



Laboratory for Sustainable Business (S-Lab), Spring 2007

15.992 (3-0-9)

E51-335

Wednesdays 2:30-5:30

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Today's business models have generated unforeseen levels of economic growth and technological innovation but also have created severe strains on our environment, social systems, and personal lives. The energy-intensive patterns of production and consumption underlying much of our current economic activities cannot be sustained without significant breakdowns in our environment. The increasing gap between the "haves" and "have-nots" within and among countries threatens to disrupt efforts to build a truly global economy. Current patterns of globalization are already provoking major social disruptions around the world. The growing imbalance between work and family is creating tremendous personal strains for blue-collar workers and high-level managers alike. What can be done about these problems? How can we reconcile the virtues of free-market capitalism with the need for more sustainable business practices? How can we translate these real world challenges into future business opportunities?

Today, organizations of all kinds--traditional manufacturing firms, those that extract resources, a huge variety of new start-ups, services, non-profits, and governmental organizations of all types, among many others--are tackling these very questions. For some, the massive challenges of moving towards sustainability offer real opportunities--opportunities for new products and services, for reinventing old ones, or for solving problems in new ways. Other organizations tackling sustainability are engaged in very real struggles in which the solutions are far from obvious. Alongside our questions about the problems of sustainability and how to reconcile free-market capitalism with the need for more sustainable business practices are real questions about how to move along the path towards sustainability. How can we translate these real-world challenges into future business opportunities? How can individuals, organizations, and society learn and undergo change at the pace needed to stave off worsening problems?

This course seeks to address these questions by providing students with: 1) in-depth **knowledge** of the various sustainability issues we face today; 2) a set of **analytical tools and frameworks** that will help you understand/analyze as well as impact these issues; and 3) **experience** working with a firm or organization currently developing new business models (or reforming existing ones) in line with sustainable development.

This is a new, experimental course taught by a group of faculty who deeply care about these issues and feel that business has an important role to play in developing and shaping future solutions to our current problems. The course combines traditional lecture/case discussion classes with simulations, guest speakers, and hands-on work (semester internship team project) with an array of different organizations.

Readings

Readings include a combination of analytical articles and company case studies drawn from a variety of different industries and different countries. All readings will be posted on the course web site (<http://stellar.mit.edu/S/course/15/sp07/15.992/>). Additional articles, class notes, slides and other resources related to the course will also be posted on the course web site. Please check the site regularly. The **readings** for the course are required, to establish a common understanding and methodologies for the in-class discussions and the team project. You will also be expected to contribute additional readings, references, and cases pertinent to the topic for each class. We will establish a central resource (such as a web page) for easy access of these materials to all students. You should supplement the required reading with other sources of current news on business and sustainability-related topics, such as *The Wall Street Journal*, *New York Times*, *The Guardian*, and other publications.

Suggested Supplementary Readings:

1. Kolbert, Elizabeth (2006). *Field Notes from a Catastrophe*. New York, NY: Bloomsbury Press.
2. McDonough, W., Braungart, M. (2002). *Cradle to Cradle: Remaking the Way We Make Things*. New York, NY: North Point Press.
3. Savitz, A. W. with Weber, K. (2006). *Triple Bottom Line*. San Francisco, CA: Jossey-Bass.

Course Requirements

The requirements for the course and the contribution of each towards the final grade are:

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| 1. World Bank Development Marketplace proposals | 20% |
| 2. Class Participation | 30% |
| 3. Internship Workplan, Final Report | 50% |

These requirements for the course are described in detail below:

1. World Bank Development Marketplace Proposals (20 percent)

Each year, the World Bank's Development Marketplace awards grants of up to \$200,000 to 40-50 entrepreneurs with scalable, replicable, and sustainable models that will contribute to the broader development process. These are mostly small-scale projects in relatively poor countries. This is a high profile competition with a strong track record; it attracts many good applicants.

There are two rounds in the selection process. In the first, 2,500 applicants are narrowed down to 120-130 finalists. In the second, the finalists have 6 weeks to hone their proposals so as to convince the judges that they deserve the money. (Only 40-50 applicants receive awards but all 120 finalists travel to Washington, DC and participate in a two-day event of networking and knowledge-sharing.)

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S-LAB students will work with finalists on improving their proposals so that they can become money winners. The stakes are high for everyone involved, since this is real money for the entrepreneurs.

This year, the WB projects are focused on health and nutrition, but knowledge of these sectors is NOT required. The main task of the S-LAB students is to add business knowledge to the entrepreneur's proposals so that they can become sustainable and replicable businesses. **First review of the Proposal is due February 28th and the final review is due April 9th.**

2. Class Attendance and Participation (30 percent)

Participation in class and small-group interactions will account for **30 percent** of the grade. We will cold call students throughout every session. Attendance at and preparation for every class is expected. Please talk to us if you need to miss a class. We are willing to consider any reasonable explanation for why you can't attend class, but each unexplained absence reduces your grade by 10 percent. **Missing 3 classes constitutes an automatic failure of the course.**

In addition to class attendance and participation, S-Lab will entail extensive teamwork. You need to build a team with diverse and complementary skills so please try to be inclusive of students from different programs at Sloan and different MIT departments when forming teams. This is the key to success in your internship. Think carefully about the people you want to work with and how you will allocate responsibilities within your team. We will help you as much as possible, but ultimately team selection and operation is your responsibility. This activity is not graded directly, but it will have a major effect on your performance throughout the course.

3. Internship, Organization Deliverables and Final Report (50 percent)

We will post the list of potential host organizations and projects on the course web site before the beginning of the semester. **There will be a project mixer on February 14th and Projects Bids are due on February 19th. We expect that if you submit a project bid you are committing to stay in the course. If you don't submit a project bid, we will assume that you are dropping the course.**

Each team will have a faculty member or TA serve as the advisor for all aspects of the project. It is your team's responsibility, however, to negotiate and manage all aspects of the work plan and the project. **A detailed work plan is due on March 7th, 2007.**

The goal of each internship is for your team to professionally and effectively deliver analysis, advice and recommendations that are immediately useful to your host organization. You will make a formal presentation to your host near the end of your internship and provide them with supporting written analysis and data as appropriate. **You will deliver a copy (or summary) of your organization deliverables to your team advisor by May 9, 2007.**

The **final report** is due on **Wednesday, May 16, 2007**. The final written report should demonstrate your understanding of the organization, its comparative strengths and weaknesses, and your project

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focus. The final report should be 20 double-spaced pages of text, plus any tables and appendices that help the reader.

Note that you may prepare your final report in a form that can be used effectively as a teaching case in MBA classes. We encourage this approach but do not require it.

Your work plan, internship, host organization deliverables and final report will count for **50 percent** of the grade.

Other Important Points

- 1) The course web site should be monitored closely. It is continuously updated by the TAs, and will be the primary source of information for the course.
- 2) All participating S-Lab companies have submitted questionnaires with substantial background information on the organization and the proposed project focus. The questionnaires will be posted on the course web site before the beginning of the semester. Each organization will have one TA or one faculty member assigned to it. If you have questions for the organization (until the final matching of teams and companies is complete), please ask the appropriate Faculty or TA to ask the organization. You should not contact any organization until matching is complete.
- 3) Each team will work with a specific faculty member or with one of the TAs, whose job it is to make sure that the teams functions effectively. Faculty or TAs will meet with each group on a regular basis during the semester.
- 4) To facilitate team building and to enable the companies to get to know you, please post your resumes on the course web site. It is very important that you register on the course web site as soon as possible, in order to see information about companies and other students.
- 5) Overheads and handouts will be posted on the course web site. Please check this regularly and particularly before each class. All the materials for each class should be posted the evening before class, but please check for late breaking items posted before noon on the day of class.
- 6) Office Hours: Individual faculty will post their office hours at the beginning of the semester.
- 7) We expect the highest professional standards in this course. We will conduct end of term interviews with your host organizations (once you submit your final project) but also plan on checking in with them throughout the term, to hear how they think the project is going/identify any issues that may arise. We will also administer an inter-team evaluation at the end of the term. You get to evaluate how your other teams performed during the internship. This evaluation will be used in the final grading for the course.

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Assignment due: S-Lab Project Work Plan

Class #6 Can companies achieve a good ROI by doing good? March 14

Trying to run a business to be environmentally friendly creates higher costs for the company. Can business create a model that achieves a competitive Return on Investment despite the higher costs involved?

Guest Speakers: Bud Sorenson, Board Member, Whole Foods; Tom Ricciardelli and Michael King (co-founders, SelecTech); Mark Goodstein, Executive Director, Automotive X Prize

(No class March 21 and March 28 because of SIP and March Break)

Class #7 Sustainability Simulation April 4

We explore the dynamics of sustainability, focusing on renewable resources in market economies. Renewable resources can, in principle, be managed sustainably, but doing so is challenging due to complex feedbacks among entrepreneurs, the market system, and the biosphere. Through an interactive computer-based simulation you will play the role of entrepreneurs seeking to maximize your profits as you invest in and manage a fishing fleet. We will discuss implications and applications in a variety of renewable resource settings and consider the many challenges involved in the design and implementation of effective policies to promote sustainable and productive use of renewable resources, including ecological, political, institutional, and other issues.

Assignments: Fishbanks Briefing Materials
World Bank Development Marketplace – final reviews due April 9

Class #8 Climate Change April 11

Climate change is one of the most daunting challenges we face in creating a sustainable society. The spatial scale is global; the time scale dwarfs normal human concerns. The dynamics of the climate are exquisitely complex. As a global resource shared by all, the climate is vulnerable to the tragedy of the commons since individuals, firms, and nations benefit in the short-run from high greenhouse gas (GHG) emissions, while the costs are borne by all—the greatest example of market failure in history. Worse, the costs and benefits are distributed inequitably, both between rich and poor and between future generations and ourselves. What does the science tell us? Are emissions reductions urgently needed? How can it be done? What are the challenges and opportunities for business and government?

Readings: Stern Review Executive Summary (Available online: http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_ind_ex.cfm). The exec summary is http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_ind_ex.cfm

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Follow-up Reading: Sterman and Booth Sweeney article in Climatic Change; see also Kerry Emanuel, “Phaeton’s reins: The human hand in climate change” and various responses in The Boston Review, Vol. 32, N. 1 (January-February 2007), on the course web site.

Class #9 **Energy** **April 18**

The world’s consumption of energy is a major driver of global climate change. Developing markets are increasing their total energy consumption while developed countries continue their upward trends in overall energy use. What are the choices in energy sources and locations to reduce global warming? What are the mechanisms through which markets and new technologies can successfully reduce carbon emissions?

Case: AES Global Values (HBS 9-399-136)

Guest Speaker: Roger Saillant, CEO, PlugPower
Mark Farber, Vice President, Strategic Planning, Evergreen Solar

Readings: Selected passages from World Energy Report, 2006

Assignments: When reading the AES case, please think of the following: Who’s environmental values should determine the plant technology AES should specify for its coal plant project in India? Should it meet US standards at a higher price or India’s standards at a lower price? What other values are at play in this situation? How do you balance trade-offs among them? With the lower standards, is AES exposing poor people to great risk? With higher standards, is AES practicing econ-imperialism? In your opinion, is it possible to develop a universal set of ethical standards for business, or do cultural differences make universal standards impractical, if not impossible?

Class #10

Beyond the Limits? The Transition from Growth to a Sustainable World **April 25**

Up to now we have considered aspects of sustainability in isolation: water, resources, energy, climate, food, poverty, development. In this session we develop an integrated framework to consider the system-wide dynamics of human society. Our global economy and civilization is currently not sustainable, and human impact on global ecosystems continues to grow exponentially. We consider the interactions of population and economic growth with the carrying capacity of the planet. How will growth end? What is the role of technological innovation? Of markets? How can the world make a transition to a sustainable society?

Readings: TBA

Assignments: Ecological footprint calculator

Class #11 **Policy and Personal Choice** **May 2**

A critical issue for sustainability is the ways in which the risks are communicated, and the framing of the solutions, both for specific organizations and for communities. Company and nonprofit organizations, as well as governmental bodies, are developing and pursuing policies that set the stage for addressing sustainability. What are the implementation challenges? How

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can the science of sustainability be communicated to policymakers and citizens? We focus on our own personal choices and responsibility. How can you walk the talk in your own life? What can one person do?

Guest speakers: (TBA)

Class #12 Learning from the process: An organizational change view May 9

The challenges we've examined are vast. What can be done by individuals and organizations to address them? So far in this course, we have learned about a variety of businesses working on various aspects of sustainability. In this session, we'll add the lens of organizational change and learning to our toolkit, and examine the experiences of a set of MIT Sloan alumni who are tackling some aspect of sustainability in their current work. We'll add presentations from selected S-Lab student teams, using the class session as a forum for exploring how an understanding of organizational learning and change can help to address the challenges of sustainability. Asking how to best support these processes, we'll link our discussion to themes from throughout the course.

Readings: (TBA)

Assignments: Preliminary report due to host organization for internship team project

Class #13 FINAL PRESENTATIONS May 16

S-LAB Day at Sloan: Team projects exhibit their projects, talk about them for entire school outside of Tang Hall, and present to panel of industry people

Assignment: Final report due to host organization and faculty