

Economics 454
Benefit-Cost Analysis
Spring 2019
Prof. Robert Halvorsen

Benefit-cost analysis is a widely applied method for evaluating government projects, policies, and regulations. This course reviews the theoretical foundations of benefit-cost analysis and derives formulas and procedures for the monetization of benefits and costs, aggregation over time, valuation of uncertain benefits and costs, and aggregation over individuals. By the end of the course, students should have a firm understanding of the issues, techniques, and practical difficulties involved in benefit-cost analysis and the ability to critique real-life benefit-cost analyses.

Two, non-cumulative, exams will count for 70% of the course grade, with the (curved) grade for the exam on which you do better receiving a weight of 0.6 in calculating the overall exam grade and the exam on which you do less well receiving a weight of 0.4. . Last Quarter's exams are posted on Canvas as a preview of the types of questions that will be asked as well as sources of practice questions in studying for this Quarter's exams. **Please refer to the next page for very important information on the rules for taking exams and quizzes. Note especially the information concerning cell phones.**

Five in-class quizzes will account for 20% of the course grade. The quiz on which you do least well will not be included in calculating the overall quiz grade.

Seven problem sets will account for 10% of the course grade. Each problem set will be graded credit/no credit. Detailed answer sheets will be provided for the problem sets and quizzes. Previous students have frequently reported that doing the problem sets and reviewing the answer sheets is a very good way to learn the course material.

There is no textbook or course pack for this course. Lecture notes on the topics expected to be covered in class are posted on Canvas. The actual lectures given in class will not always be identical to the posted notes, so attending class is highly recommended. Problem sets, answers to problem sets and quizzes will also be posted.

My office hours during the Spring Quarter are 10:00-11:00 on Monday, Tuesday, and Friday in Savery 351. An appointment to meet at another mutually convenient time can be made in person after class, by phone at 206-543-5546, or by email at halvor@uw.edu. You can also use email to ask any (short-answer) questions that may arise as you review your notes or work on the problem sets.

Exam Rules

I Exam Absence Policy

1. If you are unable to make it to an exam period due to illness or another unexpected happening, do the following:
 - i. Notify me no later than the time of the exam that you are not able to take the exam and why.
 - ii. If you missed the exam for health reasons, you need to show me a note issued by a medical professional documenting the reason you missed the exam.
 - iii. If there was some other reason for missing the exam, come and see me to explain the reason. You will need to show appropriate documentation. Not waking up or missing your bus/plane is not an acceptable excuse.
2. If you know that you are going to be away due to a University-related activity, such as participation in an away sport or debate, let me know well in advance so that arrangements can be made.

II Exam Taking Rules

1. Material allowed during an exam.
 - i. You must bring a large bluebook with nothing written on it.
 - ii. All books, papers, notebooks, etc., must be placed inside your backpack or other type of bag, which must be securely and fully closed. If you do not have a bag, you must place all your material out of your reach.
 - iii. No electronic devices, including calculators, can be accessible during the exam. Cell phones must be turned off and placed in your closed bag (not in your pocket). **If your cell phone is observed at any point during the exam, your exam will be taken away and assigned a grade of zero.**
 - iv. Baseball caps and any other kinds of headgear that conceal your eyes are not permitted.
2. Attendance and special accommodation
 - i. You are not allowed to leave the room during the exam. This includes restroom use; be sure to use the restroom before the beginning of the exam.
 - ii. If you arrive late to an exam, you cannot expect to get extra time after the official end of the exam to make up for the missing time at the beginning.
 - iii. If you have a documented disability, please show me documentation from the Office of Disability Resources for Students on the first day of class, so that I can make any arrangements required for accommodations.

III Academic Integrity

1. Exams are individual work and cheating will not be tolerated. Looking at notes or your neighbors' answers will result in the immediate termination of your exam time and a grade of zero for the exam.
2. Altering an exam before submitting it for a review of the grading, obtaining an advance copy of an examination, or arranging for a surrogate test-taker are all flagrant violations of University policy.
3. Cheating of any kind may result in expulsion from the University. The Department will follow University policy in case of academic misconduct. I strongly recommend that you review University policy at <http://www.washington.edu/uaa/advising/help/academicintegrity.php>. Students found to have engaged in academic dishonesty will be subject to sanctions, which range from a disciplinary warning to permanent expulsion from the University, depending on the seriousness of the misconduct.

Course Schedule

All dates except for the final exam are subject to revision.

April 1st

Introduction

Benefit-cost analysis as four-way aggregation
Standing
Social welfare

April 3rd

Evaluation criteria

Social welfare criterion
Pareto criterion
Potential compensation criterion

April 8th Problem Set 1 Due

Aggregation over commodities

Valuation principles
Valuation of inputs and outputs in undistorted, perfectly competitive, markets

April 10th Quiz 1

Valuation of inputs and outputs when markets are not used or are distorted
Mandatory acquisition of inputs
Price controls

April 15th Problem Set 2 Due

Aggregation over Time

Basic principles
Dynamic efficiency
Present value of consumption criterion
Capital markets and dynamic efficiency

April 17th Quiz 2

Net present value decision rules
Continuous discounting
Special cases of discounting formulas

April 22nd Problem Set 3 Due

Benefit-cost ratio decision rules
Internal rate of return decision rules

April 24th Quiz 3

Dynamic inefficiency
Social value of private investment
Net social benefit formula

April 29th Problem Set 4 Due

Aggregation over States of the World

Expected monetary value (EMV)

Certainty equivalent (CE)

Risk aversion

Expected utility

May 1st REVIEW FOR MIDTERM EXAM

May 6th MIDTERM EXAM

May 8th

Gambles vs. insurance

EMV as approximation of CE

May 13th Problem Set 5 Due

Aggregation over Individuals

Methods using explicit distributional weights

May 15th Quiz 4

Methods not using explicit distributional weights

May 20th Problem Set 6 Due

Valuation of Commodities with Incomplete Market Data

Limited observations on price and quantity

Hedonic technique

Cost of alternative supply

Use of market data for related commodities

May 22nd Quiz 5

Valuation of Commodities for Which Market Data Are Nonexistent

Travel cost technique

Implicit valuation of risks to life

Value of a statistical life

May 27th MEMORIAL DAY

May 29th Problem Set 7 Due

Factors affecting the value of a statistical life

Risk-risk analysis

June 3rd REVIEW FOR FINAL EXAM

June 5th FINAL EXAM COVERS MATERIAL SINCE MIDTERM EXAM