

Economics 329 (L01) - Electricity Markets

Instructor: Dr. Blake Shaffer
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Lecture Location: WEB-BASED (Zoom)
Lecture Days/Time: MWF 13:00-14:00

Office: <https://ucalgary.zoom.us/my/blakeshaffer>
Office Hours: MWF 14:00-15:00

WINTER 2021

Course Description:

Economic analysis of the deregulated electric power industry including the pricing of power, energy and capacity, power supply and demand, market structure, market architecture, and the design and testing of market rules.

Course Outcomes:

Students will learn why electricity markets pose interesting economic problems, the solutions proposed and how basic economic theory can shed light on real world problems.

Course Outline:

Electricity has some unique characteristics that pose unique economic problems. Some jurisdictions have sought to use markets (deregulation) to tackle these problems rather than central planning (regulation), other jurisdictions have not. Even within market-based systems there are important differences in structure and market rules. Not all the drivers are economic, some are technical, some historical and some political. The interplay between all these factors can be complex, controversial and, often, poorly understood.

To make the course as accessible as possible the focus will be on using the Alberta Electricity Market as a case study, comparing and contrasting this to the approaches used elsewhere. The Alberta Electricity Market is in the midst of a major transition. A phase out of coal generation is underway along with an expected increase in generation from renewable sources. The market design itself has been the subject of much change, with the introduction and subsequent revocation of a capacity market. All of these changes make for an exciting time to be studying electricity markets.

Topics covered in the course will include:

- Fundamentals about the electric system and electric generation
- How the Alberta electricity market works: Uniform clearing price auctions
- Ensuring reliability: How do markets provide security and adequacy?
- Coal phase-out and support for new renewable generation: Correcting for market failures?
- The interplay between climate policies and electricity markets: In Alberta and beyond
- New frontiers: The potential role of demand-side management, energy storage and electric vehicles

There is no required textbook for this course. Government and industry publications will be used as appropriate; these will be identified in class. Interested students are welcome to consult with the instructor for additional suggested readings.

Prerequisites:

Econ 201

Required Textbook(s):

None

Recommended Textbook(s):

Stoft, Steven (2002), Power system economics. (available electronically via library.ucalgary.ca)

Books on Reserve:

None

Online Delivery:

This course will be delivered online. Students are expected to be able to participate online in accordance with this Course Outline. Lectures, assignments, office hours, exams, readings and other course material, etc. all require online access and this access is the responsibility of the student. The instructor will make an effort to provide reasonable accommodations and flexibility as circumstances require. Students are expected to raise with the instructor at the beginning of the semester any potential concerns that require such accommodations.

In order to remotely participate in online courses, students will need to have: computer with a current and updated operating system (macOS or Windows will work with all university-supported online learning technologies), a current and updated web browser installed – the latest versions of Firefox, Safari, Chrome or Edge will help to avoid compatibility issues, secure and reliable internet, microphone / headphones, webcam (optional), scanner (or camera to scan your work).

The general flow of the course, adjusted for online delivery, will be as follows:

- Each Monday and Wednesday we will meet for synchronous lectures. These will immediately be posted on D2L following the lecture for those who cannot attend.
- Every Friday we will have a group discussion on the week's topic, with a focus on that week's quiz or assignment.
- Weekly quizzes will be 30 minutes in length, with the ability for students to take the quiz at any period during the 24 hours prior to Friday's class (i.e. from Thursday at 13:00 to Friday at 12:59).
- There will be no quizzes during the weeks assignments are due (Jan 29, Feb 26, and March 26; subject to change).

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.

Lectures:

Lectures will be delivered online at the Registrar scheduled times and delivered using ZOOM. The lectures will be recorded and subsequently posted to D2L.

Grade Determination/Assessment:

QUIZZES (8; top 7 count)	30%
ASSIGNMENTS (3)	30%
FINAL EXAM	35%
PARTICIPATION	5%
	<hr/>
	100%

Grade Determination and Final Examination Details

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.

The final examination will be take-home, comprehensive, and scheduled by the Registrar. Students will download the exam from D2L, complete the exam, scan it, and submit using Dropbox in D2L. Student will have 50% more time to complete the exam, at a time of their choosing, within the 24-hour period that begins 24 hours before the end date of the Registrar's scheduled final exam for this course. The exam is designed and intended to be completed in two hours. The exam will be open book.

Tests and exams WILL involve multiple choice questions.

If a student's letter grade on the final exam exceeds their midterm(s) letter grade, the weight of the midterm(s) may be transferred to the final exam at the discretion of the instructor. The student must have written the midterm(s) or provided supporting documentation for the absence(s) 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>.

Course material dealing with a particular assignment will typically be covered in class at least 1 week 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 week 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.

All other course components will also be accessed, submitted, and returned through D2L.

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.

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.

Quizzes are 30 minutes in duration. Students may complete the quiz via D2L at anytime during a 24-hour period prior to Friday's class (i.e. from Thursday at 13:00 until Friday at 12:59). There will be 8 quizzes in total, of which *the top 7 will count*, allowing for an occasional absence and/or "second chance".

Three assignments will be due on Jan 29, Feb 26, and March 26 (subject to change). While group work is allowed, individual *and different* assignments must be submitted. Dates for the assignments are subject to change given class progression, so please check for updates on D2L.

Absence from a Test/Exam

THERE WILL BE NO MAKEUP OR DEFERRED QUIZZES under any circumstances, nor may the quizzes be written early. Students unable to write the quizzes 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 and Intellectual Honesty:

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 on the course.

For information on the Student Academic Misconduct Policy and Procedure please visit:

<https://ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf>

<https://ucalgary.ca/policies/files/policies/student-academic-misconduct-procedure.pdf>

Additional information is available on the Academic Integrity Website at <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 <http://www.ucalgary.ca/policies/files/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

<http://www.ucalgary.ca/legalservices/files/legalservices/faq-students.pdf> and

http://www.ucalgary.ca/legalservices/files/legalservices/faq-faculty_0.pdf.

Copyright Legislation:

See the University of Calgary policy on Acceptable Use of Material Protected by Copyright at

www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.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>.

Important Dates:

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

Student Organizations:

Faculty of Grad Studies website: <http://grad.ucalgary.ca/home>

Graduate Students Association: <http://gsa.ucalgary.ca/>

Professional Development for Grad Students

Workshops and resources can be found at <http://www.ucalgary.ca/mygradskills/>

Economics Graduate Association: <http://econ.ucalgary.ca/ega/>

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>.
- 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.

Notes:

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

2020-11-24