

**Georgia Institute of Technology  
School of Economics**

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**ECON 6150-JKK**

**Syllabus: Cost-Benefit Analysis**

**Spring 2012**

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Lectures: Tuesday and Thursday from 3:05 to 4:25, **Whitaker Bio Engineering Building, Room 1232**

Instructor: **Dr. Johnson Kakeu** (Johnson.kakeu@econ.gatech.edu)

Office Hours: Mon & Wed, from 10:00 to 11:00, and by appointment, **Old building CE, Room: 223**

TAs: **Joseph Greene** (jgreene39@gatech.edu)

TA office hours: Monday from 1:30 to 2:30, **Old building CE, Room: 310**

### **I. Course Objective:**

This course provides an analytical framework for evaluating projects with an emphasis on publicly funded projects such as biodiversity conservation, water resources, urban infrastructure, and education projects. We look at the evaluation of benefits and costs over time, including in the presence of uncertainty, in the absence of market prices, and when income distribution objectives need to be incorporated into a project's evaluation. The course will consist of a mix of lectures and interactive discussions.

### **II. Reading:**

The textbook for the course is *Boardman et al., Cost-Benefit Analysis, Concepts and Practice, Pearson/Prentice-Hall, 4th edition, 2011*. It can be purchased at the Engineering bookstore and the GT Barnes and Nobles Bookstore.

### **III. Papers to be Discussed/Presented**

Each student will be assigned a paper listed below. For your assigned paper, it is strongly advised that you research the papers in the bibliography and familiarize yourself with the context surrounding that work.

Vincent, J. (2000) "Green accounting: from theory to practice," *Environment and Development Economics*, vol. 5, pages 13–24.

Solow, R., 1993. "An almost practical step toward sustainability," *Resources Policy*, vol. 19, pages 162-172.

Dasgupta, P. (2000) "Valuing Biodiversity", encyclopedia of Biodiversity, edited by Simon Levin (New York: Academic Press).

Moran, D. and D. Pearce, *The Value of Biodiversity*, World Conservation Union, Biodiversity Programme. London, UK: Earthscan Publications, 1994

Brock, W. and A., Xepapadeas (2003) "Valuing Biodiversity from an Economic Perspective: A Unified Economic, Ecological, and Genetic Approach," *American Economic Review*, vol. 93, pages 1597-1614.

Krutilla, J. (1967) "Conservation Reconsidered." *American Economic Review*, vol. 57, pages 777-786.

- Smith, M. and L. Crowder, (2011), "Valuing Ecosystem Services with Fishery Rents: A Lumped-Parameter Approach to Hypoxia in the Neuse River Estuary", *Sustainability*, vol. 3 pages 2229-2267
- Ferreira, S and Vincent, J. (2010) "Governance and Timber Harvests," *Environmental & Resource Economics*, vol. 47, pages 241-260.
- Arrow, K. and Cropper, M. and Eads, G. and Hahn, R. and Lave, L. and Noll, R. and Portney, P. and Russell, M. and Schmalensee, R. and Smith, V. and Stavins (1997) "Is there a role for benefit-cost analysis in environmental, health, and safety regulation?," *Environment and Development Economics*, vol. 2, pages 195-221.
- Smith, C. and J., Gilden (2000) "Cultural and Natural Assets for Willamette Basin, Oregon Sustainability," Oregon State University
- Lovins, A., L. Lovins, and P. Hawken (1999) "A road Map for Natural Capitalism," *Harvard business review*, vol. 77, pages 65-97
- Evans, M. and Smith, V. and J., Snook (2011) "Air Quality, Caregiving Needs, and the Location Decisions of Older Adults"
- Alberini, A. and A., Krupnick (2000) "Cost-of-illness and willingness-to-pay estimates of the benefits of improved air quality: evidence from Taiwan". *Land Economics*, vol.76, pages 37- 53.
- KyeongAe, C. and Dale, W. and T. Donald (1996) "The Economic Benefits of Surface Water Quality in Developing Countries: A Case Study of Davao, Philippines," *Land Economics*, vol. 72, pages 519-537
- Kling and al. (1999) "Estimating the Value of Water Quality Improvements in a Recreational Demand Framework," Staff General Research Papers 12334, Iowa State University, Department of Economics.
- Loomis, J. (2002) "Quantifying recreation use values from removing dams and restoring free-flowing rivers: A contingent behavior travel cost demand model for the Lower Snake River," *Water Resources Research* Vol. 38, pages 2-1 to 2-8.
- Edwards, S. (1988). "Option prices for groundwater protection.", *Journal of Environmental Economics and Management*, vol. 15, pages 475-487.
- European Union Business and Biodiversity Platform (2009) "Agriculture Sector and Biodiversity Conservation"
- Banzhaf, S. and Burtraw, D. and Evans, D. and A., Krupnick (2006) "Valuation of Natural Resource Improvements in the Adirondacks," *Land Economics*, vol. 82, pages 445-464.
- Minister for Community, Rural and Gaeltacht Affairs (2004) "A Social Cost Benefit Analysis of the Rural Social Scheme"
- Phaneuf, D. and Smith, V. and Palmquist, R. and J. Pope (2008) "Integrating property value and local recreation models to value ecosystem services in urban watersheds," *Land Economics*, vol. 84, pages 361-381.
- Hakansson, C. (2009) "Costs and benefits of improving wild salmon passage in a regulated river," *Journal of Environmental Planning and Management*, vol. 52, pages 345-363.
- Dadaser-Celik, F. and Coggins, J. and Brezonik, P. and H., Stefan (2009) "The projected costs and benefits of water diversion from and to the Sultan Marshes (Turkey)," *Ecological Economics*, vol. 68, pages 1496-1506.

Black, S. (1999) "Do Better Schools Matter? Parental Valuation of Elementary Education," *Quarterly Journal of Economics* vol. 114, pages 577-599.

Washington State Institute for Public Policy (2006) "Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates," Washington State Document ID 06-10-1201. October.

Kamer, P. (2005), "Placing an Economic Value on the Services of Public Libraries in Suffolk County", New York

Hoeckel, K (2008) "Costs and Benefits in Vocational Education and Training"

European Commission, (2003) "The costs and Benefits of Diversity"

Veisten, K. and Houwing, S. and Mathijssen, R. and J., Akhtar (2011) "Cost-benefit analysis of drug driving enforcement by the police"

Wang et al, (2003) A Cost-Benefit Analysis of Electronic Medical Records in Primary Care.

City of Portland (2010) "Cost Benefit Evaluation Of Ecoroofs"

David Langdon (2010) "The cost and benefit of achieving Green buildings"

Sustainable Eastside (2004) "Green Roofs Benefits and Cost Implications"

Richard Yao and Pamela Kaval, 2008, Valuing Biodiversity Enhancement in New Zealand

Cameron, T. (2010) Euthanizing the Value of a Statistical Life. *Review of Environmental Economics and Policy*, vol 4, pages 161-178.

Viscusi, W. and J. Aldy (2003) "The Value of a Statistical Life: A Critical Review of Market Estimates throughout the World." *Journal of Risk and Uncertainty*, vol. 27: 5-76.

#### IV. Course Requirements

You are expected to complete all of the assigned reading before class. The aim is to have much of class based on discussion, so being prepared will be important.

#### V. Grading:

Course grades will be computed based on the following formula

<b><i>Video assignment on a topic in biodiversity and conservation<sup>1</sup></i></b>	10%
Referee report	10%
Presentation	30%
Midterm Exam	20%
Final Exam	30%

The final course grade will be curved

**Exam dates:** March 10 and May 3.

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<sup>1</sup> You can use your smartphone for this if it suits you. Your video must be uploaded with a title that includes the names of the students responsible.

## VI. Brief course outline:

Week 1	<b>Overview of Decision Rules in Cost-Benefit Analysis</b>	BGVW chapters 1, 2
Week 2	<b>Microeconomic foundations of Cost-Benefit Analysis</b>	BGVW chapter 3
Week 3	<b>Valuing Benefits and Costs in Primary Markets</b>	BGVW chapter 4
Week 4	<b>Valuing Benefits and Costs in Secondary Markets</b>	BGVW chapter 5
Week 5	<b>Non-Market Valuation: Revealed Preference Methods</b>	BGVW chapters 13,14
Week 6	<b>Non-Market Valuation: Stated Preference Methods</b>	BGVW chapter 15
Week 7 & 8	<b>Taking account of uncertainty in Cost-Benefit Analysis</b>	BGVW Chapter 7
Week 9	<b>Option Price and Option Value</b>	BGVW chapter 8
Week 10	<b>Discounting in Cost-Benefit Analysis</b>	BGVW chapters 6, 10
Week 11	Spring Break	
Week 12	<b>Distributionally Weighted Cost-Benefit Analysis</b>	BGVW chapter 19
Week 13	<b>Video presentations and discussions</b>	
Week 14	<b>Video presentations and discussions</b>	
Week 15	<b>Final Exam</b> (May 3, from 11:30 AM to 2:20 PM)	

## VIII. Academic Integrity

Cheating on exams or quizzes or plagiarizing a homework assignment are both serious violations of Georgia Tech Academic Honor Code. Plagiarizing is defined by Webster's as "to steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source." If caught plagiarizing, you will be dealt with according to the Georgia Tech Academic Honor Code.

## IX. Students with Disabilities

Please make arrangements with me during the first week of the term. Please request that the **ADAPTS-Disability Services Programs** (<http://www.adapts.gatech.edu/>) send me a letter verifying your disability.

*"This syllabus is subject to change to facilitate instructional and/or student needs"*