



# Energy Choices for the 21<sup>st</sup> Century

**Geography 3368/5368**

**Geology 3368/5368**

**Environmental and Sustainability Studies 3368**

## Course Syllabus

<b>Instructors:</b> Tim Edgar & Ola Opara	<b>Credit Hours:</b> 3
<b>Course Name:</b> Energy Choices for the 21 <sup>st</sup> Century	<b>Semester:</b> Fall 2020
<b>Department:</b> Geography/ Geology/ Environmental & Sustainability Studies	<b>Pre-requisites:</b> None; A basic knowledge of algebra is a prerequisite; calculus is not required.
<b>Office:</b> GC 4842 <b>Office Hours:</b> By appointment	<b>Meeting Days:</b> Online
<b>Email:</b> tim.edgar@geog.utah.edu	<b>Meeting Times:</b> Online

*Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. [Any changes will be posted on Canvas.]*

## Course Description

### Course Summary

This class is designed to give students an introduction to the critical energy issues facing our planet, with a focus on controversial topics and issues in Utah. These will include: hydraulic fracturing (fracking), offshore oil and gas development, oil shale and tar sand development, nuclear energy (with particular regard to the proposed Blue Castle nuclear plant in Green River and storage of radioactive waste in Utah), wind, solar and geothermal energy (again, with emphasis on Utah), other renewable technologies, the Smartgrid, difficulties in commercializing new energy technologies, air pollution, transportation choices, energy policy development, and global issues including population dynamics, climate change, carbon management, water resources, the Law of Unintended Consequences, and tipping points. A number of outstanding guest lecturers will provide expertise in their respective fields through videos.

This course fulfills the **Gen Ed requirement for Physical/Life Science Exploration (SF)**.

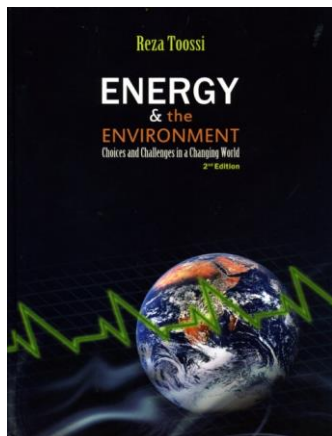
## Course Objectives

At the end of the course, students will be able to:

1. Apply a working knowledge of energy: what it is, units of energy and how to convert from one form to another, different forms of energy (mechanical, chemical, heat, etc.), the First and Second Law of Thermodynamics and will be able to differentiate the energy use sectors (e.g., transportation vs. electricity production vs. residential heating and cooling) and how different energy resources are better suited for different purposes.
2. Compare and evaluate energy resources (fossil fuels, nuclear, renewables – wind, solar, geothermal and hydro) particularly with respect to Utah, how much energy each can realistically provide and identify the advantages and disadvantages of each resource.
3. Applying the principle of "unintended consequences" and the fact that there are always unintended and unanticipated consequences that may overwhelm the intended consequence. They will discover that there are no "good" and "bad" energy resources and that a sustainable future will require diversified energy production with proper environmental regulations.
4. Evaluate the global distribution and geopolitics of energy resources and be able to critique and analyze energy policy, how and why it's made, and how we can develop energy policies that will sustain us and our children through the next century. They will analyze how scientific facts and controversies are presented in the public forum, and how to interpret and judge critically important issues like global climate change, the Keystone XL Pipeline, carbon management, hydraulic fracturing, wilderness preservation and renewable energy.
5. Solve everyday issues in their lives with practical knowledge about things like conservation, selecting the right automobile, knowing what an energy efficient home is and how to make a home more energy-efficient through design, insulation and other methods.
6. Collaborate with other students through the online experience to enhance learning through teamwork, leadership and group discussion, and will demonstrate their knowledge through assessments, exams, and particularly in the online discussion groups where collaboration will be encouraged: Communicate; assist each other; organize response.
7. Integrate all of the above into a functional knowledge and appreciation of energy, why we need it and how we can pursue it in a way that considers all the facets of sustainability: the ecological footprint, a skyrocketing global population, what sustainability really means and how we can change to achieve it in a context that will help the student chart a life-path that will incorporate the principles of environmental justice and sustainability.

Student will acquire skills and knowledge that they can use in their everyday lives. They will be able to read and interpret energy news in the context of a global community where energy demand may soon exceed supply. They will also be able to realistically evaluate alternative energy resources and plan conservation measures and lifestyle changes that can help create a sustainable future. They will gain immediately applicable skills like knowing how to calculate the R-value of insulation, choose an energy-efficient home, select an automobile or reduce air pollution.

## Required Materials



The **optional** textbook for the class (recommended but not required) is Energy & the Environment – Choices and Challenges in a Changing World, by Reza Toossi, 4th Edition. You may use a different edition, if available.

You should read the intro and the summary for each section. Not all the material in the book is essential to the class, but you may, of course, read any additional material that interests you. It is permissible for students to use other, similar text books; however, it will be up the student to make sure that the same material is covered.

In addition to the book, you will have approximately two hours of PowerPoint videos, more or less, each week to watch on the topics. The primary content focus of the class and the exams is based on the lecture videos, therefore, you are strongly encouraged to watch the videos first, and then read the book so you will know and can concentrate on the material that is deemed most important.

## Teaching and Learning Methods

The class will be taught as an on-line class, with online videos of the lectures and online class discussions. This course is organized into five learning modules.

There will be a Module Assessment at the conclusion of each learning module that you will need to complete. Answers and comments will be posted on Canvas and feedback will be given so you will be able to use the assessments as a learning mechanism.

There will be Online Discussions during each learning module where you will interact with other students and the instructors to discuss and address questions and current events related to that subject matter. The professor will audit and help guide the discussion, pose questions and make comments as appropriate. You will be required to participate in the discussion groups and will be graded on your responses. Group projects within the discussion group will be encouraged. Feedback will be provided on individual and group discussions. Professors are always available for and encourage Zoom meetings with students.

# Online Course Expectations

## Instructor Expectations

Your instructors are committed to the following expectations for this course:

- The instructors will design the course to include lectures, readings materials, and assignments that will challenge students and will provide them with opportunities to learn and practice course content.
- Though this online course includes pre-recorded lectures, it is not a class that is run “automatically” by technology. The instructors will interact with the class via announcements, emails/the Canvas Inbox feature, feedback on assignments, and comments on the discussion boards, among other methods.
- The instructors will grade and provide feedback on the lecture quizzes and discussions in a timely manner.

## Student Expectations

The following is expected of all students in this class:

- Students will log in to the course a minimum of 3 times per week.
- Communication is key. Let us know when you need help.
- To do well in online courses, students must be self-motivated, organized, and willing to stay on top of their schedule. Students should take control of their learning while in this course.
- Students will engage with the course, students, and the instructor in a respectful and professional manner at all times.

## Key to Success in this Class:

The University expects regular “attendance at all class meeting” – in this case, that means participation in all online activities in accordance with the class schedule. Students are responsible for acquainting themselves with, and satisfying, the entire range of academic objectives and requirements as defined by the instructors.

Your best strategy for success is to watch all video lectures, make sure you understand the questions asked in each quiz and ask questions if you don't, and to participate actively in the group discussions! All test questions will have been covered in the videos and class discussions. Both professors are available to provide individual assistance to students.

## Netiquette

Students are expected to follow the [core rules of netiquette](#) at all times while participating in the class, interacting with other students, and communicating with the course instructor and teaching assistants.

## Evaluation & Grading

The components of the class grade are provided below.

Module Assessments	25%
Online Discussion	25%
Midterm Exam	25%
Final Exam	25%

All test questions will be covered in the lecture materials and reviewed prior to exams. Lecture videos and PowerPoints will be posted on University of Utah Canvas system. A typical exam will have two to three problems to solve, one or two short essay questions, and several multiple choice, fill-in-the-blank, or true/false question groups (very similar to the Module Assessments). The Midterm Exam will cover material from Modules 1-3. Approximately half of the Final Exam will cover material from Modules 4-5, the other half of the questions will cover the entire semester (Modules 1-5).

Independent and creative thinking is a primary criterion in online discussion group grading. Accuracy, depth and quality of research are the second most important criteria, and grammar, organization and presentation is third.

No extra credit is available in this class; students already have sufficient opportunities for learning and for demonstrating their knowledge of the subject and their effort and commitment in the class.

Students taking the course at the 5000 level will be held to a higher standard of performance, will be expected to take a leadership role in student discussions and projects, and may be asked to assist in mentoring other students.

### Grading Scheme

<b>A</b> 100%-94%	<b>A-</b> 93.9%-90%	
<b>B+</b> 89.9%-87%	<b>B</b> 86.9%-84%	<b>B-</b> 83.9%-80%
<b>C+</b> 79.9% - 77%	<b>C</b> 76.9%-74%	<b>C-</b> 73.9%-70%
<b>D+</b> 69.9%-67%	<b>D</b> 66.9%-64%	<b>D-</b> 63.9%-60%
<b>E</b> 59.9%-0%		

## Course Policies

### Attendance & Participation

Regular attendance and participation at all class meetings are expected. The University expects regular “attendance at all class meeting” – in this case, that means participation in all online activities in accordance with the class schedule.

Except in the rare cases of sudden illness or emergency (excused with documentation), students are expected to arrange with the instructors to submit assignments in advance of a planned absence.

### Canvas

This course uses Canvas as the meeting and learning environment.

Problems with Canvas? Contact 24/7 Canvas Support by clicking the Help button located on the left-side global navigation.

### Communication

If you have questions related to the course, please email Tim Edgar at [tim.edgar@geog.utah.edu](mailto:tim.edgar@geog.utah.edu). You can also send a message through the Canvas mailing tool. I will respond in a timely manner.

### Late Assignments

Late assignment policy applies to Module Assessments and Discussions.

- Up to 6 hours late: no penalty
- 1 day late: -10%
- 2-4 days late: -30%
- 5-7 days late: -50%
- Over a week late: -70%

## Institutional Polices & Procedures

- 1. Face coverings are required in all in-person classes for both students AND faculty.** Based on CDC guidelines, the university requires everyone to wear face coverings in shared public spaces on campus, including our classroom. As a reminder, when I wear a face covering, I am protecting you. When you wear a face covering, you are protecting me and all of your classmates. If you forget your face covering, I will ask you to leave class to retrieve it. If you repeatedly fail to wear a face covering in class, I will refer you to the Dean of Students for a possible violation of the Student Code. Note that some students may qualify for accommodations through the Americans with Disabilities Act (ADA). If you think you meet these criteria and desire an exception to the face covering policy, contact the [Center for Disability & Access \(CDA\)](#). Accommodations should be obtained prior to the first day

of class so that I am notified by CDA of any students who are not required to wear a face covering.

2. **The Americans with Disabilities Act.** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability & Access.
  - a. **Accommodation Policy (see Section Q):**  
<https://regulations.utah.edu/academics/6-100.php>
3. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
4. **Drop/Withdrawal.** Students may drop a course within the first two weeks of a given semester without any penalties. Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A "W" grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade "W" is not used in calculating the student's GPA. See the [Academic Calendar](#) for the last day to withdraw from term, first and second session classes.
  - a. **Deadlines for courses with irregular start and end dates policy.**  
<https://registrar.utah.edu/handbook/miscellaneous.php>
5. **Plagiarism/Cheating.** It is assumed that all work submitted to your instructor is your own work. When you have used ideas of others, you must properly indicate that you have done so. Plagiarism and cheating are serious offenses and may be punished by failure on an individual assignment, and/or failure in the course. Academic misconduct, according to the University of Utah Student Code, "*includes, but is not limited to, cheating, misrepresenting one's work, inappropriately collaborating, plagiarism, and fabrication or falsification of information...It also includes facilitating academic misconduct by intentionally helping or attempting to help another to commit an act of academic misconduct.*" For detailed definitions and possible sanctions please see the **Student Code** below.  
<https://regulations.utah.edu/academics/6-400.php>
6. **Wellness Statement.** Your personal health and wellness are essential to your success as a student. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's

ability to succeed and thrive in this course and at the University of Utah. Please speak with the instructor or TA before issues become problems. And, for helpful resources, contact the Center for Student wellness at <https://wellness.utah.edu/> or 801-581-7776.

7. **Veterans Support Center.** The Veterans Support Center is a “one stop shop” for student veterans to find services, support, advocacy, and camaraderie. They are located in the Park Building Room 201. You can visit their website for more information about their services and support at <https://veteranscenter.utah.edu/>.
8. **LGBT Resource Center.** The University of Utah has an LGBT Resource Center on campus. They are located in Room 409 of the Olpin Union Building. Hours: M-F 8-5pm. You can visit their website to find more information about the support they can offer, a list of events through the center and links to additional resources: <https://lgbt.utah.edu>.
9. **Learners of English as an Additional/Second Language.** If you are an English language learner, please be aware of several resources on campus that will support you with your language and writing development. These resources include: the Writing Center (<http://writingcenter.utah.edu>); the Writing Program (<http://writing-program.utah.edu>); the English Language Institute (<http://continue.utah.edu/eli>).
10. **Safety and Wellness.** Your safety is our top priority. In an emergency, dial 911 or seek a nearby emergency phone (throughout campus). Report any crimes or suspicious people to 801-585-COPS; this number will get you to a dispatch officer at the University of Utah Department of Public Safety (DPS; [dps.utah.edu](https://dps.utah.edu)). If at any time, you would like to be escorted by a security officer to or from areas on campus, DPS will help — just give a call.

The University of Utah seeks to provide a safe and healthy experience for students, employees, and others who make use of campus facilities. In support of this goal, the University has established confidential resources and support services to assist students who may have been affected by harassment, abusive relationships, or sexual misconduct. A detailed listing of University Resources for campus safety can be found at <https://registrar.utah.edu/handbook/campussafety.php>  
Your well-being is key to your personal safety. If you are in crisis, call 801-587-3000; help is close.

The university has additional excellent resources to promote emotional and physical wellness, including the Counseling Center (<https://counselingcenter.utah.edu>), the Wellness Center (<https://wellness.utah.edu>), and the Women’s Resource Center (<https://womenscenter.utah.edu>). Counselors and advocates in these centers can help guide you to other resources to address a range of issues, including substance abuse and addiction.

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](https://safeu.utah.edu).



- 11. Undocumented Student Support.** Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. **Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence.** The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. **To learn more, please contact the Dream Center at 801.213.3697 or visit [dream.utah.edu](http://dream.utah.edu).**
- 12.** Please let us know if there is any additional support you would like to discuss for this class.

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*As the only institution in the state classified in the highest research category (R1), at the University of Utah you will have access to state-of-the-art research facilities and be able to be part of the knowledge creation process. You will have the opportunity to do research of your own with faculty who are leading experts in their field, engaging in programs that match your research interests. Further, you will interact with and often take classes with graduate students that provide an advanced understanding of the knowledge in your field.*

## CSBS Emergency Action Plan





## BUILDING EVACUATION

EAP (Emergency Assembly Point) – When you receive a notification to evacuate the building either by campus text alert system or by building fire alarm, please follow your instructor in an orderly fashion to the EAP marked on the map below. Once everyone is at the EAP, you will receive further instructions from Emergency Management personnel. You can also look up the EAP for any building you may be in on campus at <https://dps.utah.edu/emergency-management-services/>



## CAMPUS RESOURCES

**U Heads Up App:** There's an app for that. Download the app on your smartphone at <https://dps.utah.edu/headsup/> to access the following resources:

- **Emergency Response Guide:** Provides instructions on how to handle any type of emergency, such as earthquake, utility failure, fire, active shooter, etc. Flip charts with this information are also available around campus.
- **See Something, Say Something:** Report unsafe or hazardous conditions on campus if you see a life threatening or emergency situation, please call 911!
- **Safety Escorts:** For students who are on campus at night or passed business hours and would like an escort to your care, please call 801-585-2677. You can call 24/7 and a security officer will be sent to walk with you or give you a ride to your desired on-campus location.