

Economics 454
Benefit-Cost Analysis
Spring 2018
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 quarter, 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 worse receiving a weight of 0.4. Last year's exams are posted on the class website on Canvas and can be used both as a preview of the types of questions that will be asked and as sources of practice questions in studying for this Quarter's exams. Please refer to the next page for very important information concerning exam rules and policies with respect to academic integrity.

Six in-class quizzes will account for 20% of the course grade and seven problem sets will account for 10%. Detailed answer sheets will be provided for the problem sets and quizzes. Previous students have frequently reported that doing the problem sets was a very good way to learn the course material.

There is no textbook or course pack for this course. Lecture notes are posted on Canvas. Practice exams, problem sets, answers to problem sets and quizzes, as well as other course materials will also be posted there.

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 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 use a large bluebook for your answers.
 - 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/uua/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.

Lecture, Quiz, and Exam Schedule

Dates shown for lectures, quizzes, and the first exam are subject to revision

March 26th

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

March 28th

Social welfare criterion
Pareto criterion
Potential compensation criterion
Summary of criteria

April 2nd

Aggregation over commodities

Valuation principles
Willingness to pay
Opportunity cost
Aggregate Consumer and Producer Surplus
Valuation in undistorted, perfectly competitive, markets

April 4th Quiz 1

Valuation in distorted markets

April 9th

Aggregation over Time

Basic principles
Rate of Time Preference
Opportunity Cost Rate
Dynamic efficiency
Present value of consumption criterion

April 11th Quiz 2

Capital markets and dynamic efficiency
Net present value formula
Accounting for inflation
Net present value decision rules
Continuous discounting

April 16th

Special cases of discounting formulas
Benefit-cost ratio decision rules
Internal rate of return decision rules

April 18th Quiz 3

Dynamic inefficiency
Social value of private investment
Net social benefit formula

April 23rd

Aggregation over States of the World

Expected monetary value
Certainty equivalent
Expected utility
Utility function

April 25th In-class review for first exam

April 30th First exam covers material through aggregation over time.

May 2nd

EMV as approximation of CE

May 7th

Aggregation over Individuals

Introduction
Methods using explicit distributional weights

May 9th Quiz 4

Methods not using explicit distributional weights

May 14th

Valuation of Commodities for Which Market Data Are Incomplete

Limited observations on price and quantity
Use of market data for similar commodities
Hedonic technique
Cost of alternative supply

May 16th Quiz 5

Valuation of Commodities for Which Market Data Are Nonexistent

Use of market data for related commodities
Travel cost technique

May 21st

Valuation of risks to life

Estimation of the value of a statistical life
Factors affecting the value of a statistical life
Risk-risk analysis

May 23rd Quiz 6 and in-class review for second exam

May 28th Memorial Day

May 30th Second exam covers material since aggregation over time