

MGT 7351: Environmental Considerations in Managerial Decision-Making (College of Management, Georgia Institute of Technology)

Instructor: Dr. Ravi Subramanian
Email : ravi.subramanian@mgt.gatech.edu
Tel : 404-894-4197
Office Hours: By Appointment, in Room #478 (Management Building)

Course Description :

This doctoral-level course explores managerial decision-making at the increasingly important interface between firms' operations and the environment. While altruistic motives for considering the interface may or may not be compelling, our emphasis will be on competitive and legal drivers. Since the area is relatively new to the majority of management researchers, the course will first introduce participants to the pertinent competitive and legal attributes of the interface. This will be accomplished through readings that are descriptive or theoretical in nature. In particular, selected readings related to recent environmental legislation will highlight the important strategic and legal issues that have surfaced with the implementation of various forms of environmental regulation – issues that demand the attention of scientific management. Having motivated the need to study the interface, we will briefly look at how various management disciplines have treated or can treat the interface. Thereafter, we will proceed to the core of the course where we will critically review research papers (journal articles) that have studied the interface. Mimicking the life-cycle view, the papers are categorized on the basis of product life-cycle stages – Design, Production, Use, and Post-Use. Such an organization will allow us to coherently experience the richness of methodologies that have been used in the literature to address problems of prime managerial concern.

Grading:

Grading will be on the collective basis of class participation, presentations, and a term paper.

Class Participation:

At the beginning of each session, each participant should hand in a post-it note or note card in which one key question/issue/concept/thought related to each of the assigned readings should be written out. These will serve as fuel for in-class discussions as well as a measure of class participation. For the course to be meaningful, regular attendance and active participation are vital.

Presentations:

Participants will be assigned specific readings to present. These assignments will be decided in-class for scheduling convenience. Presentations will be by turn and I will try my best to incorporate scheduling constraints. Presentations should not have more than five slides. Presentations should be designed assuming that all participants have read the assigned articles. The use of graphics (flowcharts, boxes & arrows, etc.) is encouraged.

Term Paper:

A key grading component will be the term paper, due on the last day of classes. The term paper should include a carefully thought through research question, structured as a research paper (i.e., Introduction, Literature Review, Model, Outline of Analysis, Conclusion, etc.). The term paper should not be more than 15 pages in length (one-half spaced). The chosen research question could be among those that originate in classroom discussions or any that closely relates to the content of the course. I will be happy to discuss your term paper ideas with you and guide you through the process. I strongly encourage you to view the term paper as part of future individual or collaborative work.

Detailed Schedule

1. Introduction

- Introduction to the field: Discussion of the reasons/disciplines/methodologies for treating the interface between operations and the environment.
- Outline of the course.

2. Competitive and Economic Views

- a. Lovins, A. B., L. H. Lovins, P. Hawken. 1999. A Road Map for Natural Capitalism. *Harvard Business Review*. (May-Jun) 145-158.
- b. Hart, S. L. Beyond Greening: Strategies for a Sustainable World. 1997. *Harvard Business Review*. (Jan-Feb) 66-76.
- c. Porter, M. E., C. van der Linde. Green and Competitive: Ending the Stalemate. 1995. *Harvard Business Review*. (Sep-Oct) 120-134.
- d. Walley, N., B. Whitehead. It's Not Easy Being Green. 1994. *Harvard Business Review*. (May-Jun) 46-52.

3. The Legal Perspective (Market-Based Mechanisms)

- a. National Round Table on the Environment and the Economy (NRTEE), Canada. 2002. *The ABCs of Emissions Trading: An Overview*.
- b. Tietenberg, T. H. 2001. Editor's Introduction to *The Evolution of Emissions Trading: Theoretical Foundations and Design Considerations*. Ashgate Publishing Ltd., Aldershot, UK.
- c. Joskow, P. L., R. Schmalensee, E. M. Bailey. 1998. The Market for Sulfur Dioxide Emissions. *The American Economic Review*. **88**(4) 669-685.

4. The Legal Perspective (Life-Cycle Responsibility)

- a. Gutowski et al. 2005. Environmentally Benign Manufacturing: Observations from Japan, Europe and the United States. *Journal of Cleaner Production*. **13** 1-17.
- b. Organization for Economic Cooperation and Development (OECD). 2001. *Extended Producer Responsibility: A Guidance Manual for Governments*.
- c. Fishbein, B. K. 1998. EPR: What does it Mean? Where is it Headed? *Pollution Prevention Review*. **8** 43-55.

5. The Environment and Operations Management

- a. Corbett, C. J., P. R. Kleindorfer. 2001a. Environmental Management and Operations Management: Introduction to Part 1 (Manufacturing and Eco-Logistics). *Production and Operations Management*. **10**(2) 107-111.
- b. Corbett, C. J., P. R. Kleindorfer. 2001b. Environmental Management and Operations: Introduction to Part 2 (Integrating Operations and Environmental Management Systems). *Production and Operations Management*. **10**(3) 225-227.
- c. Fleischmann et al. 1997. Quantitative Models for Reverse Logistics: A Review. *European Journal of Operational Research*. **103** 1-17.
- d. Bloemhof-Ruwaard et al. 1995. Interactions between Operational Research and Environmental Management. *European Journal of Operational Research*. **85** 229-243.

6. Corporate Environmentalism as a Research Domain

Hoffman, A. J. 2005. Business Decisions and the Environment: Significance, Challenges, and Momentum of an Emerging Research Field. In *Decision Making for the Environment: Social and Behavioral Science Research Priorities* (G. D. Brewer, P. C. Stern, Eds.). The National Academies Press, Washington, D.C. 200-229.

7. The Classical Approach (Environmental Economics)

- a. Wierenga, M. 2003. A Brief Introduction to Environmental Economics. *Environmental Law Alliance Worldwide & US EPA*. 1-5.
- b. Cropper, M. L., W. E. Oates. 1992. Environmental Economics: A Survey. *Journal of Economic Literature*. **30**(2) 675-740.

8. The Design Stage

- a. Debo, L. G., L. B. Toktay, L. N. Van Wassenhove. 2005. Market Segmentation and Product Technology Selection for Remanufacturable Products. *Management Science*. **51**(8) 1193-1205.
- b. Subramanian, R., S. Gupta, B. Talbot. 2005. Product Design and Contracts under Extended Producer Responsibility. *Production and Operations Management* (Forthcoming).
- c. Chen, C. 2001. Design for the Environment: A Quality-Based Model for Green Product Development. *Management Science*. **47**(2) 250-263.

9. The Production Stage

- a. Subramanian, R., S. Gupta, B. Talbot. 2008. Emissions Compliance Strategies: A Permit Auction Model. *Production and Operations Management*. **16**(6) 763-779.
- b. van der Laan, E., M. Salomon, R. Dekker, L. N. Van Wassenhove. 1999. Inventory Control in Hybrid Systems with Remanufacturing. *Management Science*. **45**(5) 733-747.
- c. Greenberg, H. J. 1995. Mathematical Programming Models for Environmental Quality Control. *Operations Research*. **43**(4) 578-622.

10. The End-of-Life Stage

- a. Calcott, P., M. Walls. 2000. Can Downstream Waste Disposal Policies Encourage Upstream Design for Environment"? *The American Economic Review: Papers and Proceedings*. **90**(2) 233-37.
- b. Savaskan, R. C., S. Bhattacharya, L. N. Van Wassenhove. 2004. Closed-Loop Supply Chain Models with Product Remanufacturing. *Management Science*. **50**(2) 239-252.
- c. Majumder, P., H. Groenevelt. 2001. Competition in Remanufacturing. *Production and Operations Management*. **10**(2) 125-141.

11. Discussion – Examples from Practice

12. Industrial Ecology Approach: Life-Cycle Analysis (LCA)

- a. Matthews, H. S., C. T. Hendrickson. 2003. The Economic and Environmental Implications of Centralized Stock-Keeping. *Journal of Industrial Ecology*. **6**(2) 71-81.
- b. Smith, V. M., G. A. Keoleian. 2004. The Value of Remanufactured Engines: Life-Cycle Environmental and Economic Perspectives. *Journal of Industrial Ecology*. **8**(1) 193-221.
- c. Svoboda, S. *Pollution Prevention in Corporate Strategy: Note on Life Cycle Analysis*. National Pollution Prevention Center for Higher Education, Ann Arbor, Michigan.

13. Empirical Studies

- a. King, A. A., M. J. Lenox. 2001. Does it *Really* Pay to Be Green? An Empirical Study of Firm Environmental and Financial Performance. *Journal of Industrial Ecology*. **5**(1) 105-116.
- b. Dowell, G., S. Hart, B. Yeung. 2000. Do Corporate Global Environmental Standards Create or Destroy Market Value. *Management Science*. **46**(8) 1059-1074.
- c. Reinhardt, F. 1999. Market Failure and the Environmental Policies of Firms: Economic Rationales for “Beyond Compliance” Behavior. *Journal of Industrial Ecology*. **3**(1) 9-21.
- d. Klassen, R. D., C. P. McLaughlin. 1996. The Impact of Environmental Management on Firm Performance. *Management Science*. **42**(8) 1199-1214.

14. Presentations of Term Papers