



2019

Analytical Methods for Energy and Climate Policy

Dwayne Breger

University of Massachusetts Amherst, dbreger@umass.edu

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Dwayne Breger, Ph.D.
dbreger@umass.edu
 413-545-8512

Office Hours

Ag Engineering 209/204
 Mon 11:00am-12:30pm; Thurs 2:30-4:00pm
 and by appointment

Meeting Location and Time

Location: Holdsworth 301
 Tuesday/Thursday 10:00-11:15am

Credits: 3**Course Description**

The course will introduce students to analytical methods applicable to the evaluation of energy and climate problems and policy solutions. The methods include ethical analysis, spreadsheet analysis, lifecycle analysis, optimization and systems analysis. While applicable across many fields, the methods will be applied through class and assignments to current issues in clean energy and climate policy.

Learning Objectives

The course will provide students with the understanding and skills to analytically address issues of policy pertaining to clean energy and climate policy. Students will understand the theory and practice associated with conducting economic cost benefit analysis, optimization under constraints and multi-objectives, and the systems thinking and modeling. Students will learn the application of these tools to market and policy analysis and to present the results of such analyses in manners useful to decision and policy makers.

Assignments and Grading

Grading will be based on students' performance on assignments, exams, and class participation. Grades will be calculated based on the following weighting.

Class Participation and Presentations	20%
Class Assignments (~6)	25%
Independent Projects (2)	25%
Mid-Term Exam	15%
Final Exam	15%

Grading Scale

100 - 94% A	76% - 73% C
93% - 90% A-	72% - 70% C-
87%-89% B+	69% - 67% D+
86% - 83% B	66% - 64% D
82% - 80% B-	below 64% F
79% - 77% C+	

Note: Graduate students cannot earn grades of C-, D+ or D. Graduate students with scores below 73% will earn a grade of F.

Attendance Policy

Attendance will be taken daily. As this is a discussion-based class, you are expected to attend. Absences will detract from your grade as follows:

0-3 absences:	no adjustment
4-6 Absences:	adjusted down one grade (e.g. B+ to B)
7-9 Absences:	adjusted down entire letter grade (e.g. B+ to C+)
10 or more:	grade adjusted to F

Course Weekly Outline and Assignments (use Moodle class site for updated information)

Fall 2018 Date	Class	Topic	Sub-Topic	Assignment		
Sep-4	1	Course Introduction				
Sep-6	2	Moral Theory and Ethical Analysis	Foundations in Ethical Theory and Analysis			
Sep-11	3		Case Study: Love Canal	Read Love Canal Case Study Prepare Discussion Questions	OPTIONAL FOR UNDERGRAD STUDENTS	
Sep-13	4			Love Canal - Extended Discussion		
Sep-18	5		Case Study: Juliana vs U.S. Climate Case - Structure of Case	Research Julianna		
Sep-20	6		Case Study: Juliana vs U.S. Climate Case - Stakeholder perspectives and ethical analysis			
Sep-25	7		Financial and Benefit Cost Analysis	Cash Flows, NPV, Debt/Equity, Benefit Cost Analysis		Spreadsheet Assignment: Energy Policy B/C Analysis
Sep-27	8					
Oct-2	9	Distributinal and Intergenerational Equity, Limits to B/C		Spreadsheet Assignment - GHG Policy Analysis		
Oct-4	10					
Oct-11	11	Greenhouse Gas - Life Cycle Analysis		Reading TBD		
Oct-16	12			Case study		
Oct-18	13	Greenhouse Gas - Inventory Protocols and Methodologies		Reading TBD		
Oct-23	14			Case study		
Oct-25	15	Mid Term Exam				
Oct-30	16	Optimization	Objective Function, Constrained Optimization		Independent Project #2 (Proposal, Research, Paper)	
Nov-1	17			Problem Set: Optimization		
Nov-6	18		Multiobjective Optimization			
Nov-8	19		Applications to Energy/Climate Policy	Spreadsheet Optimization: Analysis and Presentation		
Nov-13	20		Spreadsheet Analysis, Graphical Representation			
Nov-15	21	Systems Thinking, Modeling, and Analysis	Introduction; System Dynamic Modeling	Reading TBD		
Nov-27	22		Systems Thinking Application - Limits to Growth	Reading TBD		
Nov-29	23		Systems Thinking Application - Limits to Growth, World3 Model	Stella Software: Simple Model		
Dec-4	24		Strategem Game Playing			
Dec-6	25		Strategem Game Playing			
Dec-11	26		Strategem Game Playing and Debriefing	Stella Software: Group Project and Presentation		
Final Exam						