

## Economics 493 (L01) (Empirical Energy Economics)

Instructors: Derek E. H. Olmstead  
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Lecture Location: EDC 280  
Lecture Days/Time: TR 09:30 - 10:45

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Office Hours: TR 11:00 - 12:00

Winter 2024

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### Course Description:

This is the capstone course for the Applied Energy Economics program. Students will study and learn how to apply methods of data analysis that are particularly useful in the context of energy economics. The course will discuss current econometric techniques commonly used in energy economics research, and critically review some of the top research papers in energy economics. Students will develop and present a serious energy research project.

### Course Learning Outcomes:

Students who successfully complete this course will:

- a) be familiar with sources of energy data and have the ability and knowledge to collect, collate, and analyze energy data for the purpose of empirically investigating energy markets and evaluating public policy alternatives.
- b) be able to work with large data sets, preparing data for computer imputation and reading data into standard computer econometric programs.
- c) understand the statistical theory used to support and build econometric models.
- d) be knowledgeable with standard econometric skills in setting up and evaluating econometric equations.
- e) be familiar with econometric procedures for estimating econometric equations using least squares and maximum likelihood estimators.
- f) be familiar with identification issues in econometric modelling.
- g) be familiar with the construction and use of Instrumental Variables in econometric application.
- h) be knowledgeable with price forecasting techniques.
- i) be knowledgeable with techniques for building and interpreting elasticities.
- j) be proficient with econometric procedures for estimating single and multi-equation econometric models.
- k) have the ability to critically read the applied energy literature.
- l) be able to produce a serious research paper on an applied energy topic that combines knowledge of energy markets, statistical theory, econometric application and policy evaluation.
- m) be able to present and defend the findings of the research in a business setting.

**Course Outline:**

1. Data sources, collection, cleaning, visualization, and manipulation
2. Regression techniques, inference, and hypothesis testing
3. Electricity markets: Measuring market power and estimating the impact of carbon pricing
4. Futures markets: Informational efficiency and unbiasedness
5. Network regulation: Cost allocation and transmission rights
6. Oil and gas markets: Cost benefit analysis, elasticities, and demand estimation
7. Price forecasting: Approaches and limitations
8. Input/output models: Specifications and applications
9. Additional applications as time permits

**Prerequisites/Corequisites:**

Economics 427

**Required Textbook(s):**

Required readings will be provided via a reading list and available online through the library.

**Recommended Textbook(s):**

Zweifel, Peter, Aaron Praktiknjo, and Georg Erdmann. Energy Economics Theory and Applications. Springer, 2017.

A good econometric principles textbook will also be essential. For example:

Wooldridge, Jeffrey M., Introductory econometrics: A modern approach (7th ed.). South-Western Cengage Learning, 2019.

**Required Access to Technology:**

MS Excel, Python or STATA

**Desire2Learn:**

This course will make use of the Desire2Learn (D2L) platform. Students who are registered in the course can log on at <http://d2l.ucalgary.ca> through their student centre. Please note that D2L features a class e-mail list that may be used to distribute course-related information. These e-mails go to your University of Calgary e-mail addresses only.

**Grade Determination:**

Research paper #1	45%
Research paper #2	45%
Discussion groups	<u>10%</u>
	100%

**This course does not have a final examination.** Instead, the course emphasizes research, writing, and speaking / presentation skills. The research papers are to be submitted using Dropbox in D2L. Each research paper will include a presentation component. The presentations will take place in class. Discussion sessions will be scheduled throughout the semester, providing an opportunity for students to engage in detailed discussions of empirical methods and studies.

**Grading Policies:**

The official grading system will be used. See <http://www.ucalgary.ca/pubs/calendar/current/f-1-1.html>.

Students must receive a passing grade on both research papers to pass the course.

As per the Writing Across the Curriculum Statement in the Calendar, writing and grading thereof will be a factor in the evaluation of student work. See <https://www.ucalgary.ca/pubs/calendar/current/e-2.html>.

Any student work which remains undistributed after the last day of classes will be available to students through the instructor's office during the instructor's office hours.

**Reappraisal of Grades:**

*For Reappraisal of Graded Term Work, see Calendar I.2*

<http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

*For Reappraisal of Final Grade, see Calendar I.3*

<http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

**Academic Misconduct and Intellectual Honesty:**

Academic Misconduct refers to student behavior that compromises proper assessment of students' academic activities and includes: cheating; fabrication; falsification; plagiarism; unauthorized assistance; failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

*Statement of Intellectual Honesty, see Calendar K.3*

<https://www.ucalgary.ca/pubs/calendar/current/k-3.html>

*Plagiarism and Other Academic Misconduct*

<https://ucalgary.ca/student-services/student-success/learning/academic-integrity>

**Academic Accommodations:**

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services. SAS will process the request and issue letters of accommodation to instructors. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their instructor. The full policy on Student Accommodations is available at

<https://www.ucalgary.ca/legalservices/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf> and <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>.

**Freedom of Information and Protection of Privacy (FOIP) Act:**

Personal information is collected in accordance with FOIP. Assignments can only be returned to the student and will be accessible only to authorized faculty and staff. For more information, see <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/faq-privacy-faculty-members.pdf> and <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/faq-privacy-students.pdf>

**Internet and Electronic Communication Device Information:**

The use of cell phones for any purpose in class is prohibited. Computers and tablets may be used for note taking only unless otherwise authorized by the instructor.

**Copyright Legislation:**

See the University of Calgary policy on Acceptable Use of Material Protected by Copyright at <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Acceptable-Use-of-Material-Protected-by-Copyright-Policy.pdf>. Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

**Recording of Lectures:**

Recording of lectures is prohibited, except for audio recordings authorized as an accommodation by SAS or an audio recording for individual private study and only with the written permission of the instructor. Any unauthorized electronic or mechanical recording of lectures, their transcription, copying, or distribution, constitutes academic misconduct. See <https://www.ucalgary.ca/pubs/calendar/current/e-6.html>.

**Instructor Intellectual Property:**

Course materials created by instructors (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

**Important Dates:**

Please check: <http://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>.

**Student Organizations:**

Faculty of Arts Students' Association (F.A.S.A.):

Economics Department Representative

Office: SS 803, E-mail: [econrep@fasaucalgary.ca](mailto:econrep@fasaucalgary.ca) and Web: [www.fasaucalgary.ca](http://www.fasaucalgary.ca).

**Society of Undergraduates in Economics:** <https://www.ucalgarysue.com/>.

Society of Undergraduates in Economics is a student run organization whose main purpose is to assist undergraduate economics students to succeed both academically and socially at the University of Calgary. Services include access to the exam bank, career events such as Industry Night and information sessions, mentorship programs, and social events for members. They invite you to join by contacting SUE at [sue@ucalgarysue.com](mailto:sue@ucalgarysue.com)

**Faculty of Arts Program Advising and Student Information Resources:**

- Have a question, but not sure where to start? The Arts Students' Centre is your information resource for everything in Arts! Drop in at SS102, call them at 403-220-3580, or email them at [artsads@ucalgary.ca](mailto:artsads@ucalgary.ca). You can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate>, which has detailed information on common academic concerns, including program planning and advice.

- For registration (add/drop/swap), paying fees and assistance with your Student Centre, contact Enrolment Services at 403-210-ROCK [7625] or visit them in the MacKimmie Tower.

**Student Support and Resources:**

- See <https://www.ucalgary.ca/registrar/registration/course-outlines> for information on campus mental health resources, the Student Ombuds Office, Student Success Centre, Safewalk, and Emergency Evacuation and Assembly.
- Online writing resources are available at <https://ucalgary.ca/student-services/student-success/writing-support>.

**Notes:**

1. Students are responsible for all assigned material, e.g., supplementary material posted on D2L, regardless of whether or not the material was covered in class.

DEHO AHW

2023-12-05