

Economics 429 (L01) - Advanced Electricity Markets

Instructor: Dr. Blake Shaffer
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Lecture Location: EDC 280
Lecture Days/Time: MWF 11:00-11:50

Office: SS 444
Office Hours: MWF 12:00-12:50

Winter 2022

Course Description:

Market design of electricity markets; transmission regulation, investment and pricing; ancillary service demand, procurement, and regulation; retail competition; and distribution and distributed generation.

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.

Students are expected to actively participate in the course. A portion of the final grade will be based on a combination of class participation, solicited online (via Flipgrid) feedback, and performance in an **Electricity Market Game** played throughout the course.

A term paper on a broad topic related to Canadian electricity markets will provide students the opportunity to dive deeper into a subject of their choosing. This term paper may be completed in pairs.

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.

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, 257, 359, 471

Required Textbook(s):

None

Recommended Textbook(s):

Reading material will be provided in class

Books on Reserve:

None

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 and Final Examination Details:

Final Exam	35%
Midterm	20%
Term Paper	20%
Quizzes (best 5 of 6)	20%
Participation	5%
	100%

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

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

If a student's letter grade on the final exam exceeds their midterm letter grade, the weight of the midterm is transferred to the final exam at the discretion of the instructor. The student must have written the midterm or provided supporting documentation for the absence such as a medical note or statutory declaration.

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](https://www.ucalgary.ca/pubs/calendar/current/e-2.html).

Course material dealing with a particular assignment will typically be covered in class at least 2 days before the assignment is due; thus, assignments can be completed at any time up to and including the due date. Given these factors, only situations where someone can document illness or domestic affliction for an extended period (i.e., the entire 2 days prior to the due date) would possibly warrant shifting the assignment weight to the final exam. Furthermore, technical problems can be expected to occur with computer systems (and internet availability) so it may be a good idea to not wait until the last minute to submit your assignment.

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.

The Final Exam and Midterm may involve some multiple choice questions. The quizzes will involve multiple choice and written 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 date for the in-class midterm is **February 18**.

Quizzes will be held during Friday lectures. Your grade on quizzes will be based on your top 5 quiz scores out of a total of 6.

The term paper will be due **March 18**. You may work in groups of two on the term paper. More details on the term paper will be provided in class.

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.

UPDATE: For the period of online delivery (currently scheduled for up to and including the February reading break), the following modifications are required:

All quizzes will be online. These timed quizzes will be available on D2L on Thursdays at 11am and will be available for 24 hours. When you access the quiz, you will have 45 minutes to complete and submit it. Each quiz will consist of a mix of multiple choice, multi-select, true/false, and written responses. If you experience an issue that affects your ability to complete the assessment, which can include (but is not limited to) issues with technology, caregiving responsibilities, or distractions within your test-taking environment, you will need to contact

your instructor as soon as possible to arrange an alternate or (in the case of technical issues) extended time to write the quiz.

The midterm will be online. It will be available on D2L on Thursday, February 17 at 11am and will be available for 24 hours. When you access the assessment, you will have 50 minutes to complete and submit it. The midterm will consist of a mix of multiple choice, multi-select, true/false, and written responses. If you experience an issue that affects your ability to complete the assessment, which can include (but is not limited to) issues with technology, caregiving responsibilities, or distractions within your test-taking environment, you will need to contact your instructor as soon as possible to arrange an alternate or (in the case of technical issues) extended time to write the midterm.

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:

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.

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

For information on the Student Academic Misconduct Policy, Procedure and Academic Integrity, please visit: <https://www.ucalgary.ca/pubs/calendar/current/k-3.html>

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/legal-services/university-policies-procedures/accommodation-students-disabilities-procedure>

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/access-information-privacy>

Copyright Legislation:

See the University of Calgary policy on Acceptable Use of Material Protected by Copyright at <https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy> Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

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.

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>.

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
E-mail: econrep@fasaucalgary.ca
Website: 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 societyofundergradsineconomics@gmail.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 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.

BCS

2021-11-01