture Slides, Study	Unit 15 Discussion: No posts due Unit 15 Quiz: No quiz assigned	No Discussion or Quiz assignments. Good luck studying!
			Guide	Final Exam (Units 1- 14) Opens Friday	Opens Friday 4/25/2025; closes Wednesday 4/30/2025

As this is my first time teaching the course and we are changing the textbook (ergo emphasis) from that used by previous instructors, this schedule will change a bit as we go.

Here is the schedule in .xlsx format: <u>SP25_GEO3150_Schedule.xlsx</u> (https://usu.instructure.com/courses/791747/files/95428925?wrap=1) \(\psi \) (https://usu.instructure.com/courses/791747/files/95428925/download?download frd=1)

Check for schedule changes often— at least once a week!

IDEA Objectives and Course Evaluations

This semester, much of the content will lead to a similar goal—guiding you, the student, to think critically about energy topics around the world. With this in mind, the following IDEA Objectives are important/essential in 'Energy in the 21st Century':

- 1) Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
- 3) Learning to apply course material (to improve thinking, problem solving, and decisions)
- 11) Learning to analyze and critically evaluate ideas, arguments, and points of view
- e end of the semester, you'll receive a flurry of emails reminding you to complete an IDEA Evaluation for this course. What is this survey? Well, you can think of it as a way to help me make this course better for future students and measure my progress as an instructor by providing information

about your experience and giving constructive feedback about how to improve the course. Yes, I do read these.

But wait! If you've ever been frustrated that IDEA Evaluations only benefit future students, you'll also be asked to participate in an anonymous survey (for points!) mid-way through the semester. Your constructive feedback will allow me to address issues that might be limiting your success so that you can potentially improve your grade and your experience in the class.

Learning Outcomes

- 1. Understand what our current energy use patterns are, and what the primary energy sources are, in the US and globally. We will examine energy consumption patterns as a function of national GDP, population, geography, and use sectors.
- 2. Evaluate where our current energy resources come from. This means examining the full resource cycle of our current energy resources, including renewables as well as oil, natural gas, coal, and nuclear fuel.
- 3. Examine the fundamentals of the physics of energy, and the basic chemical and physical principles that limit any energy use. We will also acquire a working understanding of "energy efficiency".
- 4. Discuss the positive economic services provided by energy consumption, and the environmental and climate implications of hydrocarbon use.
- 5. Examine future energy resources: their basic physics, their potentials, their limitations, and their distribution. Key point: there's no free lunch.
- 6. Understand the fundamental terminology and concepts of energy, and be able to make some basic calculations regarding the economics and science of energy.
- 7. Define sustainability in the context of our current and projected energy use, and develop the knowledge to make sustainable environmental, social, and economic energy choices

Course Fees

A \$15 per credit-hour fee is applied to all online courses to support digital technologies and support services required for engaging in effective online learning.



Course Policy on the Use of Generative Al

The use of generative AI in assignments is not permitted, and discussion posts/homeworks/exams seen to have utilized AI tools will receive a zero score. This course affords you an opportunity to explore observations, evidence and ideas to develop a nuanced understanding of an extremely complex topic. AI substitutes a mediocre and often inaccurate averaging of thought in place of the uniqueness of your human mind. This may be appropriate for mundane or tedious tasks found in corporate offices, but it has no place in a college classroom dedicated to developing skillsets that will lead you to compelling or original insights. Moreover, frequent use of AI tools encourages offloading of cognitive tasks and reduces critical thinking skills, which are the very skills your tuition dollars are spent to develop.

Canvas Information and Tech Support

Canvas is where course content, grades, and communication will reside for this course.

- http://canvas.usu.edu/)
 - Your username is your A#, and your password is your global password (the same one you use for Banner or Aggiemail).

I know Earth physics, but I don't know all of the ins and outs of our course delivery software. If you have any problems opening Canvas assignments or accessing an exam in Proctorio, please use the resources below:

- For <u>Canvas (http://canvas.usu.edu/)</u>, <u>Passwords (https://id.usu.edu/Password/Help/#password)</u>, or
 any other computer-related technical support contact the <u>IT Service Desk (http://it.usu.edu/)</u>.
 - 435 797-4357 (797-HELP)
 - o 877 878-8325
 - http://it.usu.edu/)
 - servicedesk@usu.edu (mailto:servicedesk@usu.edu)

University Policies & Procedures

Appropriate Use of Canvas and Other IT Resources

vas and all other course technologies are information technology services provided as tools to
 rurther the mission of the university. By using these services, users agree to comply with USU Policy
 550: Appropriate Use of Computing, Networking, and Information Resources

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(https://www.usu.edu/policies/550) and the accompanying Terms of use for USU IT ⇒

(https://usu.service-now.com/aggies?id=kb_article_view&sysparm_article=KB0015388) resources, as well as https://www.usu.edu/student-conduct/student-code/article5) of the USU Student Code. Using course technologies in ways that are inconsistent with the university's mission or are disruptive will not be tolerated. Disruptive behavior includes any activity that interferes with either the faculty member's ability to conduct the class or the ability of other students to profit from the instructional program.

Classroom Behavior

Utah State University supports the principle of freedom of expression for both faculty and students. The University respects the rights of faculty to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede the learning process. Disruptive classroom behavior will not be tolerated. An individual engaging in such behavior may be subject to disciplinary action. Read Student Code Article V Section V-3 (https://www.usu.edu/student-conduct/student-code/article5) for more information.

Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 (https://www.usu.edu/policies/403) further defines academic freedom and professional responsibilities.

Academic Integrity - "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this
 institution; and
- Is a welcomed and valued member of Utah State University.

@ demic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University's Student Code. Acts of academic dishonesty include but are not limited to:

- Cheating: using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
 - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually;"
 - Depending on the aid of sources beyond those authorized by the instructor in writing papers,
 preparing reports, solving problems, or carrying out other assignments;
 - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
 - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
 - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
 - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.
- Falsification: altering or fabricating any information or citation in an academic exercise or activity.
- Plagiarism: representing, by paraphrase or direct quotation, the published or unpublished work of
 another person as one's own in any academic exercise or activity without full and clear
 acknowledgment. It also includes using materials prepared by another person or by an agency
 engaged in the sale of term papers or other academic materials.

For additional information go to: <u>ARTICLE VI. University Regulations Regarding Academic Integrity</u>

(https://www.usu.edu/student-conduct/student-code/article6)

Discrimination and Sexual Misconduct

General Overview

USU strives to provide an environment for students and employees that is free from discrimination (https://www.usu.edu/equity/non-discrimination) and sexual misconduct (https://www.usu.edu/equity/sexual-misconduct/Sexual-Misconduct-Terms). If you experience sexual misconduct or discrimination at any point during the semester inside or outside of class, you are encouraged to contact the USU Title IX Coordinator via Distance Education room 400 in Logan, 435-797-1266, titleix@usu.edu (mailto:titleix@usu.edu), or at equity.usu.edu/report (https://www.usu.edu/equity/report). You can learn more about the USU resources available for individuals who have experienced sexual misconduct at sexual-respect.usu.edu (https://www.usu.edu/equity/resources (https://www.usu.edu/equity/resources).

Tauired Reporting of Sexual Misconduct and Threats of Harm

USÚ cares about our students and provides a number of resources and supportive measures to students who may be experiencing thoughts of self-harm or who have experienced sexual misconduct. To ensure

students are informed about resources and services available to them, including available grievance or criminal processes for incidents of sexual misconduct, USU has implemented <u>reporting policies and practices</u> (https://www.usu.edu/policies/340) that require designated employees to report any information they receive about incidents of sexual misconduct. This reporting policy also assists USU with its efforts to prevent sexual misconduct and keep our campus community safe.

Under USU's sexual misconduct reporting policy, I am designated as a "reporting employee (https://www.usu.edu/equity/sexual-misconduct/employees.php)." This means that if you share information with me about incidents of sexual misconduct (https://www.usu.edu/equity/sexual-misconduct/Sexual-Misconduct-Terms.php) (sexual harassment, sexual assault, relationship violence, or sex-based stalking), including within a course assignment, , I will report that information to the USU Title IX Coordinator (https://www.usu.edu/equity/sexual-misconduct/Title-IX-Coordinator.php). I will also share with you information about designated confidential resources (https://www.usu.edu/equity/sexual-misconduct/confidential-resources), supportive measures (https://www.usu.edu/equity/Supportive-Measures.php), and how you can file a report (https://www.usu.edu/equity/report.php) with the USU Title IX Coordinator.

Self-disclosures about sexual misconduct that you experienced are not required for your course work.

Similarly, if you disclose thoughts of harm to self or a threat to others to me, including within a course assignment, I will report the information to the appropriate campus administrators. I will also share with you information about the <u>mental health and wellness resources</u> (https://www.usu.edu/aggiewellness/caps) available to you.

Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Students with Disabilities

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) (http://www.usu.edu/drc) as early in the semester as possible (University Inn # 101, (435) 797-2444, drc@usu.edu (mailto:drc@usu.edu). All disability related mendations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to vide accommodations.

Students Who are Pregnant or Have a Pregnancy-Related Condition

If you need academic accommodations related to pregnancy, childbirth, false pregnancy, termination of pregnancy, recovery, or other pregnancy related conditions, please contact the Office of Equity as early as possible. All accommodations related to pregnancy must be approved by the Office of Equity. The Office of Equity will then coordinate with instructors to provide accommodations. The University will not exclude a student from participating in any part of an educational program based on the student's pregnancy or pregnancy related conditions.

Office of Equity: Distance Education, Room 400, Logan Campus, 435-797-1266, Office of Equity:

Pregnancy and Pregnancy Related Conditions → (https://www.usu.edu/equity/pregnancy-accommodations).

Inclusive Excellence

USU provides resources to help all students feel included as part of the campus and broader USU community. To learn more about the resources available and how to access them, visit the Inclusive-excellence/).

Excellence Office (https://www.usu.edu/inclusive-excellence/).

Grievance Process

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Academic Grievances section of the Course Catalog (https://catalog.usu.edu/content.php?catoid=39&navoid=30452).

Full details for USU Academic Policies and Procedures

- Acceptable Use of University Computing Resources (https://www.usu.edu/policies/550)
- Academic Policies and Practices (USU Catalog)

 (https://catalog.usu.edu/content.php? catoid=39&navoid=29998)
- Student Conduct (http://www.usu.edu/studentconduct)
- Student Code (https://www.usu.edu/student-conduct/student-code/)
- (https://catalog.usu.edu/content.php?catoid=38&navoid=28932) Academic Freedom and Professional Responsibility Policy (https://www.usu.edu/policies/403)

Emergency Procedures

In the case of a drill or real emergency, classes will be notified to evacuate the building via USU official communication channels. Those channels will be: an audible alarm, such as a fire alarm; an Aggie Alert notification; or notification by a USU representative. In the event of a disaster that does not permit enough time for notifications, evacuate as the situation dictates (i.e., when shaking ceases in an earthquake; immediately when a fire is discovered or in the event of other immediate life safety concerns). If it does not inhibit safety, turn off computers and take any personal items with you. Elevators

② Ild not be used; instead, use the closest stairs. See <u>USU Emergency Management</u> ⇒ (nttps://www.usu.edu/dps/emergency) for more information.

General Health Protocols

The cold, flu, COVID-19, and other illnesses can have an impact on the health of our university community. USU welcomes the wearing of masks in all university buildings and encourages taking measures to mitigate risk as recommended by federal and state public health officials: getting vaccinated, staying home if you are sick, and frequent hand washing.

Mental Health

Mental health is critically important for the success of USU students. As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. Utah State University provides free services for students to assist them with addressing these and other concerns. You can learn more about the broad range of confidential mental health services available on campus at COUNSELING (CAPS) (https://counseling.usu.edu).

Students are also encouraged to download the <u>"SafeUT App"</u> <u>(https://safeut.org/)</u> to their smartphones. The SafeUT application is a 24/7 statewide crisis text and tip service that provides real-time crisis intervention to students through texting and a confidential tip program that can help anyone with emotional crises, bullying, relationship problems, mental health, or suicide related issues.

USU Course Policies:

Appropriate Use of Canvas and Other IT Resources
Academic Freedom and Professional Responsibilities
Academic Integrity - "The Honor System"
Academic Dishonesty
Discrimination and Sexual Misconduct
Withdrawal Policy and "I" Grade Policy ☐→ (https://www.usu.edu/teach/help-topics/teaching-tips/syllabus-resources#policy)
Students with Disabilities

Students Who are Pregnant or Have a Pregnancy-related Condition (https://www.usu.edu/teach/help-topics/teaching-tips/syllabus-resources#pregnant)
Inclusive Excellence
Grievance Process
Full Details for USU Academic Policies and Procedures
Emergency Procedures
General Health Protocols
Mental Health ☐ (https://www.usu.edu/teach/help-topics/teaching-tips/syllabus-resources#mental)

Course Summary:

Date	Details	Due
Sat Feb 18, 2023	Problem Set 1 Corrections (https://usu.instructure.com/courses/791747/assignments/4852821)	11:59pm
Sun Feb 26, 2023	Anonymous Course Feedback Survey due by (https://usu.instructure.com/courses/791747/assignments/4852768)	11:59pm
Sat Mar 25, 2023	Problem Set 2 Corrections due by (https://usu.instructure.com/courses/791747/assignments/4852822)	11:59pm
Sun Apr 9, 2023	Extra Credit: Energy Use and You due by (https://usu.instructure.com/courses/791747/assignments/4852814)	11:59pm
Sat Apr 15, 2023	Problem Set 3 Corrections due by (https://usu.instructure.com/courses/791747/assignments/4852823)	11:59pm
Sun Apr 16, 2023	Extra Credit: IPCC Report (https://usu.instructure.com/courses/791747/assignments/4852816)	11:59pm

Date	Details	Due
Fri Apr 21, 2023	Problem Set #4 Corrections (https://usu.instructure.com/courses/791747/assignments/485282	ue by 11:59pm
Sun Jan 12, 2025	Unit 1 Discussion: Welcome to the Forum (https://usu.instructure.com/courses/791747/assignments/485280	ue by 11:59pm 18)
Sull Jail 12, 2025		ue by 11:59pm <u>(2)</u>
Sup lon 10, 2025	Unit 2 Discussion: Motivations for Energy Conservation (https://usu.instructure.com/courses/791747/assignments/485280	ue by 11:59pm 17)
Sun Jan 19, 2025		ue by 11:59pm <u>'9)</u>
	Problem Set #1: Energy Units and Conversions (quiz) (https://usu.instructure.com/courses/791747/assignments/485276	ue by 11:59pm <u>(9)</u>
	Unit 3 Discussion: The Economic Pull of Hydrocarbons (https://usu.instructure.com/courses/791747/assignments/485280	ue by 11:59pm <u>16)</u>
Sun Jan 26, 2025		ue by 11:59pm 87)
	Problem Set #1: Energy Units and Conversions (instructions and file submission page) (https://usu.instructure.com/courses/791747/assignments/485281	ue by 11:59pm
Cur Fab 2, 2025	Unit 4 Discussion: Exploring Global Hydrocarbon Use (https://usu.instructure.com/courses/791747/assignments/485280	ue by 11:59pm 05)
Feb 2, 2025		ue by 11:59pm

Date	Details	Due
Fri Feb 7, 2025	EXAM 1: Units 1 through 4 (Must be taken at USU Testing Center) (https://usu.instructure.com/courses/791747/assignments/485	due by 11:59pm 52788)
55 1, 2525	EXAM 1: Units 1 through 4 (Remote version) (Remotely Proctored) (https://usu.instructure.com/courses/791747/assignments/488	due by 11:59pm
Sun Feb 9, 2025	Unit 5 Discussion: Energy Efficiency and Society (https://usu.instructure.com/courses/791747/assignments/488	due by 11:59pm 52804)
Out 1 Cb 3, 2020		due by 11:59pm 52782)
		due by 11:59pm 52786)
Sun Feb 16, 2025	Unit 6 Discussion: Nuclear Energy and You (https://usu.instructure.com/courses/791747/assignments/48	due by 11:59pm 52803)
		due by 11:59pm 52774)
Fri Feb 21, 2025	Exam 1 Corrections (https://usu.instructure.com/courses/791747/assignments/48s	due by 11:59pm
Sun Feb 23, 2025	Unit 7 Discussion: Social Consequences of Anthropogenic Climate Change (https://usu.instructure.com/courses/791747/assignments/488	due by 11:59pm 52802)
•		due by 11:59pm 52791)
Sun Mar 2, 2025	ঢ়িন <u>Unit 8 Discussion: Geothermal</u> vs. Biofuels	due by 11:59pm

Date	Details Due
	(https://usu.instructure.com/courses/791747/assignments/4852801)
Fri Mar 7, 2025	EXAM 2: Units 5 through 8 (Must be taken at USU Testing Center) (https://usu.instructure.com/courses/791747/assignments/4852770)
	EXAM 2: Units 5 through 8 (Remotely Proctored) due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852778)
Sun Mar 9, 2025	Unit 9 Discussion: Winners and Losers in the Battle Over Energy (https://usu.instructure.com/courses/791747/assignments/4852800)
	Problem Set #3: Solar Energy Calculations (quiz) due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852793)
Cur. Mar. 22, 2025	Unit 10 Discussion: Is Solar the Solution? due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852799)
Sun Mar 23, 2025	
	Problem Set #3: Solar Energy Calculations (instructions and file submission page) (https://usu.instructure.com/courses/791747/assignments/4852819)
Mar 30, 2025	Unit 11 Discussion: Is Wind a Win-Win? due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852797)

Date	Details Due
	(https://usu.instructure.com/courses/791747/assignments/4852790)
	Exam 2 Corrections (https://usu.instructure.com/courses/791747/assignments/4852812)
	Unit 12 Discussion: The Race
	for Raw Materials due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852798)
Sun Apr 6, 2025	☑ Unit 12 Quiz: Raw Materials for
	Renewable Energy due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852776)
	EXAM 3: Units 9-12 (must be
	taken at a USU Testing Center) due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852771)
Fri Apr 11, 2025	EXAM 3: Units 9-12 (Proctorio
	Edition) (Remotely Proctored) due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852792)
	Energy Efficiency Endeavor' (quiz) due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852780)
	☐ Unit 13 Discussion: Case ☐ Unit 13 Discussion: Case
	<u>Studies</u> due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852796)
Sun Apr 13, 2025	☑ Unit 13 Quiz: Case Studies:
	<u>The Geopolitics of Energy</u> due by 11:59pm (https://usu.instructure.com/courses/791747/assignments/4852781)
	Problem Set 4: 'The Great
	<u>Energy Efficiency Endeavor'</u> (<u>instructions and file submission</u> due by 11:59pm
	<u>page)</u> (<u>https://usu.instructure.com/courses/791747/assignments/4852824)</u>
3	

Date	Details	Due
Sun Apr 20, 2025	Unit 14 Discussion: Take Heart: We Can Do This! (https://usu.instructure.com/courses/791747/assignments/4852)	due by 11:59pm <u>795)</u>
Mon Apr 21, 2025	\(\overline{Quiz: Hope for the Future (? or !) \\ \(\begin{align*} \text{(https://usu.instructure.com/courses/791747/assignments/4852} \end{align*} \]	due by 11:59pm 785)
Tue Apr 22, 2025	Exam 3 Corrections (https://usu.instructure.com/courses/791747/assignments/48526	due by 11:59pm
	Extra Credit: IDEA Evaluation screen shot (https://usu.instructure.com/courses/791747/assignments/4852)	due by 11:59pm <u>815)</u>
Tue Apr 29, 2025	FINAL EXAM (Units 1-14) (https://usu.instructure.com/courses/791747/assignments/4852)	due by 11:59pm
	FINAL EXAM (Units 1-14) (Remote Version, Proctorio- enabled) (Remotely Proctored) (https://usu.instructure.com/courses/791747/assignments/4852)	due by 11:59pm 783)
	One Topic Template (https://usu.instructure.com/courses/791747/assignments/4852)	<u>809)</u>
	Practice Quiz (Remotely Proctored) (https://usu.instructure.com/courses/791747/assignments/4852	<u>817)</u>
	Two Topic Template (https://usu.instructure.com/courses/791747/assignments/48526	<u>810)</u>

