SYLLABUS

COURSE OBJECTIVES:

There are two main objectives of this course. The first is to teach students how to conduct three types of analyses: (1) a financial appraisal, (2) a social cost-benefit analysis, and (3) a multi-criteria project appraisal. Students will learn the strengths and weaknesses of these three approaches, and their underlying assumptions. In the process students will develop an in-depth understanding of four dimensions of project/policy analyses: criteria for evaluation, alternatives (interventions), groups of affected parties, and the time profile of project/policy consequences.

The second objective is to put students in the role of a consumer of policy analyses, especially cost-benefit analyses, and for them to think carefully about how they would like others to assemble evidence for a planning or policy choice (e.g., an infrastructure investment). Students will consider the type of analyses and displays of information that they would want if they were a decision maker (manager). Students will learn how to assess the quality of financial, cost-benefit, and multi-criteria analyses prepared by others.

ASSIGNMENTS

There are four required written assignments. Typically assignments will be discussed during class on the dates they are due, so late assignments cannot be accepted. The assignments are due on the following dates:

- Assignment No. 1 – Tuesday, Jan. 27
- Assignment No. 2 – Thursday, March 5
- Assignment No. 3 – Thursday, April 2
- Assignment No. 4 – Thursday, April 23

In addition there are group exercises and two class debates.

Note: Assignment No. 4 is a group assignment. Assignment Nos. 1-3 are individual assignments.

Note regarding Assignment No. 4 – Literature Review

I want students in the course to learn to conduct a systematic literature review and explore in depth the literature on a cost-benefit topic in which they are especially interested. A good
literature review should critically appraise what is already known about a subject and identify gaps in knowledge (what is not yet known) from existing studies. Systematic literature reviews structure the search process and data extraction from existing studies systematically and transparently with explicit and reproducible methods.

Kristen Downs, a PhD student in the Department of Environmental Sciences and Engineering (ENVR), and Ryan Cronk (ENVR PhD student) will present a session on how to conduct a systematic literature review on Thursday, January 29.

Students will work in pairs on this assignment because it is important to have a way to control for individual biases in the assessment of a specific literature. You are encouraged to discuss different possible topics for your literature review with other students in class and find a “partner” with similar interests to you. If you are unable to find a suitable partner, you can do your literature review by yourself. However, I prefer that students work in pairs.

Review Topics

Students (in pairs) will select one of the following as the focus of their literature review:

1) a theoretical issue about cost-benefit analysis;
2) a methodological issue about cost-benefit analysis; or
3) cost-benefit analyses about a specific project or policy.

Students should submit the topic of their literature review on Thursday, Feb. 5. It is recommended that students do some preliminary searching of the existing literature and any prior literature reviews to ensure that there are sufficient primary studies on the topic, it is narrow enough, and there have not been recent systematic reviews on the same topic.

Assignment No. 4 – Important Dates

Jan. 29 Lecture on conducting a systematic literature review
Feb. 5 Students should submit the topic of their literature review,
April (TBD) Group presentations on the results of the literature review are scheduled for April.
April 23 The written assignment is due the last day of class on Thursday, April 23.

More details about Assignment No. 4 will be provided on Thursday, January 29.

GRADING POLICY:

Grades for the course will be based on the following weights:

Assignments:

No. 1 – 10% - Decision Matrices – Dams & Environment
No. 2 - 20% - Fisheries Project Evaluation
No. 3 - 10% - Kolkata WTP for Vaccines
No. 4 - 25% - Literature Review

Subtotal for assignments - 65%

**Participation in Class Debates and Class Discussion** - 10%.

There are 2 debates, so everyone will participate in one or the either, on either the pro or con side. I encourage you to ask questions in class and to submit questions to me by email after a lecture. I expect questions about the readings; if a student has no questions, I interpret this to mean that it is likely that s/he has not done the readings.

**Final Exam** - 25%

TOTAL = 100%

A Grade of H indicates superior performance, over and above the mastery of basic concepts. A Grade of P indicates satisfactory performance. A grade of L indicates a low pass and that the student has a poor understanding of numerous concepts covered in the course. A grade of F indicates a failure to understand the basic concepts covered in the course.

**All students are bound by the UNC honor code:** “It shall be the responsibility of every student at the University of North Carolina at Chapel Hill to obey and to support the enforcement of the honor code, which prohibits lying, cheating, or stealing when these actions involve academic processes or University, student or academic personnel acting in an official capacity.” Please do not look at past years’ assignments or exams.

**REQUIRED TEXTS:**


**FINAL EXAM – Friday, May 1, 8:00-11:00 AM**

[Note: Students must arrange their schedule to ensure that they are in Chapel Hill to take the final exam on the regularly scheduled exam date and time.]
Part I - Introduction - Decision Matrices and Types of Policy Problems (Lecture 1-2)


Background Reading


Part II - Criteria for Project Evaluation & Introduction to Cost-Benefit Analysis (Lectures 3-6)

A. Selecting Criteria


B. The Concept of Economic Value


C. Cost-Benefit Analysis – An example

L-G, Introduction, pp. 1-24

D. Ethical issues and debates regarding the use of cost-benefit

BGVM, Ch. 1-3.

Background Readings:


E. Teaching case: Tahiti Electrification

Levy, Robert I. "Sociocultural factors in the reception and impact of solar energy systems in isolated Tuamotuan communities."

Lecture 7: Conducting a Systematic Literature Review (Kristen Downs – Thursday, Jan. 29, 2015)

Readings


Examples of Literature Reviews


Part III - Using a Financial Criterion – Introduction to Financial Appraisal (Lectures 8-10)

A. Introduction to concepts of financial analysis; discounting and treatment of inflation; Depreciation, Annual Costs, Discounted Cash Flow Analysis


B. Investment Decision Rules


C. Capital Budgeting


Part IV - Project Appraisal and Shadow Pricing (Lectures 11-19)

A. Valuing Benefits and Costs in Primary Markets

BGVM, Ch. 4.

Welfare Effects of Nonprice Allocation Schemes

Background Readings:
L-G: Ch. 1 (Drèze and Stern)
L-G: Ch. 2 (Sen)

B. Valuing Benefits and Costs in Secondary Markets

BGVM, Ch. 5.

C. The social rate of discount

BGVW, Ch. 10.

Background Reading


Poulos, Christine, and Dale Whittington. “Individuals’ Rates of Time Preference in Developing Countries: Results of a Multi-country Study.” Environmental Science and Technology. April 15, 2000. 43:8 1445-1455. [pubs.acs.org/subscribe/journals/esthag/34/i08/pdf/es990730a.pdf]


F. The shadow value of investment

L-G: Introduction, pp. 25-44
L-G: Ch. 3 (Stiglitz)


G. Shadow pricing labor, employment, time savings

BGVW, Ch. 16
BGVW, Ch. 17
H. Valuing risks to life

BGVW, Ch. 16
L-G: Ch. 8 (Rosen) and Ch. 9 (Jones-Lee)

Background readings:


Rohlfs, Chris. 2012. "The Economic Cost of Conscription and an Upper Bound on the Value of a Statistical Life: Hedonic Estimates From Two Margins of


I. Integrating concerns about poverty & income distribution; equity weights

BGVM, Ch. 19
L-G: Ch. 5 (Layard and Walters)

**Background Reading:**


J. Discussion of Hirschman's *Development Projects Observed*


K. Dealing with risk and uncertainty in project appraisal

BGVM, Ch. 7-8.

L-G: Ch. 4.

**Background Readings:**


Part V - Nonmarket Valuation Techniques (Lectures 20-26)

A. Introduction


B. Stated Preference Methods: Contingent Valuation Method, Choice Experiments

BGVW, Ch. 15.


Background readings


C. Class Debate on the Use of Existence Values in Cost-Benefit Analysis

BGVM, Ch. 9.


D. Hedonic Property Value Models


Background Reading


E. The Travel Cost Method


F. Economic Benefits of Improvements in Health: The Cost-of-Illness Approach; Damage Functions


G. Benefit Transfer
BGVW, Ch. 16 & 17.

**Background Readings**


**Part VI – Implications of Behavioral Economics Research for Cost-Benefit Analysis (Lectures 27-28)**

A. Summary of Selected Empirical Findings from the Behavioral Economics Literature


**Background Readings:**


B. New approaches for measuring subjective well-being


Background Readings


C. Debate: Implications of Behavioral Economics for Cost-Benefit Analysis

Part VII – Concluding Remarks (Lecture 29)

Final Exam: Friday, May 1, 8:00-11:00 AM
### Schedule Overview – Spring 2015

<table>
<thead>
<tr>
<th>JANUARY</th>
<th>Public Investment Theory</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thurs, Jan. 8</td>
<td>Lecture 1 – Introduction – Policy Analysis Framework</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tues, Jan. 13</td>
<td>Lecture 2 – Decision Matrices &amp; Problem Types</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thurs, January 15</td>
<td>Lecture 3 – The Concept of Economic Value</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tues, January 20</td>
<td>Lecture 4 – CBA: Bridge Example</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thurs, Jan. 22</td>
<td>Lecture 5 – Ethical Debates about the use of Cost-Benefit Analysis</td>
<td>Whittington</td>
</tr>
<tr>
<td></td>
<td><strong>Discussion of Group Exercise: Bridge CBA</strong></td>
<td></td>
</tr>
<tr>
<td>Tues, Jan. 27</td>
<td>Lecture 6 – Teaching Case: Tahiti Electrification;</td>
<td>Whittington</td>
</tr>
<tr>
<td></td>
<td><strong>Assignment No. 1 due: Decision Matrices: Dams &amp; Environment;</strong></td>
<td></td>
</tr>
<tr>
<td>Thurs, Jan. 22</td>
<td>Lecture 7 – Conducting a Literature Review</td>
<td>Downs, Cronk</td>
</tr>
<tr>
<td>FEBRUARY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tues, Feb. 3</td>
<td>Lecture 8 – Financial Appraisal I – Basic Concepts, Dealing with Inflation</td>
<td>Zhao</td>
</tr>
<tr>
<td>Thurs, Feb. 5</td>
<td>Lecture 9 – Financial Appraisal II – Investment Decision Rules</td>
<td>Zhao</td>
</tr>
<tr>
<td></td>
<td>of Capital Costs and Capital Budgeting</td>
<td></td>
</tr>
<tr>
<td>Thurs, Feb. 12</td>
<td>Lecture 11 – Valuing Benefits and Costs in Primary Markets (I)</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tues, Feb. 17</td>
<td>Lecture 12 – Valuing Benefits and Costs in Primary Markets (II)</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tues, Feb. 24</td>
<td>Lecture 14 – Social rate of discount</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thurs, Feb. 26</td>
<td>Lecture 15 – Shadow value of investment</td>
<td>Whittington</td>
</tr>
<tr>
<td>MARCH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tues, March 3</td>
<td>Lecture 16 – Shadow pricing time savings, pricing labor, employment</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thurs, March 5</td>
<td>Lecture 17 – Valuing Risks to Life</td>
<td>Zhao</td>
</tr>
<tr>
<td></td>
<td><strong>Assignment No. 2 due: Fisheries Project Appraisal</strong></td>
<td></td>
</tr>
<tr>
<td>Tuesday, March 10</td>
<td>SPRING BREAK</td>
<td>N.A.</td>
</tr>
<tr>
<td>Thurs, March 12</td>
<td>SPRING BREAK</td>
<td>N.A.</td>
</tr>
<tr>
<td>Tues, March 17</td>
<td>Lecture 18 – Integrating concerns about poverty, equity, and distribution; equity</td>
<td>Whittington</td>
</tr>
<tr>
<td></td>
<td>weighting schemes; Discussion of Assignment No. 2</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Instructor</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Thurs, March 19</td>
<td>Lecture 19 - Dealing with risk and uncertainty in project appraisal in CBA and Financial Appraisal; Discussion of Development Projects Observed</td>
<td>Whittington</td>
</tr>
<tr>
<td>Friday, March 20</td>
<td>Recitation – Crystal Ball tutorial</td>
<td>Zhao</td>
</tr>
<tr>
<td>Tues, March 24</td>
<td>Lecture 20 – Nonmarket valuation – Stated Preference Techniques (I)</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tuesday, March 31</td>
<td>Lecture 22 - Class Debate: Existence Values in CBA: Pros and Cons</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>April</strong></td>
<td></td>
</tr>
<tr>
<td>Thursday, April 2</td>
<td>Lecture 23 – Nonmarket valuation: RP Techniques – Hedonic Property Value Models; Assignment No. 3 due: Kolkata WTP for Vaccines</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tuesday, April 7</td>
<td>Lecture 24 – Nonmarket valuation: Revealed Preference (RP) Techniques - Travel Cost Models</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thursday, April 9</td>
<td>Lecture 25 – Nonmarket Valuation: RP Techniques – Cost of Illness, Damage Functions; Group 1 Presentation (15-20 minutes)</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tuesday, April 14</td>
<td>Lecture 26 – Nonmarket Valuation Techniques – Benefit Transfer Group 2 Presentation (15-20 minutes)</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thursday, April 16</td>
<td>Lecture 27 – Overview of Empirical Findings from Behavioral Economics; Measures of Subjective Well-being as Benefit Estimates Group 3 Presentation (15-20 minutes)</td>
<td>Whittington</td>
</tr>
<tr>
<td>Tuesday, April 21</td>
<td>Lecture 28 – Class Debate: Implications of Behavioral Economics for CBA</td>
<td>Whittington</td>
</tr>
<tr>
<td>Thursday, April 23</td>
<td>Lecture 29 – Wrapping up – Things Not to Forget Groups 4 &amp; 5 Presentations (15-20 minutes each) Assignment No. 4 due</td>
<td>Whittington</td>
</tr>
<tr>
<td></td>
<td><strong>May</strong></td>
<td></td>
</tr>
<tr>
<td>Friday, May 1</td>
<td>Final Exam 8:00 – 11:00 am</td>
<td></td>
</tr>
</tbody>
</table>