

Purdue University
Department of Agricultural Economics

AGEC 60800: Benefit-Cost Analysis
Syllabus—Spring 2019

Date last updated: January 23, 2019

Instructor	Carson Reeling, Ph.D. Office: 776 Krannert Building Email: creeling@purdue.edu Phone: (765) 496-6197
Schedule	Tuesdays and Thursdays 1:30 to 2:45 p.m. from Feb. 11 to Apr. 27, 2019 RAWLS 1071
Office Hours	By appointment

Brief Course Description (from Purdue Graduate Catalog)

Principles and practice for analysis of the benefits and costs of public investments. Topics include measures of project worth, choice of the discount rate, analysis of projects with multiple objectives and purposes, identifying and quantifying benefits and costs, applications of consumer and producer surplus in project analysis, treatment of risk and uncertainty, and shadow pricing techniques for project evaluation in developing countries. *Concurrent prerequisite: AGEC 60400; a graduate course in microeconomic theory.*

Course Objectives and Desired Learning Outcomes

The primary objective of this course is to prepare students to conduct rigorous applied economic policy and project analyses. Students who complete this course will be able to:

- Estimate a project's benefits and costs, including shadow pricing project inputs and outputs and valuing non-market goods and services;
- Appropriately apportion various benefits and cost across different project stakeholders to estimate the distribution of project benefits and costs across society;
- Derive and interpret economic measures of project performance, including net present value, internal rate of return, and benefit-cost ratios; and
- Incorporate risk and uncertainty into project analysis.

Materials

The primary course texts are:

- Campbell, Harry F. and Richard P.C. Brown. 2015. *Cost-Benefit Analysis: Financial and Economic Appraisal using Spreadsheets* (2nd ed.). New York: Routledge.
- (Optional) Boardman, A.E., D.H. Greenberg, A.R. Vining, and D.L. Weimer. 2011. *Cost-Benefit Analysis: Concepts and Practice* (4th ed.). Saddle River, N.J.: Pearson Prentice Hall.
- (Available online through Purdue Libraries) Champ, P.A., K.J. Boyle, and T.C. Brown. 2017. *A Primer on Nonmarket Valuation* (2nd ed.). Dordrecht: Springer.

Inexpensive used copies of the texts are available on Amazon and elsewhere. Older versions of all textbooks are available (the 3rd edition of Boardman et al. is on reserve in the Parrish Library) and can substitute for those listed here, although the chapter numbering may differ between versions.

Most problem sets and the take-home exam will be completed using Microsoft Excel. Microsoft Office 365 (which contains Excel and other programs) is available for free to Purdue students.¹ We will also make some use of the @Risk add-on for Microsoft Excel. You can install @Risk on your personal computer during the course period if you wish.² Alternatively, @Risk is available in several campus computer labs (HIKS G959, KRAN 250, SC 179, and HAMP 3144). A trial version of the software is also available.³

Course Content

Most class content, including problem sets and supplementary readings, can be accessed via Blackboard Learn (<https://mycourses.purdue.edu>).

Problem Sets (50% of Final Grade)

I will provide several problem sets over the course of the semester. Each problem set is worth the same portion of your final grade. Students may work together to complete the problem sets. However, each student must turn in their own, original assignment. Completed problem sets are to be uploaded to Blackboard by the due date. Late assignments will not be accepted. Detailed answer keys will be made available in Blackboard after the assignment's due date, and each problem set will be discussed in class on the due date.

Term Project (20% of Final Grade)

Each student will complete a class project comprising (i) an original benefit-cost analysis related to their thesis research or (ii) a case study taken from the textbook or other materials. Additional details and requirements will be provided after the start of the course.

Final Exam (30% of Final Grade)

The final exam will be cumulative and will comprise in-class and take-home components (15% of your final grade each). The take-home final exam must be submitted electronically before the in-class final exam. No late exams will be accepted. *Students are not permitted to collaborate on the final exam.* The in-class final will be offered on the assigned time and date during final exam week. (Note: the Registrar's office sets the final exam schedule in February. Once available, the date and

¹ See <https://www.itap.purdue.edu/shopping/software/product/office365.html>.

² Please contact me via email by 5 p.m. on 2/15 if you want to have @Risk installed on your work computer.

³ See <http://go.palisade.com/RISKDownload.html>

time will be announced in-class and via Blackboard.) No make-up exams will be offered. The exam will be similar to the problem sets and may draw on the course readings. Hence, no practice exams or study guides will be provided. No outside notes or materials are permitted for use during the in-class exam.

Grade Scale

I will assign grades according to the following scale: 97–100 = A+; 94–97 = A; 90–94 = A-; 87–90 = B+; 84–87 = B; 80–84 = B-; 77–80 = C+; 74–77 = C; 70–74 = C-; 67–70 = D+; 64–67 = D; 60–64 = D-; <60 = F. Final grades may be curved at my discretion, but no adjustments will be made to grades unless there is an error in their calculation

Policy Statements

Attendance Policy

Attendance will not be formally monitored for this class. However, all students are expected to attend each class session except in cases of illness or emergencies.

Academic Honesty

Academic integrity is one of the highest values that Purdue University holds. Any student found to engage in academic dishonesty will be assigned a failing grade in the course and be referred to the Office of the Dean of Students. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

Counseling and Psychological Services Information

Purdue University is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765) 494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Accessibility and Accommodations Statement

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center by email at drc@purdue.edu or by phone at (765) 494-1247.

Course Schedule and Reading List

1. Introduction

- Campbell and Brown (2015), Ch. 1
- Boardman et al. (2011), Ch. 1; 20 (pp. 507–510 only)

2. Principles of Project Appraisal & Decision Rules

- Campbell and Brown (2015), Ch. 2; 3
- Boardman et al. (2011), Ch. 6; 19

3. Private/Financial, Project, and Efficiency Analysis

- Campbell and Brown (2015), Ch. 4; 5; 10
- Boardman et al. (2015) Ch. 4; 5; 17

4. Risk and Uncertainty

- Campbell and Brown (2015), Ch. 9
- Boardman et al. (2011), Ch. 7 (pp. 167–187 only)

5. Nonmarket Valuation

- Campbell and Brown (2015), Ch. 8
- Boardman et al. (2011), Ch. 13–16
- Champ et al. (2017), Ch. 4, 6, 7, 11

6. The Social Discount Rate

- Boardman et al. (2011), Ch. 10
- Fischer, A.C., and J.V. Krutilla. 1975. “Conservation, Environment, and the Rate of Discount.” *Quarterly Journal of Economics* (August):358–371.
- Rowse, J. (2008) “On Hyperbolic Discounting in Energy Models: An Application to Natural Gas Allocation in Canada.” *The Energy Journal* 29:135–158.
- Moore, M.A., A.E. Boardman, and A.R. Vining. 2013. “More Appropriate Discounting: The Rate of Social Time Preference and the Value of the Social Discount Rate.” *Journal of Benefit-Cost Analysis* 4(1):1–16.
- Harberger, A.C. and G.P. Jenkins. 2015. “Musings on the Social Discount Rate.” *Journal of Benefit-Cost Analysis* 6(1):6–32.