

# AEDECON 5330: BENEFIT-COST ANALYSIS

## Spring 2020 Syllabus

Instructor: Dr. Zoë Plakias  
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 Office: 323 Agricultural Administration  
 Office hours: M 3-4 PM, or by appointment

### COURSE DETAILS

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Time: 3:55-5:15 PM Tuesday and Thursday  
 Location: Agricultural Administration 246  
 Credits: 3

### COURSE DESCRIPTION AND GOALS

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This course is intended to provide you with an introduction to the theory and practice of project evaluation techniques—with an emphasis on benefit-cost analysis—and to help you develop the tools to understand and help carry out these types of project evaluations in your future work or academic study. By the end of this course, I expect that you will be able to:

- Recognize different project evaluation techniques and their strengths and weaknesses in various settings
- Understand the basic microeconomic theory related to project motivations and impacts
- Conduct simple quantitative benefit-cost analyses and project evaluations
- Critically analyze different types of project evaluations

### PREREQUISITES

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You are expected to be comfortable with microeconomic theory at the intermediate undergraduate level. The official prerequisites are AEDE 4310, AEDE 4001, or ECON 4001.

### REQUIRED READING

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There is no required textbook for this course. Readings will come from a variety of sources. All assigned readings will be posted on Carmen and are listed on the reading list at the end of this syllabus. *Required* readings are those that I expect you to be prepared to discuss in class. I may call on you to answer a question about the reading or may reference the reading on a homework or exam. *Suggested* readings are those that I believe will be very helpful references for you but which I will not hold you accountable for reading. I may add or subtract readings during the semester; if so, these changes will be announced in class and I will update Carmen accordingly. Also, I have asked for two copies of the textbook *Cost-Benefit Analysis: Concepts and Practice* (4th ed.) by Anthony E. Boardman, David H. Greenberg, Aidan R. Vining and David L. Weimer to be put on reserve in the FAES Library. This book is not required but is an excellent reference for much of the material that we will cover.

### GRADING

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The grading for this class will be broken down as follows:

Problem Sets (x4)	28%
Reading Summaries (x3)	12%
Exams (x2)	50%
Attendance + Participation	10%

The grading scale will be:

A	93.0-100	C	73.3-76.6
A-	90.0-92.9	C-	70.0-73.2
B+	86.7-89.9	D+	66.7-69.9
B	83.3-86.6	D	60.0-66.6
B-	80.0-83.2	E	<60.0
C+	76.7-79.9		

### **PROBLEM SETS**

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Four problem sets—each worth 7% of your final grade—will be assigned throughout the term. I will give you about two weeks to do each problem set, which must be turned in in-person or on Carmen at the beginning of class the day it is due. Late problem sets will have their grade reduced by 10% of the total possible points each day they are late. Working together with classmates on the problem sets is permitted, but you are always expected to submit your own work written in your own words. Make sure you do not start these problem sets at the last minute. They are not easy, and they are worth a substantial part of your grade.

### **CASE STUDY SUMMARIES**

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There are four days during the semester on which we will discuss case studies. These are specific cost-benefit analyses that we will consider and analyze. These days are indicated on the calendar. For the first three of these, you must submit a summary of the reading via Carmen by class time on the due date. These reading summaries will prepare you for will prepare you Each reading summary is worth 4% of your grade, and no late submissions will be accepted. Reading the cost-benefit analysis and writing this summary will prepare you for our case study discussion. The required format for the these reading assignments will be provided on Carmen.

### **EXAMS**

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There will be two exams—one midterm and one cumulative final. More details about the exams will be provided closer to the date of each one. Exam dates are indicated in bold on the calendar and attendance is required on these dates. Make-up exams will be considered only for extenuating circumstances, and on a case-by-case basis.

### **ATTENDANCE + PARTICIPATION**

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I will take attendance and grade you on participation (e.g., contributing to discussion and coming to class having done any required readings). If you need to be absent five or fewer times for any reason, not to worry! No need to send me an e-mail. If you are absent more than five times, your attendance may affect your grade, as this suggests you are not putting in an effort to prioritize this class. In particular, attendance on case study days is strongly encouraged, as these days are the most participatory. The rubric for your attendance and participation grade is provided on Carmen.

### **SOFTWARE**

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We will make use of Microsoft Excel this semester. You are not expected to have prior Excel experience or to have Excel on your own computer. If you do not have Excel on your computer, Excel is available in most computer labs on campus (including the lab in 005 Ag Administration). One or more Excel tutorials will be offered in class.

### **ACADEMIC INTEGRITY**

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As indicated previously, while collaboration is permitted and encouraged in certain situations, you must complete your own work. Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute "Academic Misconduct."

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration),

copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an "excuse" for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

## **MENTAL HEALTH**

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A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other, and alcohol use among the top ten health impediments to academic performance. These kinds of challenges affect college students, graduate students and even professors in the course of the academic year. If you are experiencing any of these challenges, personal problems or situational crises during the semester, please don't hesitate to contact the OSU Counseling and Consultation Service (614-292-5766; [www.ccs.osu.edu](http://www.ccs.osu.edu)) for assistance, support and advocacy. This service is free and confidential. I understand it can help for you to be seen sooner by the OSU Counseling and Consultation Service if you call them with a faculty member. If your mental health is affecting your ability to succeed in this class, you are welcome to set up an appointment with me outside of office hours and we can call together to set up an appointment for you.

## **LAUREN'S PROMISE-I WILL LISTEN AND BELIEVE YOU IF SOMEONE IS THREATENING YOU.**

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Lauren McCluskey, a 21-year-old honors student athlete, was murdered on Oct. 22, 2018, by a man she briefly dated on the University of Utah Campus. We must all take actions to ensure this never happens again.

Any form of sexual harassment or violence will not be excused or tolerated at The Ohio State University.

In cases of sexual harassment or violence, Ohio State will:

- Respond promptly and effectively to sexual assault, relationship violence, and stalking,
- Provide interim measures as necessary
- Provide confidential and non-confidential support resources,
- Conduct a thorough, reliable, and impartial investigation,
- Provide remedies as necessary.

If you are experiencing sexual assault, relationship violence, or stalking, you can take the following actions:

- If you are in immediate danger, call 911.
- Report it to me, and I will connect you to resources.
- Seek confidential sources of support and help:
  - Counseling and Consultation Service Available 24/7 through the Office of Student Life, [ccs.osu.edu](http://ccs.osu.edu), 614-292-5766
  - Medical services through the Office of Student Life Wilce Student Health Center, [shs.osu.edu](http://shs.osu.edu), 614-292-4321
  - Legal services through Student Legal Services, [Studentlegal.osu.edu](http://Studentlegal.osu.edu), 614.292-5853

OSU's Office of Institutional Equity has established procedures and resources for Sexual Misconduct Response and Prevention. They are detailed here: [https://womensplace.osu.edu/sites/default/files/documents/2018/04/Reporting-Resources\\_Brochure\\_Columbus.pdf](https://womensplace.osu.edu/sites/default/files/documents/2018/04/Reporting-Resources_Brochure_Columbus.pdf).

## DISABILITY ACCOMMODATION

If you feel that you need an accommodation based on the impact of a disability, please contact me privately to discuss your specific needs and contact the Office of Student Life's Disability Services at 614-292-3307 or in Room 98 of Baker Hall to coordinate reasonable accommodations.

### COURSE OUTLINE (SUBJECT TO CHANGE)

Week	Date	In-Class	Homework	Reading
1	T 1/7	<i>Intro + Course Logistics</i>		None
1	Th 1/9	<i>Why CBA?</i>		Required
2	T 1/14	<i>Welfare + Efficiency</i>		Suggested
2	Th 1/16	<i>Measuring Benefits + Costs in Markets</i>		Suggested
3	T 1/21	<i>Measuring Benefits + Costs in Markets</i>		Suggested
3	Th 1/23	<i>Measuring Benefits + Costs in Markets</i>		Suggested
4	T 1/28	<i>Measuring Benefits + Costs in Markets</i>		Suggested
4	Th 1/30	<i>Case Study: Cannabis Legalization</i>	CS Summary Due	Required
5	T 2/4	<i>Intro to Monetizing Impacts</i>	HW1 Due	None
5	Th 2/6	<i>Monetizing Impacts – Benefit Transfer</i>		Required
6	T 2/11	<i>Monetizing Impacts – Stated Preference</i>		Required
6	Th 2/13	<i>Monetizing Impacts – Stated Preference</i>		Required
7	T 2/18	<i>Case Study: Ecoroof Adoption</i>	CS Summary Due	Required
7	Th 2/20	<i>Exam Review</i>	HW2 Due	None
8	T 2/25	<b>Exam 1</b>		None
8	Th 2/27	<i>Monetizing Impacts – Revealed Preference</i>		Required
9	T 3/3	<i>Monetizing Impacts – Revealed Preference</i>		Required
9	Th 3/5	<i>Monetizing Impacts – Revealed Preference</i>		Required
—	T 3/10	Spring Break - No class or office hours		
—	Th 3/12	Spring Break - No class or office hours		
10	T 3/17	<i>Discounting</i>		Suggested
10	Th 3/19	<i>Discounting</i>		None
11	T 3/24	<i>Discounting</i>	HW3 Due	Required
11	Th 3/26	<i>Uncertainty + Sensitivity Analysis</i>		Required
12	T 3/31	<i>Value of a Statistical Life</i>		Suggested
12	Th 4/2	<i>Case Study: High Speed Rail</i>	CS Summary Due	Required
13	T 4/7	<i>Cost Effectiveness Analysis</i>		Required
13	Th 4/9	<i>Economic Impact Analysis</i>	HW4 Due	Suggested
14	T 4/14	<i>Case Study: TBA</i>		TBA
14	Th 4/16	<i>Exam Review + Course Evaluations</i>		None
Finals	T 4/21	Reading Day - No Class		
Finals	M 4/27 (6 PM)	<b>Exam 2</b>		None

**READING LIST (SUBJECT TO CHANGE)****Week 1**

Tuesday, January 7: *Intro + Course Logistics*

- No reading

Thursday, January 9: *Why CBA?*

- *Required:* Arrow, Kenneth J., Maureen L. Cropper, George C. Eads, Robert W. Hahn, Lester B. Lave, Roger G. Noll, Paul R. Portney, Milton Russell, Richard Schmalensee, V. Kerry Smith, and Robert N. Stavins. 1996. “Is There a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation?” *Science* 272(5259):221-222.

**Week 2**

Tuesday, January 14: *Welfare + Efficiency*

- *Suggested:* Review the concepts of market supply and demand; consumer, producer, and social surplus, and the concept of elasticity in your favorite intermediate microeconomics textbook.

Thursday, January 16: *Measuring Benefits + Costs in Markets*

- *Suggested:* Chapter 4 in Boardman, Anthony E., David H. Greenberg, Aidan R. Vining and David L. Weimer. 2011. *Cost-Benefit Analysis: Concepts and Practice*, 4th ed. Upper Saddle River, NJ: Prentice Hall, 541 pp.

**Week 3**

Tuesday, January 21: *Measuring Benefits + Costs in Markets*

- Same as previous class

Thursday, January 23: *Measuring Benefits + Costs in Markets*

- *Suggested:* Chapter 5 in Boardman, Anthony E., David H. Greenberg, Aidan R. Vining and David L. Weimer. 2011. *Cost-Benefit Analysis: Concepts and Practice*, 4th ed. Upper Saddle River, NJ: Prentice Hall, 541 pp.

**Week 4**

Tuesday, January 28: *Measuring Benefits + Costs in Markets*

- Same as previous class

Thursday, January 30: *Case Study: Cannabis Legalization*

- *Required:* Shanahan, Marian, and Alison Ritter. 2014. “Cost Benefit Analysis of Two Policy Options for Cannabis: Status Quo and Legalisation.” *PloS One* 9(4): e95569.

**Week 5**

Tuesday, February 4: *Intro to Monetizing Impacts*

- No reading

Thursday, February 6: *Monetizing Impacts – Benefit Transfer*

- *Required:* Richardson, Leslie, John Loomis, Timm Kroeger, and Frank Casey. 2015. “The Role of Benefit Transfer in Ecosystem Service Valuation.” *Ecological Economics* 115: 51-58.

**Week 6**

Tuesday, February 11: *Monetizing Impacts – Stated Preference*

- *Required:* Kling, Catherine L., Daniel J. Phaneuf, and Jinhua Zhao. 2012. “From Exxon to BP: Has Some Number Become Better than No Number?” *Journal of Economic Perspectives* 26(4): 3-26.

Thursday, February 13: *Monetizing Benefits – Stated Preference*

- *Required:* Christensen, Tove, Anders B. Pedersen, Helle O. Nielsen, Morten R. Mørkbak, Berit Hasler, and Sigrid Denver. 2011 “Determinants of Farmers’ Willingness to Participate in Subsidy Schemes for Pesticide-Free Buffer Zones—A Choice Experiment Study.” *Ecological Economics* 70: 1558-1564.

**Week 7**

Tuesday, February 18: *Case Study*

- *Required:* David Evans and Associates, Inc. and ECONorthwest. 2008. “Cost Benefit Evaluation of Ecoroofs.” Technical report prepared for the City of Portland.

Thursday, February 20: *Exam Review*

- No reading

**Week 8**

Tuesday, February 25: **Exam 1**

- No reading

Thursday, February 27: *Monetizing Benefits – Revealed Preference*

- *Required:* Hainmueller, Jens, Michael J. Hiscox, and Sandra Sequeira. 2015. “Consumer Demand for Fair Trade: Evidence from a Multistore Field Experiment.” *Review of Economics and Statistics* 97(2): 242-256.

**Week 9**

Tuesday, March 3: *Monetizing Benefits – Revealed Preference*

- *Required:* Poor, P. Joan, Keri L. Pessagno and Robert W. Paul. 2007. “Exploring the Hedonic Value of Ambient Water Quality: A Local Watershed-Based Study.” *Ecological Economics* 60: 797-806.
- *Suggested:* Chapter 5 in Hanley, Nick, and Edward B. Barbier. 2009. *Pricing Nature: Cost-Benefit Analysis and Environmental Policy*. Northampton, MA: Edward Elgar. 353 pp.

Thursday, March 5: *Monetizing Benefits – Revealed Preference*

- *Required:* Hesseln, Hayley, John B. Loomis, Armando González-Cabán and Susan Alexander. 2003. “Wildfire Effects on Hiking and Biking Demand in New Mexico: A Travel Cost Study.” *Journal of Environmental Management* 69: 359-368.
- *Suggested:* Chapter 4 in Hanley, Nick, and Edward B. Barbier. 2009. *Pricing Nature: Cost-Benefit Analysis and Environmental Policy*. Northampton, MA: Edward Elgar. 353 pp.

**SPRING BREAK****Week 10**

Tuesday, March 17: *Discounting*

- *Suggested:* Chapter 6 in (NCEE) National Center for Environmental Economics, US Environmental Protection Agency. 2016. “Guidelines for Preparing Economic Analyses.” Technical report. Online: <https://www.epa.gov/sites/production/files/2017-08/documents/ee-0568-50.pdf>.

Thursday, March 19: *Discounting*

- Same reading as previous day

**Week 11**

Tuesday, March 24: *Discounting*

- *Required:* Carbon Brief. 2017. “Q&A: The Social Cost of Carbon.” Carbon Brief Explainers website. Online: <https://www.carbonbrief.org/qa-social-cost-carbon>.

Thursday, March 26: *Uncertainty + Sensitivity Analysis*

- *Required:* Jeuland, Marc A., and Subhrendu K. Pattanayak. 2012. “Benefits and Costs of Improved Cookstoves: Assessing the Implications of Variability in Health, Forest and Climate Impacts.” *PloS One* 7(2): e30338.

**Week 12**

Tuesday, March 31: *Value of a Statistical Life*

- *Suggested:* Ashenfelter, Orley. 2006. “Measuring the Value of a Statistical Life: Problems and Prospects.” *The Economic Journal* 116(510): C10-C23.

Thursday, April 2: *Case Study: High Speed Rail*

- *Required:* Parsons Brinckerhoff. 2012. “California High-Speed Rail Benefit-Cost Analysis (BCA).” Report prepared for the California High Speed Rail Authority. Online: [http://www.hsr.ca.gov/docs/about/business\\_plans/BPlan\\_2012BCP.pdf](http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012BCP.pdf).

**Week 13**

Tuesday, April 7: *Cost-Effectiveness Analysis*

- *Required:* Sacks, Gary, J. Lennert Veerman, Marj Moodie, and Boydd Swinburn. 2011. “‘Traffic-light’ Nutrition Labelling and ‘Junk-food’ Tax: A Modelled Comparison of Cost-Effectiveness for Obesity Prevention.” *International Journal of Obesity* 35(7): 1001-1009.

Thursday, April 9: *Economic Impact Analysis*

- *Suggested:* Module 5 and Module 6 in Thilmany McFadden, Dawn, David Conner, Steven Deller, David Hughes, Kevin Meter, Alfonso Morales, Todd Schmit, David Swenson, Allie Bauman, Megan Phillips Goldenberg, Rebecca Hill, Becca B.R. Jablonski and Debra Tropp. 2017. “The Economics of Local Food Systems: A Toolkit to Guide Community Discussions, Assessments and Choices.” USDA Agricultural Marketing Service Report.

**Week 14**

Tuesday, April 14: *Case Study: TBA*

- TBA closer to class date

Thursday, April 16: *Exam Review + Course Evaluations*

- Review your notes and previous class material and come with questions!

**Finals Week(s)**

Tuesday, April 21: *No class—Reading Day*

- No reading

Monday, April 27 (6 PM): **Exam 2**

- No reading