



EXTENDED CAMPUS

COLLEGE *of* PROFESSIONAL
and CONTINUING STUDIES

GEOG 6230-103: Seminar in Economic Geography: Energy Systems and Sustainability

Note: This is a hybrid course offered virtually that will count as face-to-face for Program of Study purposes. The professor has opted to release more information regarding Zoom meetings on the Canvas site as the course start date approaches. Contact the site director for more information.

Course Description:

This course examines current and future energy supply, transmission, and demand management options. A focus on the economic, social, and environmental implications of energy system transitions will help identify energy technology and infrastructure solutions while understanding the institutional and organizational changes necessary for implementation. The major energy systems including coal, oil, gas, nuclear and renewables are critically examined against a set of sustainability principles. The distribution of energy resources and changing consumption patterns are reviewed. International comparisons are made and numerous solutions to energy challenges are introduced and critiqued.

Class Dates, Location and Hours:

Dates: September 11 – October 23, 2020
Location: 3281 NW Koehler Loop, Fort Sill, Oklahoma.
Hours: Friday 5:30-9:00 p.m., Saturday 9:00 a.m.-5:00 p.m.; Sunday 12:00-4:00 p.m.
Last day to enroll or drop without penalty: August 13, 2020

Site Director:

Email: apftsill@ou.edu. Phone: (580) 355-1974.

Professor Contact Information:

Course Professor: Dr. Travis Gliedt
Mailing Address: 100 E. Boyd Street, SEC 658
Norman, Oklahoma, 73019
Telephone Number: (405) 693-3665
Fax Number: (405) 325-6090
E-mail Address: tgliedt@ou.edu
Professor availability: The professor will be available via e-mail to students before and after the class sessions. On-site office hours are half an hour before and after each class session, by appointment.

Instructional Materials:

Student materials will be made available on the course website www.canvas.ou.edu, you will login with your OUNet ID and password to access the course materials.

Course Objectives:

- To understand the interdisciplinary perspectives associated with energy systems in the context of sustainability.
- To investigate the difference that place and scale make to energy decisions.

- To examine various techniques and interventions for achieving sustainability improvements in energy systems.

Course Format:

Lecture, group discussion, role play

Course Outline

Weeks	Topic and Readings
Week 1: September 11 - 17	<p>Course Overview: Introduction to Energy Systems and Sustainability Reading: International Energy Agency; World Bank Statistical Database; Lund et al. 2019; O'Dwyer et al. 2019</p> <p>Primary Energy Supply: Ghana, the United Kingdom, Germany, Saudi Arabia Reading: Heun and Brockway, 2019; Hansen et al. 2019; Ram et al. 2019; Lawrence Livermore National Laboratory; Energy Information Administration</p>
Week 2: September 18 - 24	<p>Transmission and Storage: Germany, the Netherlands Reading: Koirala et al. 2018</p> <p>Energy Demand Management: Residential: Iran, China, United Arab Emirates, Greece, Portugal, Spain Reading: Razmjoo and Davarpanah, 2019; Janjua et al. 2019; Juaidi et al. 2019; Karytsas et al. 2019; Huang et al., 2019</p> <p>Energy Demand Management: Commercial: Australia, China, Germany, USA Reading: McGuirk et al. 2019; Amiri et al. 2019; Yu et al. 2019; Sebi et al. 2019</p>
Week 3: September 25 – October 1	<p>Energy Demand Management: Industrial: Nigeria, China Reading: Edomah 2019; Sun et al. 2019</p> <p>Energy Demand Management: Agriculture: Spain, Bangladesh Reading: Carroquino et al. 2019; Talukder et al. 2019</p>
Week 4: October 2 - 8	<p>Energy Systems and National Security: Israel, Jordan Reading: Hamed and Bressler 2019</p> <p>Climate Change Mitigation and Sustainability of Energy Systems: USA, Spain Reading: Obringer et al. 2019; Moslehi and Reddy 2019; Marquez-Ballesteros et al. 2019</p> <p>Energy Prices and Technology Diffusion: Australia, Europe Reading: Csereklyei et al. 2019; Bachner et al. 2019</p>
Week 5: October 9 - 15	<p>Sustainable Energy Innovation Systems: China, Germany, USA Reading: Shubbak 2019; David and Gross 2019; Taminiau et al. 2019</p> <p>Food-Energy-Water Systems and Sustainability: China Reading: Wang et al. 2018; Zhang et al. 2019</p>
Week 6: October 16 - 23	<p>Energy Justice and Energy Poverty: Canada, USA Reading: McCauley et al. 2019; Hurlbert and Rayner, 2018; Sunter et al. 2019</p> <p>Dynamic Charging Highways and Peer-to-Peer Blockchain Energy Systems: USA, United Kingdom, Germany, South Korea Reading: Bi et al. 2019; Machura and Li, 2019; Ahl et al. 2019</p> <p>The Net Energy Cliff and Future Economic Development Implications: Global Reading: Rye and Jackson 2018</p>

Assignments, Grading, and Due Dates

Assignment 1: Attendance and Participation:

You must come to class prepared to discuss the readings, as each class will contain presentations, discussion, activities, and critical review questions. Attendance will be recorded during each class.

Assignment 2: Global Sustainability Scenarios for 2050, 2100, 2200:

In groups of 3-4, you will develop written answers to the following questions:

- (1) What are the likely impacts of climate change on Earth's environment, local societies, economies, and cultures?
- (2) In a rapidly globalizing world faced with large-scale environmental change, how can societies address climate change by focusing on energy system changes and solutions to reduce carbon footprints?
- (3) How can knowledge of economics, culture, and the environment help in the creation and development of effective policy solutions?
- (4) How can these changes be implemented given the increasing gap between wealthy and poor countries, and to what extent can community-oriented activity help to address this problem?
- (5) Conduct a KAYA Identity analysis using the [EN-ROADS MIT Interactive Climate Model to examine and identify the drivers and trends of global CO2 emissions](#).

First, read the [Fifth Assessment Report from the Intergovernmental Panel on Climate Change](#).

Second, each student in the group will find one journal article on sustainability transitions that includes scenarios for future changes to technology, economics, policies, culture, industry, infrastructure, etc.

Third, share what you have learned with the other members of your group. How will you communicate the science of climate problems and energy system solutions to the other students?

Fourth, as a group, write your own scenario for the future based on sustainability principles. Include targets for 2050, 2100, and 2200. What strategies and policy instruments are needed to achieve your targets? What international agreements, laws, collaborations, and institutions may be necessary? As sustainability professionals, what skills and capabilities do you need in order to develop and apply scenarios?

Fifth, share your scenario with the class and get their feedback on how feasible they believe it is.

The final report must incorporate ideas and insights from all students in the group. Answers to the questions should be 5 pages, and the scenarios should be an additional 5 pages for a total of 10 pages, double spaced.

Assignment 3: Paper:

Each student will write a paper that outlines a plan for creating and implementing a sustainable energy transition for a country (other than USA). This must include at least three sectors (e.g., residential, commercial, industrial, agricultural, transportation). For each sector, review the current situation, set targets or goals, and create a pathway for implementing changes (e.g., business strategies and policy instruments at key times). The structure of the paper should include three main sections: (1) where are we now? (2) where do we want to be? (3) how are we going to get there? The paper will be 10 pages, double-spaced, and 12-point Times New Roman font. The paper must cite a minimum of **10 peer reviewed academic journal articles**.

Test:

The test will require students to draw upon all of the assigned readings and lecture materials covered in class. It will consist of essay questions.

Grading:

This is a letter-graded course: A, B, C, D, or F.

Activity	Date	Details	Evaluation Weight
Assignment 1	Throughout	Participation	20%

Activity	Date	Details	Evaluation Weight
Assignment 2	End of Week 3	Global Sustainability Scenarios	20%
Assignment 3	End of Week 6	Final Paper	30%
Test	End of Week 6	Essay Questions	30%

Notice: Failure to meet assignment due dates could result in a grade of I (Incomplete) and may adversely impact Tuition Assistance and/or Financial Aid.

POLICIES AND NOTICES

Attendance/Grade Policy

Attendance and participation in interaction, individual assignments, group exercises, simulations, role playing, etc. are valuable aspects of any course because much of the learning comes from discussions in class with other students. It is expected that you attend all classes and be on time except for excused emergencies.

Excused absences are given for professor mandated activities or legally required activities such as emergencies or military assignments. It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. Unavoidable personal emergencies, including (but not limited to) serious illness; delays in getting to class because of accidents, etc.; deaths and funerals, and hazardous road conditions will be excused.

If you are obtaining financial assistance (TA, STAP, FA, VA, Scholarship, etc.) to pay all or part of your tuition cost, you must follow your funding agency/institution's policy regarding "I" (Incomplete) grades unless the timeline is longer than what the University policy allows then you must adhere to the University policy. Students who receive Financial Aid must resolve/complete any "I" (Incomplete) grades by the end of the term or he/she may be placed on "financial aid probation." If the "I" grade is not resolved/completed by the end of the following term, the student's Financial Aid may be suspended making the student ineligible for further Financial Aid.

Students are responsible for meeting the guidelines of Tuition Assistance and Veterans Assistance. See the education counselor at your local education center for a complete description of your TA or VA requirements.

Academic Integrity and Student Conduct

Academic integrity means honesty and responsibility in scholarship. Academic assignments exist to help students learn; grades exist to show how fully this goal is attained. Therefore all work and all grades should result from the student's own understanding and effort.

Academic misconduct is any act which improperly affects the evaluation of a student's academic performance or achievement. Misconduct occurs when the student either knows or reasonably should know that the act constitutes misconduct. Academic misconduct includes: cheating and using unauthorized materials on examinations and other assignments; improper collaboration, submitting the same assignment for different classes (self-plagiarism); fabrication, forgery, alteration of documents, lying, etc...in order to obtain an academic advantage; assisting others in academic misconduct; attempting to commit academic misconduct; destruction of property, hacking, etc...; intimidation and interference with integrity process; and plagiarism. All students should review the Student's Guide to Academic Integrity at http://integrity.ou.edu/students_guide.html

Students and faculty each have responsibility for maintaining an appropriate learning environment. All students should review policies regarding student conduct at <http://studentconduct.ou.edu/>

Accommodation Statement

The University of Oklahoma is committed to making its activities as accessible as possible. For accommodations on the basis of disability, please contact your local OU Site Director.

Adjustment for Pregnancy/Childbirth-Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see <http://www.ou.edu/content/eoo/faqs/pregnancy-faqs.html>.

Title IX Resources

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24/7, counseling services, mutual no-contact orders, scheduling adjustments, and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office at smo@ou.edu or (405) 325-2215 (8-5), or the Sexual Assault Response Team at (405) 615 -0013 (24/7) to report an incident. To learn more about Title IX, please visit the Institutional Equity Office's website at <http://www.ou.edu/content/eoo.html>

Course Policies

Advanced Programs policy is to order books in paperback if available. Courses, dates, and professors are subject to change. Please check with your OU Site Director. Students should retain a copy of any assignments that are mailed to the professor for the course. Advanced Programs does not provide duplicating services or office supplies.

Any and all course materials, syllabus, lessons, lectures, etc. are the property of professor teaching the course and the Board of Regents of the University of Oklahoma and are protected under applicable copyright.

For more information about Advanced Programs, visit our website at: <http://www.goou.ou.edu/>

INSTRUCTOR VITA

Travis Gliedt, Ph.D.

Education

- BES, 2005 University of Waterloo, Geography
- MAES, 2006 University of Waterloo, Local Economic Development
- Ph.D, 2012 University of Waterloo, Geography and Environmental Management

Current Positions

Associate Professor, Department of Geography and Environmental Sustainability, University of Oklahoma

Major Areas of Teaching and Research Interest

- Human and organizational dimensions of sustainability
- Corporate social responsibility, environmental management, green entrepreneurship
- Community responses to energy and water challenges
- Innovation in urban water systems
- Environmental economic geography
- Integrating sustainability into geography education

Representative Publications and Presentations

Books

Gliedt T, Larson K, 2018, “Sustainability in Transition: Principles for Developing Solutions” *Routledge*.

Refereed Journal Articles

- Gliedt T, Hoicka C, Jackson N, 2018, “Innovation intermediaries accelerating environmental sustainability transitions” *Journal of Cleaner Production* **174** 1247-1261 – Impact Factor: 6.395 – H Index: 116 - SCImago Journal Rank: 1.620 – Cite Score: 7.32
- Tziganuk A, Gliedt T, 2017, “Comparing faculty perceptions of sustainability teaching at two U.S. universities” *International Journal of Sustainability in Higher Education* **18**(7) 1191-1211– Impact Factor: 1.437 – H Index: 34 - SCImago Journal Rank: 0.32 – Cite Score: 2.29
 - Winner of the *Highly Commended Paper of 2018 from Emerald Insight****
- Hartman P, Gliedt T, Widener J, Loraamm R, 2017, “Dynamic capabilities for water system transitions in Oklahoma” *Environmental Innovation and Societal Transitions* **25** 64-81 – Impact Factor: 7.514 - H Index: 34 - SCImago Journal Rank: 3.212 – Cite Score: 8.59 - Winner of the Charles Standley Memorial Award in Recognition of the Outstanding Publication 2016, Department of Geography and Environmental Sustainability, University of Oklahoma
- Widener J, Gliedt T, Hartman P, 2017, “Visualizing dynamic capabilities as adaptive capacity for municipal water governance” *Sustainability Science* **12**(2) 203-219 – Impact Factor: 4.669 – H Index: 32 – SCImago Journal Rank: 1.096
- Lyakhov A, Gliedt T, 2017, “Understanding collaborative value creation by environmental nonprofit and renewable energy business partnerships” *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations* **28**(4) 1448-1472 – Impact Factor: 1.469 – H Index: 34 - SCImago Journal Rank: 0.408
- Koch M, Gliedt T, 2017, “Water conservation flows downstream: Assessing the performance of State conservation policies and municipal conservation” *The Southwestern Geographer*, 20, 1-17.
- Gliedt T, Widener J, Hartman P, 2017, “Water system innovation in Oklahoma: Climate change adaptation strategy?” *Southern Climate Monitor* **7**(4) 2-4
- Castleberry B, Gliedt T, Greene S.J., 2016, “Assessing drivers and barriers of energy-saving measures in Oklahoma’s public schools” *Energy Policy* **88** 216-228 – Impact Factor: 4.880 – H Index: 146 – 4th Ranked Energy Journal by SCImago Journal Rank: 2.197 – Cite Score: 4.97 -

Winner of the Charles Standley Memorial Award in Recognition of the Outstanding Publication 2015, Department of Geography and Environmental Sustainability, University of Oklahoma

- Widener J, Gliedt T, Tziganuk A, 2016, “Assessing sustainability teaching and learning in geography education” *International Journal of Sustainability in Higher Education* **17**(4) 698-728 – Impact Factor: 1.437 - H Index: 34 – SCImago Journal Rank: 0.32 – Cite Score: 1.13
- Lyakhov A, Gliedt T, Jackson, N, 2016, “Scaling sustainability value in sustainability purpose organizations: A non-profit and business comparison” *International Journal of Sustainable Entrepreneurship and Corporate Social Responsibility* **1**(1) 17-31
- Gliedt T, Hoicka C, 2015, “Energy upgrades as financial or strategic investment? Energy Star property owners and managers improving building energy performance” *Applied Energy* **147** 430-443 – Impact Factor: 8.426 – H Index: 125 – 1st Ranked Energy Journal by SCImago Journal Rank: 3.058 – Cite Score: 7.78

Major Professional Affiliations

- Association of American Geographers (AAG) 2010-
- Association for Non-Profit and Social Economy Research (ANSER) 2007-
- Canadian Association of Geographers (CAG) 2006-
- National Council for Geographic Education (NCGE) 2014-
- International Society of Sustainability Professionals (ISSP) – 2018-