

Economics 429 (L01) (Advanced Electricity Markets)

Instructor: Dr. Blake Shaffer
Email: blake.shaffer@ucalgary.ca

Lecture Location: SS403
Lecture Days/Time: MWF 14:00-14:50

Office: SS 444
Office Hours: M 11:00-12:00, W 15:00-16:00

Winter 2023

Course Description:

This course builds on the introduction to electricity markets course to more advanced topics, including: design of electricity markets; transmission regulation, investment and pricing; ancillary services demand, procurement and regulation; retail competition; and distribution systems and distributed generation. It is intended to provide advanced knowledge of electricity markets for students to pursue further research in the field.

Course Learning Outcomes:

After completing this course, students will know:

- i. How electricity markets are organized in North America
- ii. Market design options and challenges
- iii. How electricity and ancillary services are procured and traded
- iv. How externalities are priced or regulated in electricity markets
- v. Retail rate design for electricity consumers

Course Outline:

This course delves deeper than Econ 329 (Economics of Electricity Markets) into the specific options and challenges facing electricity markets today. In particular, the course will focus on market design, regulation, and retail rate design in terms of efficiency and equity implications.

The general structure of the course will be Monday and Wednesday lectures, with most Fridays being either a 25 min quiz followed by 25 min discussion of the quiz, or a component of the Energy Market Game that will be played throughout the course. Students are expected to actively participate in the course, including in an **Electricity Market Game** played throughout the course.

A term research paper on a broad topic related to Canadian electricity markets will provide students the opportunity to dive deeper into a subject of their choosing.

The planned schedule for the course (subject to change) is as follows:

Week	Topic	Friday activity
1	Intro	
2	Economics of markets	Quiz 1
3	Regulation	Quiz 2
4	Organization of electricity markets	Game 1
5	Trading	Quiz 3
6	Trading	Midterm
7	Externalities	Quiz 4
8	Externalities	Quiz 5
9	Decarbonization	Game 2, Term Papers due
10	Market design	Quiz 6
11	Rate design	Game 3
12	Final exam review	Practice Final

Prerequisites/corequisites:

Econ 329, 357, 359, 471

Required Textbook(s):

Two textbooks will be used as the primary references throughout the course. Both are available in an e-format from the University of Calgary library.

1. **Handbook of Electricity Markets.** Glachant, Jean-Michel, Paul L. Joskow, and Michael G. Pollitt, eds. Edward Elgar Publishing, 2021.
2. **Regulation of the Power Sector.** Perez-Arriaga, Ignacio, ed. Springer Science & Business Media, 2014.

Recommended Textbook(s):

Reading material will be provided in class.

Books on Reserve:

The list of reserve titles, if any, is posted at the course D2L site.

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:

Final Exam	35%
Midterm	20%
Term Paper	25%
Quizzes (best 5 of 6)	<u>20%</u>
	100%

Examination Details:

Tests and exams WILL NOT involve multiple choice questions.

Programmable calculators, cellphones, textbooks, course notes, and other electronic devices will not be allowed during the writing of tests or final examinations. Students are reminded that simply being able to access their cellphone during an exam is academic misconduct.

The exact date for the in-class midterm will be announced at least one week in advance.

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 the final exam to pass the course. Students committing academic misconduct during the final exam will not receive a passing grade for the course.

If a student's letter grade on the final exam exceeds their midterm(s) letter grade, the weight of the midterm(s) is (are) transferred to the final exam. The student must have written the midterm(s) or provided supporting documentation for the absence(s). For Winter 2023 the University has suspended the requirement for supporting documentation. Instructors cannot currently ask students for documentation to support absences.

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.

The final examination will be comprehensive, scheduled by the Registrar, held in a classroom, and last 2 hours. If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam <https://www.ucalgary.ca/pubs/calendar/current/g-6.html>. Under no circumstance will this be accommodated by the Department.

THERE WILL BE NO MAKEUP OR DEFERRED QUIZZES/TESTS/EXAMS under any circumstances, nor may the quizzes/tests/exams be written early. Students unable to write the quizzes/tests/exams because of documented illness, family emergency, religious observance, or university-sanctioned event will have the weight shifted to the final examination; otherwise a grade of zero will be assigned.

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.4

<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 policies on Student Accommodations are available at <https://www.ucalgary.ca/legal-services/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 and Web: 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.

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. 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 Library Block.

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.

BCS

2022-12-09