

**Economics 454**  
**Benefit-Cost Analysis**  
**Autumn 2020**  
**Prof. Robert Halvorsen**

In ECON 454 we will discuss how benefit-cost analysis *should* be done. In real life, benefit-cost analyses are often done very badly, frequently because the people doing them are trying to provide support for what they have already decided to do, rather than objectively analyzing what they should do. 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 therefore the ability to critique real-life benefit-cost analyses.

The prerequisite for this course is ECON 300 and the class discussions will assume that students have a solid understanding of intermediate level microeconomics. 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. The exams will be open-notes. 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.

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

Four problem sets will count for 10% of the course grade and will be graded credit/no credit. Detailed answer sheets will be posted for the problem sets and quizzes. Reviewing the answers and comparing them to your own are excellent ways to learn the course material.

Exams, quizzes, and problem sets do not need to be typed but do need to be easy to read. Exams and quizzes **must** be submitted as PDFs. If you do not have access to a scanner, you can use a cell phone scanning app (e.g., Adobe Scan).

There is no textbook or course pack. Lectures will be recorded and posted on Zoom and lecture notes will be posted on Canvas.

My office hours are 10:00 – 11:00 A.M. Seattle time on Monday and Wednesday. An appointment to meet at another mutually agreeable time can be made by email at [halvor@uw.edu](mailto:halvor@uw.edu). You may also use email to ask any short-answer questions that may arise as you review your notes or work on the problem sets.

## Course Schedule

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

Washington state law requires the UW to have a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/) (<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>).

### **September 30<sup>th</sup>**

#### **Introduction**

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

### **October 5<sup>th</sup> Evaluation criteria**

Social welfare criterion  
Pareto criterion  
Potential compensation criterion

### **October 7<sup>th</sup>**

#### **Aggregation over commodities**

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

### **October 12<sup>th</sup>**

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

### **October 14<sup>th</sup>            Problem Set 1 Due**

#### **Aggregation over Time**

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

### **October 19<sup>th</sup>            Quiz 1**

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

### **October 21<sup>st</sup>**

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

**October 26<sup>th</sup>            Problem Set 2 Due**

Dynamic inefficiency  
Social value of private investment  
Net social benefit formula

**October 28<sup>th</sup>            Quiz 2**

**Aggregation over States of the World**

Expected monetary value (EMV)  
Certainty equivalent (CE)  
Risk aversion  
Expected utility

**November 2<sup>nd</sup>            REVIEW FOR MIDTERM EXAM**

**November 4<sup>th</sup>            MIDTERM EXAM**

**November 9<sup>th</sup>**

Gambles vs. insurance  
EMV as approximation of CE

**November 11<sup>th</sup>        VETERANS DAY**

**November 16<sup>th</sup>        Problem Set 3 Due**

**Aggregation over Individuals**

Methods using explicit distributional weights

**November 18<sup>th</sup>        Quiz 3**

Methods not using explicit distributional weights

**November 23<sup>rd</sup>**

**Valuation of Commodities with Incomplete Market Data**

Limited observations on price and quantity  
Cost of alternative supply  
Use of market data for related commodities

**November 25<sup>th</sup>        Problem Set 4 Due**

**Valuation of Commodities for Which Market Data Are Nonexistent**

Travel cost technique  
Valuation of risks to life

**November 30<sup>th</sup>        Quiz 4**

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

**December 2<sup>nd</sup>**

Stated preference method

**December 7<sup>nd</sup>      REVIEW FOR FINAL EXAM**

**December 9<sup>th</sup>      FINAL EXAM COVERS MATERIAL SINCE MIDTERM EXAM**