Sustainable Energy Geographies (GEOG 5803)

The Ohio State University
Spring 2020

Instructor: Dr. Yue QIN
Office: 1123 Derby Hall
E-mail: qin.548@osu.edu
Phone: 609-865-5698
Office Hour: Tuesday 2:15 – 3:15 pm
Lecture Time: Tuesday/Thursday 12:45 pm – 2:05 pm
Lecture Location: Caldwell 102
Course URL: http://carmen.osu.edu

Course Description:
Energy consumption is a fundamental driver of societal development. Meanwhile, it is one of the primary reasons for social and environmental problems. The geospatial mismatch of energy production and consumption, the temporal evolution of energy systems, and energy technologies development will directly affect the ultimate goal of sustainable development. This course will introduce students to the geography of global and regional energy systems. In this course, we will cover various energy resources, including both fossil fuels (coal, natural gas, oil) and non-fossil energy (nuclear, hydro, wind, solar and et al.). We will introduce the geographic distribution of different energy sources. We'll explain the changing patterns in each energy system and the major drivers for different changes.

Learning Objectives:

1) Understand the spatial and temporal patterns of different energy systems in complex social and environmental systems
2) Learn to appraise social and environmental changes associated with global and regional energy industries
3) Learn the application of academic knowledge in society and the resulting impacts
4) Be able to effectively share and receive knowledge by engaging with the whole class
5) Recognize the value and culture differences across different countries towards different energy systems

Evaluation
Standard OSU grading scale will be used for evaluation. Grading will be based on four elements.

- **Attendance (15%)**

Due to our small class size, your attendance will be recorded in the whole semester and we allow 1 unexcused absence for the semester if notifying me at least *two days* in advance. You have to show up for at least one of the lectures in the first week to stay enrolled in this course. For each additional class found missing, you lose *0.5 point* for the final grade. Exceptions may be granted in cases such as serious illness, family emergency, or career opportunities, if requests were made before class starts with solid proofs.

- **Assignments and Participation (25%)**

Your assignments and participation in the whole semester will be rewarded with 25 points in total. You have to demonstrate your evolvement by concentrating and/or answering questions in class. We will have a few assignments during the semester to get you prepared for in-class discussions/debates for real-world energy issues (e.g., you will represent different energy industries to argue for support from federal/state governments).

- **Quiz (20%)**

We will have 1 in-class quiz (80 minutes) during the semester to evaluate your understanding of the energy system.

- **Mid-term presentation (20%):**

Each student will select an energy related topic to conduct a detailed literature review (5-10 classical/impactful/latest publications). You have to demonstrate your understanding of the topic selected, such as its most important and emerging questions, methodologies, and major findings. Each student will have ~15 minutes, including Q&A (~ 5 minutes).

Potential Topics:
1) Virtual water transfers due to energy trade
2) Urbanization and energy demand
3) Food-energy-water nexus

- **Final individual project (20%):**

Each student must submit a proposal about the final project by the end of the 10th week. Your final project will be particularly evaluated by your own data analysis, visualization, and presentation. You should conduct a literature review to understand the emerging questions in the subfield, based on which to design a project, collect data, analyze the data, and present the results (e.g., mapping the spatial and temporal patterns, revealing the driving factors for changing

trends, and characterizing the societal and environmental implications). A final presentation should be done in class.

Important Issues

Disability Services: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Late papers. Each exercise or project item has a specific deadline. Late submissions will be penalized 10% for each day late. Exceptions may be granted in cases such as serious illness, family emergency, or career opportunities, if requests were made before class starts with solid proofs. All submissions must be made on carmen (no email submissions please).

Academic Misconduct: It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct http://studentlife.osu.edu/csc/.

Mental Health Statement: 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 a student's ability to participate in daily activities. The Ohio State University offers services to assist you with

addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at suicidepreventionlifeline.org.

Diversity: The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Week	Date	Topics	Notes
1	1/7	Course Introduction	
	1/9	Global Basics of the Energy System	
2	1/14		
	1/16	Global Coal System Geographies	
3	1/21		
	1/23	Coal System in major producing and consuming countries *(leave time for assignment preparation)*	***Assignment 1:*** Prepare discussions on "Geographic development of coal: national and global impacts". Students will collect data to present on the importance and challenges of coal in different important countries/regions. They will represent different countries/regions such as U.S., China, India, Africa to state why coal has been important in different countries local economy, job market, energy security, and et al. Also, they will discuss the environmental and social challenges facing in the coal industry in each country. Different country representatives will then discuss together the common and unique challenges for the coal industry at the global and national levels.
4	1/28	Guest lecture on OSU sustainable energy efforts	
	1/30	In-class discussions on "Geographic development of coal: national and global impacts"	***Assignment 1 due before class***
5	2/4	Global Oil System Geographies	
	2/6	Global Natural Gas System Geographies *(leave time for assignment preparation)*	
6	2/11	Unconventional Oil and Natural Gas System Geographies; Energy consumption in Ohio and energy modeling	
	2/13		

7	2/18	Group discussions on "The Future of Fossil Industry"	
	2/20	Preparation for midterm presentation	Presentations of a chosen topic in the energy field. Select an energy topic and conduct an independent literature review. (Refer to 'Evaluation' for details)
8	2/25	Midterm presentations (~15 minutes for each student)	
	2/27	Guest lecture on 'Get to Know the Energy Industry' from the ENGIE Buckeye utility systems	
9	3/3	Review session for quiz	
	3/5	In-class quiz	
10	3/10	Extended Spring break	
	3/12		
11	3/17		
	3/19		
12	3/24	Hydro Energy Geographies	***Assignment 2***- Students will choose a politician and find out his/her energy policy from news reports/social media etc. (Details via carmen)
	3/26	Hydro Energy Geographies	
13	3/31	Students' presentation on Assignment #2	
	4/2	Nuclear Energy Geographies	***Assignment 3***- Students will read an assigned renewable-related article and report to the class to answer a particular question
14	4/7	Wind Energy Geographies	
	4/9	Solar Energy Geographies	
15	4/14	Students' presentation on Assignment #3	
	4/16	Explore uncovered energy questions with the whole class	
15	4/21	**Final project**: 15 minutes presentation + 5 minutes questions (details TBD)	
	4/24		