

Sustainability and Graduate Business Education:

An analysis of the need, best efforts to date and
curriculum recommendations.

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Introduction

Today's graduate business programs are developing our next generation of leaders. These leaders will be facing challenges that are outside the scope of anything we have seen in past generations. For one, they will be leaders within a global community of businesses where geographic borders may represent differences in how challenges are approached and dealt with, but not the challenges themselves. Chief among those will be the challenge of sustainability: managing our natural resources while dealing with global population growth, and maintaining business growth and profitability.

The analysis portion of this paper looks at those increasing needs first in terms of real estate development, with an overview of the environmental and financial costs and benefits of green buildings. It then looks more broadly at the global business community to see how they are addressing the need for change, and finally, a review of graduate business programs in the United States, and whether top schools are providing students with the skills they need to be successful in this new world.

The analysis of graduate business education includes a unique ranking developed to determine top graduate business programs in this country that are offer a high quality education, access to coursework and faculty that are actively involved in research on these issues, as well as a review of on-campus operations to determine their level of commitment outside of the classroom. This produced a list of the 17 top graduate business programs in the country that represent the highest level of achievement in sustainability.

This study concludes that while significant information on the benefits of sustainability exists, most businesses are struggling to find value in sustainable investments. As a result, the majority of coursework on this topic is relegated to elective courses, and doesn't provide a comprehensive and integrated approach to sustainability in core graduate-level business classes.

The outcome of this study highlights a strong need for more comprehensive and in-depth coursework. Therefore, four examples of potential classes that could represent a concentration in sustainability have been developed in order to illustrate a more systems-based approach to education. These courses represent a thorough cross-section of the most important concepts of sustainability, and would require integration of the more basic concepts of sustainability (such as green leases, rating programs, basic energy efficiency, etc) into core coursework. This empowers and challenges students to combine their technical skills with creative thinking, providing them with the greatest opportunity for thought leadership, and enabling them to better identify opportunities be more efficient, effective, and smart in order to sustain their enterprise and the planet.

Green Buildings: the Environment, and the Government

According to the United States Environmental Protection Agency¹, buildings in this country are responsible for the following:

- 72% of electricity consumption
- 39% of energy use
- 38% of all carbon dioxide (CO₂) emissions
- 40% of raw materials use
- 30% of waste output (136 million tons annually), and
- 14% of potable water consumption

As a result of the growing concern over population growth, consumption and depletion of natural resources, and increasing pollution, many countries around the world, including the United States have introduced a number of Green Building rating tools in order to create a template that real estate developers and adjacent industry's can use as a benchmark towards increasing the level of sustainability within building practices. Additionally, local governments, as well as the US Federal government, have begun implementing legislation, rebate and other incentive programs to help the real estate industry reduce its negative impact on the environment. The US EPA Database of State Incentives for Renewables and Energy Efficiency (DSIRE) lists a total of 17 Federal incentives for renewable energy (and 822 other state and local incentives) as well as 10 Federal incentives for energy efficiency (with an additional 1265 in state and local incentives.)²

The United States Green Building Council, a 501(c)(3) non-profit community of leaders working to create and renovate real estate to green standards, issued a report in November 2008 called *Green Outlook 2009: Trends Driving Change*, in which the "overall green building market [US] (both non-residential and residential) is likely to more than double from today's \$36-49 billion to \$96-140 billion by 2013."³

This report also states that building and renovating to green standards can have a significant positive impact on our industry by reducing our negative impact in the following magnitude:

- Reducing energy use by 24 - 50%
- Reducing CO₂ Emissions by 33 - 39%
- Reducing water Consumption - 40%
- Reducing Solid Waste - 70%

This should be seen as excellent news, since the World Wild Life Fund, in their 2008 report *Living Planet* says, "Humanity's demand on the planet's living resources, its Ecological Footprint, now exceeds the planet's regenerative capacity by about 30%. This global overshoot is growing and, as a

consequence, ecosystems are being run down, waste is accumulating in the air, land and water....If we continue with business as usual, by the early 2030's we will need two planets to keep up with humanities demand for goods and services."⁴

The above referenced report is also specifically noted by the General Services Administration Office of Government Policy in their September 2009 report, *The New Sustainable Frontier: Principles of Sustainable Development* as part of their introduction to what sustainability looks like and why business-as-usual within the real estate industry is not a sustainable practice.⁵

Costs and Benefits of Green Buildings

Just as the positive effects of green buildings have been quantified, so too have the costs to build these sustainable structures. Many studies can be pointed to including the 2003 landmark study by California's Sustainable Building Task Force, a group of more than 40 California state government agencies. The report, *The Costs and Financial Benefits of Green Buildings*⁶, examined existing data surrounding the costs and financial benefits of 33 LEED-certified projects (at various levels of sustainability) in California as compared to conventional designs for those buildings. All buildings had completion dates between 1995 and 2004. LEED stands for Leadership in Energy and Environmental Design. It is the standard used by the Federal Government for all GSA leases, and is referenced in most of the Federal, State and Local guidelines and requirements surrounding green buildings. It is a point based system that rewards buildings at four different levels of sustainability in ascending order: Certified, Silver, Gold and Platinum. (For more information on the LEED rating system, see www.USGBC.org/LEED)

At the time of publication, premiums for green development were as follows:

- Eight LEED Certified buildings: <1%
- Eighteen LEED Silver buildings: 2.1%
- Six LEED Gold buildings: 1.8 %
- One LEED Platinum building: 6.5 %

These findings have been verified by other studies, including the 2004 study by Davis Langdon, *Costing Green: A Comprehensive Database and Budgeting Methodology*, that looked at the cost of incorporating sustainable products and practices compared to their original budget without the green requirement. The LEED rating system was also used to determine the level of sustainable design. In 2006, Davis Langdon released a follow up to their initial report called *The Cost of Green Revisited*. Data from this study confirmed that many projects were able to complete LEED certified projects within their original budget parameters and further noted that the contracting and design community had embraced

sustainability to the extent that they were no longer pricing premiums in their bids for sustainable practices.⁷

My personal experience in green buildings can confirm this, as well as noting a precipitous drop in the costs of green over the past seven years. In 2003, The Tower Companies completed Blair Towns, the first LEED Certified apartments in America. Our cost premium was approximately 2-3%. In 2008, we completed the first LEED Platinum office building in the state of Maryland for a cost premium of approximately 2-3%. As our experience and that of the supporting industries has increased, our incremental costs have gone down significantly. This is proven by our ability to reach the highest levels of sustainable building practices (Platinum in 2008) with the same dollar volume that it previously cost us to complete the most minimum requirements (Certified in 2003) within five years.

The 2010 estimated value of green construction starts in US is \$60 billion, or 10% of the market, by 2013 is expected to grow to 20-25%.⁸ Additionally, between 2009 and 2013, green construction and development is expected to support 7.9 million jobs in the US, and infuse \$554 billion into the American economy.⁹

According to the GSA, green buildings have 13% lower maintenance costs, and 27% higher occupant satisfaction.¹⁰ Improvements in indoor environments are estimated to save \$17-48 billion in total health gains and \$20-160 billion in worker performance¹¹. And according to a CoStar report, published in the Journal of Sustainable Real Estate, that analyzed more than 1,300 LEED and Energy Star buildings representing about 351 million square feet in CoStar's commercial property database of 44 billion square feet, LEED certified buildings achieve average occupancy premiums of 4.1%¹², rent premiums of \$11.33/sf, and sales premiums of \$171/sf over their non-LEED peer group.¹³

Green Practices and the Business World

In the previous two sections, I have tried to establish a foundation for the endurance of green building practices. To review: green buildings have design and development cost premiums of approximately 2% for significant levels of sustainability that ultimately save 13% in building operations, command rental premiums of 11%, occupancy premiums of 4%, higher sales prices, make up a significant and growing portion of our building stock, and are a major focus for the government as they look to reduce carbon emissions, consumption of limited resources, and increase energy independence. It is with this guidance, that I then turned to investigate the business environment and their application and acceptance of sustainability as a part of their corporate strategy.

In October of 2009, MIT Sloan Management Review issued a special report called *The Business of Sustainability*,¹⁴ where they conducted a global survey of

more than 1500 corporate executives and managers from a broad cross section of industries to determine the extent to which sustainability was a part of their overall business strategy. The survey respondents were a mix of thought leaders with significant experience in sustainability, to business leaders with limited to no experience. The survey questions themselves were developed after conducting 50 in-depth interviews with a mix of global thought leaders, including companies that are on the cutting edge of sustainability such as, General Electric, Unilever, Royal Dutch Shell, Nike and BP.¹⁵

Interesting highlights of this report include the fact that 92% of all respondents said their company was addressing sustainability in some way, however more than 70% also said they have not been able to develop a clear business case for sustainability¹⁶. Most interesting is the divergence in opinions between “novice practitioners” and executives with experience in sustainable business practices. While novice practitioners thought of sustainability mostly in regulatory terms, where the benefit was chiefly brand enhancement, those with more knowledge of sustainability felt it was an integral part of value creation.¹⁷ This is consistent with the findings of the California Green Building Task Force, David Langdon, as well as my personal experience, where there was a direct correlation between costs and experience. As experience goes up, costs go down and the perception of value shifts from a broad marketing concept into a tangible financial benefit that can significantly increase ROI.

The construction industry was selected as one of eleven industry groups represented by this study. Among that group, the number one reported challenge to implementing sustainable business practices was “unproven value,” representing 26% of construction industry respondents. Second was “outdated mental models” with 22%, followed distantly by “insufficient resources to address these issues,” at 16%¹⁸. The specific obstacle that was seen as least concerning (4%) among the construction industry was; “don’t know the most effective ways to take action.”¹⁹ (See Appendix, Exhibit 1 for details)

The two poles of their response highlights a significant disconnect since, as mentioned previously in this paper, the value of sustainable projects has been proven, at least in terms of development and operations. Additionally, the minimal costs of these projects are a leading indicator that helps prove the growth projections for green construction. Retrofits of existing buildings, given all of the Federal, State and Local government incentives, also highlights a significant revenue opportunity. In fact, according to the survey, they list their top three drivers as: government legislation related to sustainability, increasing concern for sustainability issues among consumers, and to a lesser extent population growth.²⁰ (See Appendix, Exhibit 2 for details.)

Historically, real estate as an industry has grown as a reaction to the needs or growth generated by other industries. Electricity changed the function of buildings. Elevators and engineering innovations brought the ability to add height

and density. Cars spurred the growth of suburban office, retail and warehouse locations. Public finance fueled greater returns on investment and population growth has continued to create a market-driven need. However, today the real estate industry represents 13.4% of U.S. Gross Domestic Product (GDP) including all commercial, residential, industrial, and infrastructure construction. New commercial and residential building construction constitutes 6.1% of the GDP²¹. Real Estate is an integrated part of systems-thinking that must occur throughout our economy in order to overcome the global challenges that we are now facing with regards to energy, water, pollution, population, and preservation of other natural resources.

Real Estate, Sustainability and Education

As the MIT Sloan report aptly uncovered, within the business world, there continues to be a large gap between industry's ability to affect positive change, and their ability to find value in that role so that sustainable practices begin to be implemented on a wide scale. These are the kinds of challenges that can and should be addressed in our education system so that new thought leaders come into the workforce with a solutions-based mentality, ready to address the real challenges of change within uncertain regulatory environments, growing client demand, changes in how we approach our true costs of investment, and technological advancements that can either lead to market-leading or market-lagging business process.

To the extent that graduate business schools in the US, represent the next generation of leaders in this country, I have focused this study on those institutions. Furthermore, top programs need to excel in three important areas:

1. Top notch education
2. Access to coursework and faculty that are producing research on sustainability
3. Implementation of these processes and programs within the operations of the university

I selected three that I felt represented the most comprehensive research in each specific criterion, and then combined them using a weighted average to determine a unique list 14 top business schools.

Sources of Information

The first source I selected was the *Bloomberg BusinessWeek* 2009 Business School Rankings and Profiles²². This well-respected and often-cited source uses 12 different criteria to determine the final ranking of the top MBA programs in the country on an annual basis. These include the following:

1. Graduate Poll
2. Recruiter Poll
3. Intellectual Capital
4. Tuition and Fees
5. Pre-MBA Salary
6. Post-MBA Salary
7. Selectivity
8. Job Offers
9. General Management
10. Analysis
11. Teaching
12. Careers

Detailed responses to each of these criteria, as well as the Top 30 business schools, and a partial list of second tier schools, can be found in the Appendix, Exhibit 3.

The second source I identified was a report published by the Aspen Institute, called *Global 100: Preparing MBAs for Social and Environmental Stewardship*.²³ This report analyzes how well MBA programs around the world incorporate social and environmental issues in their curriculum. Surveys were sent to 590 business schools worldwide. Only MBA programs with full-time enrollment were considered eligible. All U.S.-based schools must have AACSB accreditation to participate. Data was collecting in three categories: coursework, faculty research, and institutional support. The report then published rankings based on four criteria:

1. Availability of relevant coursework
2. Student exposure (the extent to which students are actually taking the above referenced courses)
3. Relevant courses on for-profit impact (roll of business in improving environmental conditions)
4. Faculty research

The list and rank of US schools who qualified for this study can be found in the Appendix, Exhibit 4. A complete list of all 100 schools can be found at www.beyondgreypinstripes.org/rankings.

Detailed information on their methodology can be found at: <http://www.beyondgreypinstripes.org/about/methodology>

The third source is the *College Sustainability Report Card*²⁴. This report is published annually by the Sustainable Endowments Institute. Now in its fourth year, the report covers the colleges and universities with the 300 largest endowments in the United States and Canada, as well as 32 other schools that applied for inclusion. Profiled schools have combined holdings representing

more than 95% of all university endowments²⁵. As a contrast to the other two ranking systems, the College Sustainability Report Card does not focus on academic or research programs related to sustainability, it examines the behavior of the university through the lens of sustainability.

This report examined how comprehensively universities are implementing sustainable practices in nine equally-weighted categories, including:

1. Administration
2. Climate Change & Energy
3. Food & Recycling
4. Green Building
5. Student Involvement
6. Transportation
7. Endowment Transparency
8. Investment Priorities
9. Shareholder Engagement

Grades were totaled to calculate an overall grade point average (GPA) on a 4.0 scale (where A = 4, B = 3, C = 2, D = 1, and F = 0). The GPA was then translated into an overall sustainability grade, ranging from “A” to “F.” Details on the grades of each school within this analysis can be found in Exhibit 5 of the Appendix. Details on their methodology can be found at: www.greenreportcard.org/report-card-2010/methodology

Methodology

I developed my unique ranking on a 100 point scale, giving each criteria equal weight.

1. Top rated education: 33.3%
2. Access to coursework: 33.3%
3. Implementation of sustainable practices: 33.3%

This determination was based on the desire to recognize excellence among programs that may not currently be top ranked by the business community, but are making aggressive moves in within their programs and universities to elevate their status and ranking. Therefore graduate business programs ranked in the second tier as determined by *BusinessWeek*, but show excellence in programming, research, and operations have the opportunity to showcase those efforts by scoring highly in those categories.

BusinessWeek only gives rankings to the top 30 graduate business programs in the country. They follow that with a group of 15 second tier schools that are not given a rank number. For purposes of this analysis second tier schools were given a rank of 45. Any schools not included in either the first or second tier of

the *BusinessWeek* rankings were not considered in the final analysis of top sustainable business programs.

The *Global 100* list developed by the Aspen Institute contains the 100 best graduate business programs from universities around the world. Their final list contains 30 international programs. This study is only considering business schools within the United States. In order to determine the rankings of US schools, I removed the international programs from the analysis leaving a final list of the top 70 schools.

The *College Sustainability Report Card* uses a grade point average (GPA) system of rank. For purposes of this study, I examined schools that appeared in either the first or second tiers of the *BusinessWeek* rankings, and were also present on the *Global 100* list. This gave me a total of 31 business schools. One school from the final list of 31 was not included in the *College Sustainability Report Card*, and was removed from the final analysis, leaving a total of 30 schools. GPA's given for each school were converted to a 100 point scale by dividing 100 by the total number of possible grades. Leaving a weight for each grade in the following amount:

A+	8
A	15
A-	23
B+	31
B	38
B-	46
C+	54
C	62
C-	69
D+	77
D	85
D-	92
F	100

Details of the overall grades provided by the *College Sustainability Report Card*, as well as the individual grades by category are available for each school in this study, and can be found in the Appendix, Exhibit 5.

In order to be considered for the final list, programs must have received a ranking by all three institutions, *BusinessWeek*, *Aspen Institute*, and the *Sustainable Endowments Institute*. This means they are either a first or second tier graduate business program, *and* they offer meaningful coursework on sustainability, *and* they are socially responsible in their on-campus operations. Only schools with a combined average of 100 or less are included in the final list. This ensures that each program averages in the top 1/3 in each category, representing national leadership across a comprehensive set of criteria. Finally, any university that did

not receive at least a B of higher as their average GPA, as determined by the College Sustainability Report Card, was removed from final consideration. The following is a chart that identifies the output of each schools numeric value on a 100 point scale, according to the inputs from all three sources as outlined above:

University	BW Rank	Global 100	CSRC	FINAL
University of Chicago (Booth)	1	n/a	62	n/a
Harvard University	2	n/a	23	n/a
Northwestern (Kellogg)	3	40	46	89
Univ. of Penn (Wharton)	4	n/a	23	n/a
Michigan (Ross)	5	1	31	37
Stanford University	6	3	23	32
Columbia University	7	8	38	53
Duke (Fuqua)	8	14	31	53
MIT (Sloan)	9	60	31	100
UC Berkeley (Haas)	10	6	38	54
Cornell University (Johnson)	11	10	38	59
Dartmouth College (Tuck)	12	35	31	78
NYU (Stern)	13	7	38	58
UCLA (Anderson)	14	n/a	38	n/a
Indiana University (Kelley)	15	n/a	46	n/a
UVA (Darden)	16	9	46	71
UNC Chapel Hill (Kenan-Flagler)	17	12	23	52
SMU (Cox)	18	n/a	54	n/a
Carnegie Mellon (Tepper)	19	38	38	95
Notre Dame (Mendoza)	20	4	38	62
UT – Austin (McCombs)	21	n/a	46	n/a
BYU (Marriott)	22	n/a	92	n/a
Emory University (Goizueta)	23	n/a	38	n/a
Yale University	24	2	23	49
USC (Marshall)	25	46	54	125
Maryland (Smith)	26	67	31	124
Vanderbilt (Owen)	30	56	54	140
Arizona State (Carey)	45	57	23	125
Boston University	45	39	38	122
Georgetown (McDonough)	45	26	38	109
George Washington	45	11	38	94
Thunderbird	45	43	n/a	n/a

As previously noted, schools that received less than a B average in their on-campus sustainability initiatives were removed from the final analysis. Those four programs have been highlighted above and include the following schools:

- Northwestern University
- University of Virginia
- University of Southern California
- Vanderbilt University

Additionally, the following schools received combined scores of greater than 100. Although they have been removed from the final list, they deserve honorable mention as they are all second tier business schools that are providing excellence in terms of integrating sustainable coursework, as well as sustainable operations on campus. These schools are:

- Georgetown University
- Boston University
- University of Maryland
- Arizona State University

The remaining programs comprise the top business schools in the country that offer significant coursework in sustainability, and practice those principles in the operation of their university. Here are those programs:

TOP GREEN SCHOOLS

- 1 Stanford University
- 2 Michigan (Ross)
- 3 Yale University
- 4 UNC (Kenan-Flagler)
- 5 Columbia University
- 5 Duke (Fuqua)
- 7 UC Berkeley (Haas)
- 8 NYU (Stern)
- 9 Cornell University (Johnson)
- 10 Notre Dame (Mendoza)
- 11 Dartmouth College (Tuck)
- 12 George Washington
- 13 Carnegie Mellon (Tepper)
- 14 MIT (Sloan)

Top Sustainable MBA: Key Program Highlights

Stanford University Graduate School of Business

Stanford is considered the number six business school in the country by *BusinessWeek*. *The Aspen Institute* ranked them the number two business school in the world in terms of relevant coursework in sustainability, as well as the application of those courses in a for-profit environment. Stanford earned an A- from the Sustainable Endowment Institute, recognizing them as an Overall College Sustainability Leader. They received marks of excellence for Green Buildings and Investment Priorities, among others.

In 2007, Stanford radically re-worked their MBA curriculum in four key ways²⁶: 1) eliminating course requirements, using placement exams and faculty advisors to create an individual study plan for each student; sometimes in classes with as few as ten students, 2) using an integrated systems-approach to learning, courses don't focus on a single discipline but encourage analysis of an issue that transcends any single function of management, such as "alleviating global poverty," 3) students gain exposure to cultural diversity within the business environment by completing either an international internship, an overseas learning trip, or a student exchange program, 4) capstone project that asks students to examine their own strengths and weaknesses within the business environment, honing their communication skills through self-evaluation.

In January of 2010, Stanford Business School launched the "Social-M Challenge²⁷" a social-movement business plan competition that is designed to inspire sustainability-themed behavior change within a local or global environment.

Within the Business School, the Center for Social Innovation offers an MBA/Public Management Program which is designed to build knowledge in sustainable business practices, and social entrepreneurship (among other areas,) as well as the role of these sectors in creating social and environmental value²⁸. They also offer a joint MBA/MS degree in Environmental Sciences.

Stanford Business School has a \$350 million campus under construction that is expected to deliver in 2010-2011, and designed to earn a LEED Platinum certification from the United States Green Building Council.

Below I have highlighted one interesting elective course from their curriculum that focuses on sustainability and the for-profit world within the context of marketing. The excerpt provided on the course was taken directly from the School's website²⁹. The course is (MKTG 551) Initiating, Sustaining, & Monetizing Green Marketing, offered through the Department of Environmental Management.

“The last few years have seen a dramatic increase in environmental consciousness among customers, especially among the crucial 18-34 demographic. Going green for marketers is no longer a luxury, it is becoming a necessity. The primary goal of this seminar is to address the following questions across different domains and industries, thereby gaining insights into this important area of marketing: 1) How should marketers think about initiating and sustaining green marketing? 2) How can they differentiate themselves from the competition, especially with every player wanting to jump onto the green bandwagon? 3) How can marketers exploit this rapidly growing trend in terms of monetizing such efforts? 4) Where are opportunities likely to arise in the future in terms of both technological and marketing innovations?”

(The Stanford Business School does not make their syllabi available online, therefore a complete syllabus of this course is not included.)

University of Michigan, Stephen M. Ross School of Business

The Ross Business School is rated the number five business school in the country by *BusinessWeek*, and number one on the *Global 100* list of sustainable MBA programs. In terms of their for-profit impact, integrating sustainability into traditional business settings they are also number one out of 590 globally ranked programs. They received a grade of B+ on their campus-wide sustainability initiatives with excellence in their investment priorities, and a B in terms of green buildings.

Their partnership with the School of Natural Resources, known as the Frederick and Barbara Erb Institute, offers a three year dual degree MBA/MS degree focused on Global Sustainable Enterprise. The stated goal of this program is to be the world’s leading graduate-level educational program focused on harmonizing economic, environmental and social interests³⁰.

Ross Business School has also been named Net Impact Chapter of the Year in 2007, 2008, and 2009³¹. Net Impact is a non-profit group dedicated to recognizing businesses, as well as graduate and undergraduate programs, for implementing socially and environmentally excellent practices that have a measurable impact on a business or community. Winners are judged based on the following criteria³²:

- 40%: Measurable difference in key environmental or social area/ability to quantify value of initiative to the organization/campus/community
- 25% Qualitative impact of the project
- 20% Creativity of approach
- 15% Long-term sustainability of initiative

Ross graduate students won for their initiative to make all food scraps, utensils, cups, plates and bowls purchased at the Ross Cafeteria 100% compostable—diverting up to 50% of the waste that would have otherwise gone to a landfill, as well as for instituting green building standards for the university to reduce the environmental footprint of all new building construction and major renovations on campus³³.

One notable elective program from their dual degree program is STRAT 564/SNRE 513: *Competitive Environmental Strategy*. “This course deals with environmental issues from a strategic perspective, focusing on how environmental pressures (e.g., sustainable development) and environmental problems (e.g., global warming, air pollution, waste disposal) impact corporate mission, competitive strategy, technology choices, product development decisions, and production process. Basic concepts of ecology and environmental science are discussed and contrasted to those associated with the traditional economic paradigm.”³⁴

The full syllabus for this course is available in the Appendix, Exhibit 6.

Yale University, School of Management

Yale School of Management (SOM) is ranked number 24 by *BusinessWeek*, and two in the *Global 100* list. The School of Management ranked third globally in terms of the number of relevant courses on sustainability, and fourth both in terms of the number of students who take those programs, and in terms of those course’s for-profit impact. Their overall GPA of A- on the Sustainable Report Card also makes them an *Overall College Sustainability Leader*. Yale received straight A’s in eight out of nine total categories on the report card. (They received a D for endowment transparency) making their campus initiatives the most comprehensive of any schools examined in this study.

According to the university website, SOM integrates social and environmental considerations into the majority of their curriculum, studying programs such as GE’s Ecomagination Initiative, as well as creating their own multi-media case studies such as “Giving Voice to Values,” a curriculum initiative created for the Aspen Institute’s Center for Business Education Business Leadership Case Study Competition³⁵.

Yale SOM’s NetImpact Chapter was Chapter of the Year in 2005, and an award winner in 2007 for their (now) annual fundraising initiative to buy Renewable Energy Credits (RECs) to offset the schools carbon footprint. In 2008, the school won Philadelphia’s Green Economy Case Competition with their concept to create green jobs by initiating a “Philly Fund” credit card that would direct 1% of the net transactions to a business incubator that would provide start-up money to promising local start ups that are focused on “People, Planet, Profit.”³⁶

One interesting course from their elective curriculum is called *Energy, Economics, and the Environment*. An excerpt of this comes from Beyond Grey Pinstripes³⁷: “This course examines energy issues as they pertain to the environment. The course begins with an overview of energy markets and an introduction into the economics of extracting nonrenewable resources. In the second section, the class looks into the environmental implications associated with energy methods regulators use to correct for these market failures. In particular, we examine the economics of air pollution and climate change. The next part of the course covers investment in renewable. We discuss what regulations have been used to encourage investment and examine their effectiveness. The final section includes lectures on the economics of transportation (e.g., CAFÉ standards), and of energy conservation (e.g., DSM Programs.) In each section, lectures will cover the economics behind a particular energy issue and then will be followed by a class discussion about related case studies or articles.”

A full syllabus of this course is available in the Appendix, Exhibit 7.

University of North Carolina, Chapel Hill, Kenan-Flagler Business School

Kenan-Flagler is ranked number 17 by BusinessWeek, and number 12 on the list of Global 100 graduate business schools. Their course work is ranked second in terms of it's for profit impact, and 16th in terms of the number of courses that are available to students. They received an overall grade of A- on the Sustainability Report Card making them an Overall College Sustainability Leader. They received seven A's for their on-campus initiatives (receiving D's for both Endowment Transparency and Shareholder Engagement.)

Some innovative programs offered by Kenan-Flagler include the national Sustainable Investment Competition, launched in 2003 by their NetImpact Club, this national annual competition gives students from top business schools real-world venture capital experience as well as awareness of double or triple bottom line valuation techniques.³⁸ The BASE (Business Accelerator for Sustainable Entrepreneurship) business incubator is designed to help speed the growth of companies addressing financial profitability, social equity, and environmental sustainability.³⁹ Since 1998, they have also hosted an annual Sustainable Business Career Fair that focuses on recruitment by organizations specifically looking to fill positions or internships at socially responsible organizations.⁴⁰

Kenan-Flagler offers an MBA concentration in Sustainable Enterprise. One interesting elective course from this program is: Financial Analysis and Integrating Sustainability. An excerpt of this course comes from Beyond Grey Pinstripes. “The course educates students on the global issues facing financial institutions as they evaluate and quantify how environmental and sustainability issues affect the financial performance of their corporate clients and their

investments. These issues will have a direct impact on risk exposure and the quality of their individual credit, investments, and underwriting activities. By the end of the course, each student will understand the issues and be able to apply various approaches to risk management in quantifying and measuring how environmental issues and performance affect financial performance.⁴¹

(The Kenan-Flagler Business School does not make their syllabi available online, therefore a complete syllabus of this course is not included.)

Columbia University, Columbia Business School

Columbia Business School is ranked number seven by *BusinessWeek*, and number eight on the *Global 100* list. Their faculty research on issues related to sustainability is ranked fifth globally, and their for-profit impact is ranked seventh. Their overall sustainability grade related to campus initiatives is a B, and though they received a grade of “C” on their climate and energy initiatives, all other scores were a “B” or above.

The Columbia Business School, “Individual, Business and Society” (IBS) curriculum attempts to focus students on the competing demands of businesses, individuals and society. Some specific non-curriculum activities include the annual Social Enterprise Conference, which addresses how organizations can focus their business process on specific social and environmental practices⁴², and the Global Social Venture Competition, which is a partnership between Columbia Business School, Hass School of Business, the London Business School and the Indian School of Business that promotes ventures that measure both social and financial returns⁴³.

Columbia has a Social Enterprise program that initiates summer internships with for-profit and not-for-profit organizations with a focus on sustainability. The Eugene Lang Entrepreneurship Center has funded socially conscious business ventures from graduates such as the MAMATINI, a bottled organic, herbal infused drink to help nursing mothers increase their energy, and breast milk supply.⁴⁴ The Chazen Institute of International Business supports study trips with students and faculty members that have a CSR and international development focus,⁴⁵ and The Paul Milstein Center for Real Estate has supported winning business plans that address urban renewal and community development issues.⁴⁶

One course of distinction from their program is an elective entitled, *Finance and Sustainability*. “The primary objective of financial professionals is to provide a valuable service that earns a profit for the practitioner. Fortunately the same financial services that generate a profit can sometimes be used to create sustainable value for society. In recent years, for-profit financial services have been used to improve the environment, reduce poverty, increase corporate

governance, and develop social entrepreneurs. The core financial skills required to earn a profit in more traditional financial services are the same, but the application of those skills is a new and challenging opportunity. This course explores the theories and practical applications, which financial professionals can leverage to simultaneously earn a profit and have a positive impact on society.⁴⁷

A complete syllabus of this course is available in the Appendix, Exhibit 8.

Duke University, Fuqua School of Business

The Fuqua School of Business is ranked number eight by *BusinessWeek*, and number 14 on the list of *Global 100* sustainable MBA programs. They rank 14th globally for both the number of relevant courses on sustainability, as well as the for-profit impact of those courses. They rank 49th in terms of the number of students actually taking those programs, and 55th in terms of faculty research. Duke received an overall grade of B+ from the College Sustainability report card. They received seven A grades, but their F in Endowment Transparency, and B in Shareholder Engagement brought their overall average down below the level needed to be a Sustainability Leader.

One of the more interesting initiatives at Fuqua is the *Big Think* program, which is an online forum where people can share their thoughts and ideas in any type of media⁴⁸. The site includes interviews with subject experts and thought leaders, as well as student initiatives from the NetImpact club and other groups. Big Think then connects to various social networks like You-Tube, Facebook, and Twitter, sharing these ideas to the global online community.

Fuqua launched a Corporate Sustainability Initiative (CSI) in 2007. The goal of this program is twofold: develop the theory and practice of corporate sustainability, and educate business professionals on how to implement them⁴⁹. CSI offers courses, project opportunities, a student fellows program, speakers, and career planning support. Additionally, the business school participates in the university-wide Nicholas Institute for Environmental Policy Solutions, which engages with public, private, and social sector decision-makers to develop innovative proposals that address critical environmental challenges⁵⁰. Finally, the Center for Energy, Development, and the Global Environment (EDGE) within Duke's Fuqua School of Business examines issues such as how to meet the global demand for energy, identifying pathways toward sustainable energy systems and economic systems that accelerate market transformations⁵¹.

One interesting elective course offered through the department of Corporate Responsibility/Business Ethics is Corporate Social Impact Management. This university describes the course as follows, "Many companies are aggressively seeking strategies that can allow them to "do well by doing good," leaving a positive "footprint" on the world and avoiding actions that could harm consumers,

employees, investors, competitors, suppliers, and the general public. In this course, we examine how corporations can become more effective at managing their social impact, improving the relationships they have with all of their stakeholders in the process. Recent debates about issues such as obesity, tobacco and alcohol marketing, and gasoline prices will receive special attention.”

The full course syllabus is available in the Appendix, Exhibit 8.

University of California at Berkeley, Haas Business School

The Haas Business School is ranked 10th best graduate business program in the country by *BusinessWeek*, and sixth overall on the Aspen Institute’s list of *Global 100* sustainable MBA programs. They are listed fourth in terms of faculty research, fifth in for-profit impact and seventh in terms of the number of relevant courses offered. However, the number of students actually taking those courses is ranked 31st on the list. In terms of the Sustainability Report Card, Haas received an overall grade of B. Low marks came from the following: a B in both Green Buildings and Transportation, a C in Investment Priorities and Endowment Transparency, and an F in Shareholder Engagement. Still high marks in Climate & Energy, Food & Recycling and Student Involvement help keep their GPA high enough to make the final list.

In 2010, The Financial Times ranked Haas Business School the number two program globally for Corporate Social Responsibility⁵² (preceded by Notre Dame’s Mendoza Business School, who also appears on this list.) In 2003, Haas launched the Center for Responsible Business, and this program has seen considerable success in just seven years. According to the Center for Responsible Business’s Biennial Report⁵³, through 2008 they have launched cutting edge programs such as “Sustainable Products & Solutions.” This collaboration from the Haas Business School and the College of Chemistry is possible through a 5-year, \$10 million endowment from DOW Chemical. This program has resulted in the development of environmentally safe hand sanitizer, sustainable packaging standards, and arsenic remediation in the drinking water in Bangladesh. It has also led to the development of student fellowships, speaker series’, and teaching seminars.

Other experiential learning programs offered through the Center for Responsible Business include a year-long LifeScan Community Relations Graduate Fellow Program, and a semester long program, McDonald’s CRS Research Fellows, where students develop and help integrate corporate social responsibility initiatives into these organizations. They also have a student-run Socially Responsible Investment Fund. Since its inception this program has published 37 Working Papers on Sustainability⁵⁴.

The Lawrence Berkeley Laboratory, an internationally renowned institution that led in early research on Green Buildings, including the landmark 2003 study authored by Greg Katz, “The Costs and Financial Benefits of Green Buildings,” also works with student teams from the Haas Business School to develop strategies that commercialize their discoveries.

Haas Business School also joined forces with the College of Natural Resources to create the Berkeley Energy Resources Collaborative to work on problems and solutions of energy independence, and the new Center for Energy & Environmental Innovation offers interdisciplinary curricula also designed to develop sustainable energy solutions⁵⁵.

One interesting course from their diverse curricula is *Energy and Environmental Markets*. The course description comes from the school’s website, and excerpt of this is included here: “Managers in many transportation, information technology, and energy companies have had to devise strategies to cope with changes in economic and environmental regulations and the evolution of new markets and trading platforms. Drawing on the tools of economics and finance, we study the business and public policy issues that these changes have raised in energy markets. Topics include the development and effect of organized spot, futures, and derivative markets in energy; the political economy of deregulation; climate change, environmental impacts and policies related to energy production and use; privatization of publicly owned energy assets; market power and antitrust; and the transportation and storage of energy commodities.”

A full syllabus for this course is available in the Appendix, Exhibit 10.

New York University, Stern School of Business

Stern Business School is ranked number 13 by *BusinessWeek* for graduate business programs. The *Global 100* list of Sustainable MBA programs ranks them number seven. Stern is fifth out of 590 international graduate business programs in terms of the number of courses that they offer, and 10th in terms of the number of students that take those courses. Their for-profit impact is 14th on the list, and faculty research is 29th. The *College Sustainability Report Card* gives New York University an overall grade of B. While they received A’s in six of nine categories, their B in Green Buildings, D in Endowment Transparency, and F in Shareholder Engagement brought down their overall grade point average. However, their A in Investment Priorities indicates a move towards greater on-campus sustainability.

Investment Priorities at Stern business School are developed by a cross-functional task force that comprises their Campus Greening Initiative. This program is part of what earned Stern an A grade in terms of their current and future Investment Priorities.

Stern MBA's have the opportunity to create a specialization in Social Innovation and Impact⁵⁶, which focuses on intersecting corporate wealth creation and corporate social impact, providing social, environmental and economic perspectives to enhance competition and have a positive impact on the community and environment.

In 2003, Stern Business School launched the Markets, Ethics and Law Program called the Citi Leadership and Ethics Program (funded by Citigroup.) A hallmark of the program is the appointment of a Distinguished Fellow, whom students then interact with frequently throughout the year. One such example is Fred Krupp, President of the Environmental Defense Fund. Additionally, Stern, like many other top business schools, has a student-run Socially Responsible Investment Fund.

In 2009, NYU began offering a Graduate Certificate Program in Sustainable Design, Construction, and Development through the Shack Institute in the School of Continuing and Professional Studies. Two required courses of this program include: Principles of Environmentally Sustainable Design and Managing Sustainable Building Projects. These courses cover issues such as life-cycle costing, rating systems, financial incentives, design and construction techniques, as well as evaluating and selecting products, construction waste management, and more. Shack also offers MS degrees in both Real Estate Development and Construction Management.

One innovative elective course offered at the Stern School of Business is "*Leading Sustainable Enterprises.*" The university describes the course as follows: "This course is about creating, leading, and managing business enterprises that seek to contribute to facilitating sustainable development. We will look at issues regarding potential roles for business in contributing to sustainability, measuring the effectiveness of an organization in terms of sustainability indices, examples of firms that are creating and executing strategies for competing in a sustainable manner, managing stakeholders, innovating forms of business enterprises (e.g., micro-finance), methods for fostering innovation and change inside the organization that could contribute to sustainability goals, as well as the role of leadership."

A draft of this syllabus is available in the Appendix, Exhibit 11.

Cornell University, Samuel Curtis Johnson Graduate School of Management

The Johnson Business School at Cornell University is ranked 11th on *BusinessWeek's* list of top graduate business schools. They are ranked 10th on the list of Global 100 MBA programs, ranking 13th with the number of courses they offer, and 7th in their for-profit impact, but they are 36th in terms of the

number of students that are actively engaged in those classes. Faculty Research gets a rank of 26 out of 590 schools surveyed. Their overall grade on the College Sustainability Report Card is a B. This surprised me as Cornell's sustainable programming extends well beyond their business school and their School of Forestry is considered world-class, and they have an extensive organic garden that provides seasonal produce to the on-campus dining facilities. Their grades across the board were mostly B's, with A's in Administration and Investment Priorities offsetting their C's in Green Buildings and Shareholder Engagement.

Johnson School of Management frames the issue of sustainability as an unmet market need that can be addressed through innovation leading to a competitive advantage. This is somewhat of a departure from some other programs that tend to frame the issue more in terms of ethics or corporate social responsibility. Their Center for Sustainable Global Enterprise (SGE) focuses on a systems-based approach to education leveraging all degree programs at the university, in an effort to create a program designed to address complex issues of sustainability using interrelated skills that lead to practical business solutions⁵⁷. Their SGE Immersion Program is an optional part of the core MBA program, where, in addition to their core coursework, students engage in field projects to address real problems currently being faced by sponsoring companies.

Additionally the school has partnered with eleven different countries to create an expertise in low-income market development and sustainable innovation that addresses the needs of the world's poorest countries in ways that are both culturally appropriate and environmentally responsible, including working with the US Army and Marine Corps on ways to help rebuild infrastructure in places like Iraq, Afghanistan, Philippines, and more.

Johnson also has a three-year dual degree MBA/MPS (Masters of Professional Studies) program that focuses on Business and Real Estate Development. One interesting course offered through this program is, "Seminar in Sustainable Development." The school describes the course as follows: "Sustainable development is the dominant economic, environmental and social issue of the 21st century. This course will develop the concepts of sustainable development on the basis that it is an evolutionary process, not easily captured by a simple definition. It represents the epitome of systems analysis--one demanding the integration of the physical sciences and engineering with the biological and social sciences. It is a fundamental redesign of both technological and sociological processes to address change."⁵⁸

A syllabus of this course is available in the Appendix, Exhibit 12.

University of Notre Dame, Mendoza College of Business

Mendoza College of Business is ranked 20th on *BusinessWeek*'s list of top MBA programs, and fourth on the *Global 100* list of Sustainable MBA programs. This gap is the second largest between the two program rankings. Mendoza is ranked third globally for their faculty research, fourth for the number of relevant courses related to sustainability, and fifth in terms of the number of students at the business school who register for those courses. The for-profit impact of those courses received a rank of 14 out of 590. Their overall grade for the *College Sustainability Report Card* was a B, with the school receiving three A's for Administration, Student Involvement and Investment Priorities, four B's for Climate Change & Energy, Food & Recycling, Green Buildings, and Transportation, one C in Shareholder Engagement, and a D in Endowment Transparency.

In 2005 Mendoza College of Business introduced a new curriculum focused on problem-solving in the context of three issues: individual ethics, organizational effectiveness, and social responsibility. This program includes 14 required courses, and offers 93 electives, each designed to integrate all three of the issues outlined above. Some of these more interesting classes include: The UN Global Compact & the Future of the Economy, and Deep Dive, where students examine issues related to sustainability at leading organizations such as recycling, product development and reducing the carbon footprint of Coca-Cola⁵⁹ and Ten Years Hence, a one-credit speaker series program that explores ideas, issues and trends likely to affect business and society over the next decade⁶⁰.

Mendoza College is a founding member of PRME (Principles for Responsible Management Education) which is a consortium of 225 global business schools that are committed to incorporating the values of the UN Global Compact into their business school curricula and research. Their chapter of NetImpact recently won the 2009 Sustainability Case Competition, sponsored by Xcel Energy, and focused on renewable energy systems.

The UN Global Compact & the Future of the Economy is a course designed to connect students with the business, environmental and ethical issues that face the world economy. A brief excerpt of the class, as presented on the school's website is provided here and the full course syllabus is available in the Appendix, in Exhibit 13. "In today's interconnected global economy, there is a growing realization that we must restore public trust in business. Integrating environmental, social and governance issues into corporate management is the overriding purpose of the United Nations Global Compact and its ten principles. This is the heart of the corporate sustainability movement and an effective way to restore trust in business."⁶¹

Dartmouth College, Tuck School of Business

Tuck Business School is ranked number 12 on the *BusinessWeek* list of Top US graduate business programs. The *Global 100* list of Sustainable MBA programs ranks Tuck at number 35. Their high scores were in the number of relevant courses and the for-profit impact of those courses, where Tuck ranked 23rd out of 590 global programs. The number of students actually taking those courses, showed up 75th on the list of programs, and their faculty research was ranked 96th out of 590. Their overall grade on the *College Sustainability Report Card* was a B+, with no single category receiving lower than a B, which is unusual. Highest marks came from Climate & Energy, Food & Recycling, Student Involvement, and Shareholder Engagement; where Administration, Green Buildings, Transportation, Endowment Transparency, and Investment Priorities all received a grade of B.

Sustainability initiatives were not as easy to find at Tuck compared to the other business schools examined. They offer just one degree through the business school (MBA) and have a total of only 212 students. However the Tuck NetImpact chapter is one of the largest student organizations within the graduate business program, with 170 members⁶². The school's Allwin Initiative for Corporate Citizenship is designed as a program at the intersection of business and society. Students who participate enter into case competitions through the Aspen Institute, and have served as delegates to the UN conference in Copenhagen that outlined a plan for leading global business programs to teach the UN Global Compact⁶³. The Allwin Student Roundtable gives the students an administrative voice in helping set and directs the long term goals for the Tuck Business School⁶⁴. They do offer significant access to conferences that deal with issues of sustainability, including the recent: Building a New Model – Resource Constraints on the Path to Prosperity⁶⁵.

Tuck Business School's NetImpact website noted that because of the small size of their business school, there are typically only one or two classes offered on sustainability per semester. However, additional classes are offered through the other Dartmouth schools and Tuck students are able to take those courses for credit towards their MBA. One interesting course is offered through the Engineering School, Department of Environmental Management, called Industrial Ecology. The school describes the course as follows, "By studying the flow of materials and energy through industrial systems, industrial ecology identifies economic ways to lessen negative environmental impacts, chiefly by reducing pollution at the source, minimizing energy consumption, designing for the environment, and promoting sustainability. The objective of this course is to examine the extent to which environmental concerns have affected specific industries, to evaluate the benefits of prevention over compliance, and to discern where additional progress can be made. With the emphasis on technology as a source of both problems and solutions, a broad spectrum of industrial activities is reviewed."

A full course syllabus is available in the Appendix, Exhibit 15.

George Washington University, School of Business

George Washington Business School is among the list of second tier graduate business schools on the *BusinessWeek* list. As mentioned previously, there were 15 schools that were listed as second tier after the top 30 programs were ranked. All second tier programs received a ranking of 45 for purposes of this analysis. It was George Washington's rank of 11 in the *Global 100* list that enabled them to be the only second tier graduate business program that made the final list of schools for this study. GW School of Business ranked fifth out of 590 schools in terms of the number of courses that they offer on sustainability. They were 23rd in terms of the for-profit impact of those courses and 42nd for the number of students that are actually enrolled in those courses. Their sustainable research ranked 26th out of the 590 global programs surveyed. Their overall GPA as listed on the *College Sustainability Report Card* was a B. George Washington received A's in five categories including: Administration, Food & Recycling, Student Involvement, Transportation, and Investment Priorities. They received B's in Climate Change & Energy as well as Green Buildings. The university received F's in Endowment Transparency and Shareholder Engagement.

The location of George Washington University's School of Business gives students an ideal location for accessing people and organizations in government, non-profit, trade organizations, etc. that are involved with sustainability and the creation of policies that will affect the region, country and the globe. The business school offers two concentrations with a sustainable focus: Environmental Policy & Management, as well as Strategic Management & Public Policy. They also offer a Global MBA program known as GLOBE (Global Leadership of Business Enterprise) that is a two-year full-time MBA program where the first year is dedicated to developing business skills within the context of a global economy⁶⁶.

The George Washington Business School also has an active NetImpact chapter that often hosts other business schools from around the country to attend events within the Federal city. The George Washington Institute for Corporate Responsibility and the Institute for the Analysis of Solar Energy are two organizations that help to create both faculty research on sustainability as well as the development of coursework. One of the more interesting programs offered through the School of Business is called Environment, Energy, Technology and Society. The school describes this program as follows: "The identification, investigation, and evaluation of how environment, energy, and technology are inter-related, and how these interactions influence societal policy formulation, implementation, and evaluation at the international, regional, national, industrial, and organizational levels. Focus on climate crises and solutions at each of these levels."

A full course syllabus is available in the Appendix, Exhibit 15.

Carnegie Mellon University, Tepper School of Business

Carnegie Mellon is ranked number 19 on the *BusinessWeek* list of top MBA programs, and number 38 on the *Global 100* list of top Sustainable MBA programs. They were ranked 9th globally in terms of their student exposure to courses that focus on sustainable issues, although they were 45th in terms of the number of programs that they offer, and 71st in terms of their for-profit impact. Faculty Research at Tepper was ranked 85th out of 590 global programs. Carnegie Mellon's overall GPA on the *College Sustainability Report Card* was a B. Although they received A's in six of nine categories, including: Climate Change & Energy, Food & Recycling, Green Buildings, Student Involvement, Transportation and Investment Priorities, they received a C in Administration and D's in both Endowment Transparency and Shareholder Engagement.

All students who attend Tepper must attend a 12 hour introductory course on ethics during their orientation. Many topics of discussion including presentations, panels and case studies focus on topics related to sustainability. Tepper Business School has student groups that include a NetImpact chapter, as well as the Tepper Energy Club. Every year they host a Meginnis Venture Competition, and in 2007 they added a Sustainable Technology Award for a business that has created a product or use that is original, profitable, and sustainable in terms of climate change mitigation, energy efficiency, and materials and water use.⁶⁷

In June of this year, Tepper Business School professor Lester Lave will receive the Richard Beatty Mellon Environmental Stewardship Award from the Air and Waste Management Association. The award is given to an individual whose contributions of a civic nature have aided substantially in pollution abatement and for developing increased interest for the cause of air pollution control and waste management for the betterment of the environment.⁶⁸

One interesting course taught by this professor is *The Economics and Engineering of the Electricity Industry*. The school describes the course as follows, "This semester-long course covers both the economics/business of the electricity industry and power engineering, dealing with issues like choice of fuels and technologies, and the direct and external costs of each, including pollution control, in regulated and deregulated structures. It examines time of use and real time pricing, the consumers who would benefit and those who would lose by these pricing systems, in contrast to the current constant price. It gets into consumers choosing renewable electricity at a premium price. It looks at new technologies that control more of the air pollution as well as carbon capture and sequestration. It looks at the environmental externalities of coal mining, transport, and use. It looks at command and control regulation vs. effluent fees versus allowance trading. It looks at conservation and the demand side

management programs that all but ceased when the industry was deregulated, looking at the implicit savings per KWh compared to new generation.”

The Tepper Business School does not post their syllabi online , therefore none can be provided for this course.

Massachusetts Institute of Technology (MIT), Sloan School of Management

Sloan School of Management is the final school on this list, with a combined score of 100. Sloan is ranked number 9 on the *BusinessWeek* list of top MBA programs, and number 60 on the *Global 100* list of top sustainable MBA programs. This is largely due to their low score in terms of faculty research, where Sloan ranked 134th out of 590 global business programs. The number of courses offered in sustainability was ranked 33rd and the for-profit impact of those courses was 32nd on the list. The number of students enrolled in these classes ranked them 77th out 590. The *College Sustainability Report Card* gives sloan a combined GPA of B+. They received A's in Food & Recycling, Green Buildings, Student Involvement, Transportation, and Investment Priorities, and B's in Administration, Climate Change & Energy, and Shareholder Engagement. They received an F in Endowment Transparency.

In spite of their low scores on the Global 100 list, information on sustainability at MIT Sloan was easy to find. In 2007, they created the MIT Sloan Initiative for Sustainable Business & Society (S-Lab) as a means to change the way businesses use and manage resources⁶⁹. Based on collaborations with Fortune 500 companies, start-ups, NGO's, and non-profits, this program offers students real-world consulting opportunities and case study development. The S-Lab also offers a Certificate in Sustainable Business Certificate⁷⁰ consisting of four required classes and one capstone course. This can be pursued while achieving the MBA degree. The S-Lab also offers pod casts that feature topics of sustainability including, “Will Sustainability Sell?” and “Sustainability in the Built Environment.”⁷¹

A new introduction to the MIT Sloan curriculum in the Sloan Innovation Period (SIP) that replaces the traditional 13 week semester with two six-week classes that feature a one-week intensive, hands on learning experience in the middle. Topics are focused on research initiatives being conducted within the business school.⁷²

Sloan School of Management has other interesting projects like the MIT Center for Collaborative Intelligence, Sustainable Food Lab, and the Alliance for Global Strategy, all address issues of sustainability. However, the most creative project is the Greenhouse Gas Emissions simulator which is an online tutorial and interactive learning experience that teaches about greenhouse gasses, global warming, and to what degree we need to change behavior to effect positive

changes to the environment. This interactive simulator can be found online at: <http://scripts.mit.edu/~jfmartin/sip/master/>

One of the interesting courses offered by the Sloan School of Management is: Global Climate Change: Economics, Science, and Policy. This elective course is described by the school as follows: “This course introduces scientific, economic, and ecological issues underlying the threat of global climate change, and the institutions engaged in negotiating and international response. It develops an integrated approach to analysis of climate change process, and assessment of proposed policy measures, drawing on research and model development within the MIT Joint Program on the Science and Policy of Global Change.”

A full course syllabus is available in the Appendix, Exhibit 16.

IDEAL CIRRICULUM

As evidenced by the programs highlighted above, as well as the studies mentioned in this paper, there is a growing trend towards incorporating concepts of sustainability into academic curricula and research. However, many of these courses are still focused on the moral and ethical implications of the topic, viewing sustainable design in terms of corporate or social responsibility, rather than as a part of a core business strategy that can provide financial gain. Additionally, the majority of these courses are offered as electives rather than part of a core curriculum. The primary challenge to implementation is likely that regulatory issues, as well as climate change science and resource constraints are relatively new to mainstream economics, and these issues are not well-addressed through traditional neo-classical formats of study.

To develop systems-thinking, sustainability needs to be an integrated component of all coursework so that students can expand their field of vision and see these issues as primary drivers of costs and/or revenues. Adding these features into the existing framework of core classes also opens the opportunity for deeper instruction and the development of meaningful knowledge for those who choose to specialize in this area through a degree concentration.

I will briefly illustrate this concept using the course syllabus for Johns Hopkins Carey School of Business, *Special Topics in Real Estate: Sustainable Real Estate Development and Finance*. The course overview lists five primary learning objectives, noted as *Enduring Understandings*. Upon examining each of these, I will illustrate how each objective can easily be incorporated into existing coursework included in the Core Program Requirements for the Masters of Real Estate Program. (Emphasis in these objectives has been added by me.)

A full course syllabus is available in the Appendix, Exhibit 17.

1. “Understanding the role that real estate plays in the consumption of energy and production of greenhouse gases that has influenced the development of public policy for sustainable development.”
2. While sustainable buildings allow for the conservation of energy and other natural resources, these savings can be greatly enhanced through sustainable land use planning practices at the city and regional levels that allow for the better integration of residential, commercial, and open space land uses.
3. Provide an understanding of sustainable building principles and how life cycle cost analysis represents a philosophical departure from traditional first cost analysis.
4. Providing constructive working knowledge of sustainable planning, construction, marketing, and certification process.
5. Provide a framework for objectively analyzing and evaluating sustainability features on the financial performance of a commercial real estate project.

Consumption of Energy and Production of Greenhouse Gasses – these topics can easily be integrated into existing coursework on Urban Economics, Site Planning and Building Design, Land Use Regulation, and Ethics and Humanity.

Development of Public Policy – this can be integrated into Land Use Regulation, Legal Issues in Real Estate, Real Estate Development Process, and Business Communication.

Conservation of Energy and Other Natural Resources – this can be taught as a component of Urban Economics, Financial Modeling for Real Estate, Site Planning and Building Design, Construction Project Delivery, and Land Use Regulation.

Land Use Planning – this can be taught as a component of Land Use Regulation, Urban Land Economics, Site Planning and Building Design, and Real Estate Development Process.

Sustainable Building Principles – this can be addressed through courses on Site Planning and Building Design, Real Estate Development Process, Construction Project Delivery, Land Use Regulation, Business Communication, Urban Land Economics, and Ethics and Humanity.

Planning, Construction, Marketing and Certification – each of these can be addressed individually through the following existing courses; Site Planning and/or Land Use Regulation, Construction Project Delivery, Business

Communication, and Real Estate Development Process and/or Construction Project Delivery.

Analyzing and Evaluating Financial Performance – this can be addressed in existing courses on Market Analysis and Financial Modeling for Real Estate.

This simple exercise illustrates how concepts that are reserved for discussions in classes specifically geared towards sustainable practices can easily be integrated into the core curriculum, creating a more systems-level understanding of these concepts, and leaving degree concentrations open to exploring more in-depth topics that can help develop graduates into thought leaders.

Sustainability: Focusing the Lens of Graduate Business Education

You don't need to believe in climate change science to believe in sustainable business practices. Sustainability can have many meanings. To an environmentalist sustainability may imply the definition given from the Brundtland Principles, from the United Nations Report of the World Commission on Environment and Development: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." To a business person sustainability could simply be throughput, or output relative to input. In order for a business to sustain itself, it must get out more than it puts in, and the extent to which you are able to put in less and get out more, productivity and profits rise. The business can sustain itself, and ultimately grow. At the most basic level these two definitions are very similar – get more from less, and productivity and profits will rise.

Part of the problem with this over simplification is what we choose to define, or more accurately *what we choose to include*, in our accounting of inputs and outputs. The industrial revolution forever changed how we source our "inputs" and what we consider an "output." For generations we have discounted the true cost of production by not accounting for the true cost of the inputs; natural resources themselves (based on cost to extract *and* regenerate, as well as the ecosystem service they provide and the costs to reproduce those services such as habitat, water filtration, temperature control, etc,) transportation, labor, corruption, etc; and the actual net-value of the outputs, which would be value of the product being sold, less the cost of pollution, toxic waste, the permanent damage to ecosystems, and the loss of natural resources due to comingling products that keeps them from being re-used or recycled either in terms of a new product, or through the natural process of biodegrading, among other things.

It would be a major understatement to conclude that changing the industrial process, as well as the entire concept of neoclassical economics by eliminating free-riders, is unlikely. Because of this, many businesses, governments and

individuals have tried to adapt programs or slogans, like the 3 R's – Reduce, Reuse, Recycle. The problem with slogans like this is that we are a society, a global society that likes to consume. When we have money, we like to spend it, and businesses like creating products that entice us to do just that. So, now we're talking about two major impediments to change; severe complexity and lack of desire. That is why, as William McDonough so aptly states in his seminal book *Cradle to Cradle*, "Being less bad is no good." This phrase is both exciting and inspiring. Rather than castigate, it challenges us to do what we as humans do best; evolve. It represents a revolution and a renaissance all in one. And it begins with possibilities, ones that can best be explored through the combination of technical skill and philosophy that is the hallmark of higher education.

Creating a new generation of leaders

In my family business, The Tower Companies, we have a Director of Sustainability who helps identify new and better sustainable practices for our organization, and also puzzles to find new sustainable concepts or ideas that may not have been thought of or done previously. I asked him, "What's the most important thing that people should know if they want to work in the field of sustainability?" He answered simply, "Their job." What he means is that you have to actually *do* something. You cannot get a job in "sustainability." You must take a practice that you know and reinvent it. But first and foremost, you must know what you do, and why you are doing it. Like the famous story of the woman who asked three men digging a hole what they were doing. The first answered, "I'm digging a hole." The second answered, "I'm building something." The third man said, "I am building a cathedral!" This is a statement on leadership. To be a leader you must not only complete a task, but also understand how that fits into a larger goal, and then be able to share that vision with others.

Graduate business programs are designed to create leaders. But in order to lead you must understand *what* you are doing and *why*, so that you can begin to identify opportunities to do things better, smarter, faster, and safer because that is what will sustain your enterprise, your planet and yourself.

Getting to Green

A good education combines practical knowledge and theory. Most of the core curriculum within a graduate business program is focused on "how" to do things. These courses tend to comprise the more technical skills used to complete a task, such as how to read a lease, or construction drawings, find a zoning code, or do a discounted cash flow analysis. This leaves room for deeper skill development and/or creativity within the elective course work, or specialty concentrations. Based on my analysis of the top business schools in America,

in terms of education, coursework on sustainability, and the integration of sustainable practices within the operations of the university, I have created four courses that would represent a concentration in sustainable real estate, with the assumption that all core classes would include elements of sustainability as a component of the course work so that these specialized courses don't need to focus on the most basic elements of sustainable practices. These courses are based on the key areas of study currently being offered at these top business programs, but represent original thought and content in their presentation.

A concentration in sustainable real estate would include these four classes:

- A New World Order in Sustainable Design: Environmental Economics, Ecology and Best Practices in Sustainability
- Energy, The Economy and Existing Buildings
- Sustainable Design as a Core Business Strategy: Productivity and the Workplace
- Reimagining a World City: Sustainable Community Development

COURSE SYLLABUS:

A New World Order in Sustainable Design: Environmental Economics, Ecology and Best Practices in Sustainability

“No problem can be solved by the same consciousness that created it.”

- Albert Einstein

“A managers job is to do something right (to be efficient), but an executive's job is to do the right thing (to be effective).”

- Peter Drucker

When looking at the role of real estate in the broader concept of the business world and its impact on the global economy, it is easy to see that leadership is not created or sustained simply by meeting the minimum standards for building design. Today's business and thought leaders must re-imagine the process, and ask how can your product enhance the economic, ecological and social health of those who construct, work in, and live near my facility. This is the challenge that will be addressed through this course.

Recommended Textbook:

Blueprint for a Sustainable Economy, D. Pearce & E. Barber (2000)

Additional Reading:

Mid-Course Correction: Toward a Sustainable Enterprise: The Interface Model, Ray Anderson, Published by Chelsea Green (1999)

Week 1:

Overview of Traditional Economic Theory: An Overview
Ecological Economics: History and Theory
Tools & Applications: Introduction of transforming theory into practice

Topics Covered:

- Microeconomics: Supply/Demand, Utility, Opportunity Cost
- Macroeconomics: Public Policy, and Growth
- Environmental Economics
- Resource Economics
- Ecological Economics: Economy as a subset of the environment, Welfare, Public Policy, and Sustainability
- Overview of tools and applications for translating theory into practice: Life Cycle Assessments, Technological Innovation, Backcasting, Discounting, Leading Indicators (GDP, ISEW, GPI)

Readings/Presentations:

One Planet, Many People: Atlas of Our Changing Environment

“Economics in a Full World” H.E. Daly (2005) Scientific American

This article explores the economy’s relationship to the ecosystem and why limitless economic growth is impossible.

“Getting the Prices Wrong: The Limits of Market-Based Environmental Policy” F. Ackerman and K. Gallagher (2000). Global Development and Environment Institute Working Paper.

This article questions the efficacy of market-based environmental policy.

Assignment:

Write a brief memo (no more than 2 pages) on something you learned this week that surprised or interested you, and why. It can be related to your work or of personal interest.

Week 2:

What Does a Sustainable World Look Like?

Topics Covered:

- Review of Our Common Future: United Nations Report of the World Commission on Environment and Development
- Weak versus Strong Sustainability
- Linking Economic Efficiency and Sustainability

Readings:

Our Common Future, Chapter 2, Towards *Sustainable Development*, United Nations Report of the World Commission on Environment and Development

Chapter 2, “The Meaning of Sustainable Development” Pearce & Barbier

Assignment:

Write a brief two page memo on how the real estate industry can help meet the goals and objectives of the UN Report, Our Common Future

Week 3:

Decision Making Frameworks: Valuing Ecosystem Services

Topics:

- Mitigation (costs and benefits)
- Risk and Uncertainty
- Present needs versus Future Needs
- Life Cycle Analysis
- Limitations and Alternatives to Monetary Valuations

Readings:

Chapter 3, “Valuing the Environment” Pearce & Barbier

“A Road Map to Natural Capitalism,” By Amory B. Lovins, Hunter Lovins, and Paul Hawken, Harvard Business Review, July-August 2007.

Assignment:

Write a brief two page memo on how ecosystem services are accounted for in the design and development of green buildings.

Week 4:

Macroeconomic Approaches to Measuring Sustainable Development

Topics:

- Understanding and measuring GNP
- Green GNP: Modifying GNP for non-market values
- Review for Mid-Term Exam (take home)

Reading:

Chapter 4, “Measuring Sustainable Development: Economic Approaches”

Chapter 5, “Measuring Sustainable Development: Ecological Approaches”

“Price Fixing: Why is it Important to put a price on nature?” Green.view, The Economist, January 18, 2010.

Assignment:

Take Home Exam

Week 5:

Review of Take Home Exam

Causes of Environmental and Social Degradation

Topics:

- Assumptions & Market Failures: Rivalness & Excludability, Free-Riders, Public Goods, Tragedy of Commons, Externalities
- Government Policy: Successes and Failures
- Social and environmental measurement and accounting
- Multi Criteria Analysis (MCA)

Reading:

Chapter 6, “Causes of Environmental and Social Degradation”

“Sustainability + Innovation,” By Ram Nidumolu, C.K. Prahalad, and M.R. Rangaswami, Harvard Business Review, September 2009.

Week 6:

Solving Environmental Problems

Topics:

- Property Rights
- Market Policy Instruments: Taxation, Cap and Trade, Incentives, Rebates
- Capital Markets and the Global Economy

Reading:

Chapter 7, “Solving Environmental Problems: Property Rights, Markets and the Macroeconomy”

Chapter 8, “Solving Environmental Problems: Policy Instruments”

“Cap and Trade 101” Center for American Progress, January 2008.

Assignment:

Write a brief 2-page memo on one market policy related to green buildings that you think is particularly effective and why.

Week 7:

International Comparison of Green Building Rating Tools

Topics:

- Overview of International Green Building Certifications
- Living Building Challenge
- SMART Certified
- Cradle-to-Cradle certification

Reading:

“International Comparison of Green Building Rating Systems” Richard Reed, Anita Bilos, Sara Wilkenson, Karl-Werner Schulte, The Journal of Sustainable Real Estate, Volume 1, Number 1 (2009).

“The Living Building Challenge: In Pursuit of True Sustainability in the Built Environment” Green Building Council, Cascadia Region, version 1.3 (2008).

“Embracing the Living Building Challenge” Clark Brockman, Who’s Green, Living Building Edition (2008)

Assignment:

Write a 2 page memo comparing and contrasting LEED, BREEAM, and The Living Building Challenge

Week 8:

Presentations of Final Project: A Sustainable Certification Program

Assignment:

Final paper and class presentation integrating the lessons you learned in this course, and through Ray Anderson’s book Mid-Course Correction, and devise a certification program of sustainability that can be immediately implemented within your organization.

COURSE SYLLABUS:**Energy, the Economy and Existing Buildings**

Businesses are a key part of the environmental picture in terms of global governance and a key part of the climate solution, whose success requires implementation by businesses. However, policies on climate change and energy efficiency are largely limited due to a fragmented, weak and undeveloped market. This fragmentation leads to a wait-and-see attitude among businesses who don’t want to get stuck making financial commitments to policies, and/or technologies that will ultimately be replaced with newer, better, or more politically

popular concepts. In response to this many local governments have tried to respond with their own initiatives and guidelines, as well as businesses who have undertaken these projects on their own accord, believing there is either, at best, a financial advantage, and at worst, a brand advantage, to being an early mover in these areas.

The first part of this course will examine some of the above mentioned policies and the challenges to implementation, as well as market leading concepts that are slowly helping us move towards more environmentally responsible energy policies. The second half of this class will focus exclusively on methods of implementing energy efficiency into existing buildings.

Recommended Textbook:

Retrofitting Office Buildings to be Green and Energy Efficient: Optimizing Building Performance, Tenant Satisfaction and Financial Return, Leann Tobias, Urban Land Institute (2010)

Week 1:

Exploring government sponsored policies and programs, as well as business organizations involved in determining climate change policy for the US.

An introduction to Green Buildings and the importance of retrofits from a GHG perspective, as well as the challenges to implementation of sustainable practices.

Topics:

Introduction and overview of the following:

- Clean Air Act
- Kyoto Protocol
- Waxman-Markey bill
- New Energy Plan for America
- Barriers to retrofitting an office building
- Case Study – The Empire State Building Goes Green

Readings:

“Green and Competitive” Michael Porter and Claas Van Der Linde, Harvard Business Review (1995).

ULI Textbook, Chapter 1, pages 2-12.

Assignments:

Write a two page memo on your thoughts about environmental regulation, does it enhance competitiveness or it is an annoying cost? Why. Use facts, logic and contemporary examples to back up your opinion.

Week 2:

Energy Supply and Demand and unlocking Solutions to Energy Policy in the US

Topics:

- Pricing
- Market Power and Scarcity
- Regulated and Unregulated Energy Markets
- Renewable Energy Purchasing
- Cap and Trade
- Carbon Disclosure
- Climate Registry

Energy efficiency potential in the US Economy

- NPV positive opportunities
- Efficiency by market sector – special emphasis on real estate
- Barriers to implementation
- Elements of a holistic strategy

Readings:

“Cap and Trade 101,” Center for American Progress, January 2008.

EPA Regulatory Proposals Represent the First Steps of an Economy-Wide Program for Regulation of Greenhouse Gas Emissions, Robert B. McKinstry, Jr and Caleb Holmes, Ballard Saphr Andrews & Ingersoll, LLP, May 6, 2009.

“Unlocking Energy Efficiency in the US Economy” Executive Summary, McKinsey Global Energy and Materials Group, July 2009.

Review: Carbon Disclosure Project Website: <http://cdproject.net/>

Assignments:

Write a brief 3-page memo on whether benefits and drawbacks of voluntary vs. compulsory carbon reduction programs in the context of what you have learned about the Kyoto Protocol, Waxman-Markey bill, Cap and Trade, and Carbon Disclosure. Which strategic solutions you think would be most successful in terms of rapid implementation and why? Identify challenges to implementation, ways to mitigate them, as well as recommendations to enhance successful strategies.

Week 3:

Planning a green office retrofit

Topics:

- Defining a strategy for green retrofit
- Code standards and voluntary certification programs
- Cost benefit and analysis of green retrofit opportunity
- McDonalds Case Study
- 1828 L Street Case Study, Working towards Energy Star

Readings:

ULI Textbook, Chapter 2, pages 16-39

ULI Textbook, McDonald's Campus Office building, pages 257-285

Assignments:

Create a cost benefit analysis for three green features within your corporate office space, or within a building of your choice. This should include a description of the upgrade (for example: eliminating incandescent lighting, installing occupancy sensors, adding a building energy management system or changing out chillers,) the initial costs to install, annual commodity savings, annual cost savings, simple payback.

For this exercise you will need to have access to your electrical consumption in terms of total KWh, as well as your cost per kilowatt. If these are not available to you please use publicly available information regarding averages for this region, and detail where you got your numbers and why they are an accurate representation.

You have two weeks to complete this assignment.

Week 4:

Retrofitting Office Buildings for Energy Efficiency

Topics:

- Evaluating site and climate conditions
- Landscaping strategies
- Building envelope
- Building mechanical systems
- Sustainable interiors
- Brief discussion on historic preservation and green retrofits

Readings:

ULI Textbook, Chapter 3, pages 40-83

Smart Market Report: Green Building Retrofit & Renovation, McGraw-Hill, October 22, 2009, pages 1-10

Assignments:

Complete assignment from Week 4.

Week 5:

Managing the Green Retrofit Process

Topics:

- Collaboration between project team members
- Identifying a strong green building consultant
- Construction considerations
- Minimizing legal risks in green design and construction

Readings:

ULI Textbook, Chapter 4, Pages 87-106.

Cost Effective Green Retrofits: Opportunities for Savings in Existing Buildings and Top Products for Affordable Green Retrofits, BuildingGreen.com, By Tristan Roberts

Assignments:

Final Project and Presentation – identify a building in the DC area and present a case study for Green Building Retrofit, include a cost benefit analysis. Include a section in there that deals with marketing to and educating tenants on these new upgrades and how they will benefit from them. Extra Credit will be given for identifying possible rebate and incentive programs and how a particular program can change the payback for specific upgrades.

Week 6:

The Business of Green Office Renovations

Topics:

- Green building costs and paybacks
- Leasing, rental rate, and sales price benefits
- Strong global demand
- Restricted supply and premium green rents
- Underwriting green office retrofits and renovations
- Green real estate finance vehicles

Readings:

ULI Textbook, Chapter 5, pages 116-123.

ULI Textbook, Case Study: 545 Madison Avenue, pages 208-218

Assignments:

Work on final project and presentation

Week 7:

Green Property Operations

Topics:

- Property Management agreements, leases and risk management
- Green operating metrics
- Maintaining energy efficient operations
- Establishing green operating programs
- Green property management certification programs

Readings:

ULI, Textbook, Chapter 6, pages 140-158.

Building the Green Way, By Charles Lockwood, Harvard Business Review, June 2006.

Assignments:

Work on final project and presentation

Week 8:

Toward the future: New directions in green building

Topics:

Building Information Modeling
New building materials and systems
Smart buildings and smart grids
Buildings as living systems

Readings:

ULI Textbook, Chapter 8, pages 187-203

Assignments:

Final Presentations and Papers due.

COURSE SYLLABUS

Sustainable Design as a Core Business Strategy: Productivity and the Workplace

The smoking gun in terms of the benefits of sustainability has always been in the productivity numbers. Although there are measurable reductions in utility costs due to energy and water efficiency, and there are a number of studies in the marketplace that now point to increases in rental rates for LEED and/or Energy Star rated buildings, these numbers are relatively low compared to potential gains in employee productivity, as well as the ability of these buildings to reduce turnover, and sick time. That is because rent makes up about 8-10% of businesses operating expenses, while people make up roughly 88%. Therefore, looking to save money on your rent could potentially increase your overall costs by not looking at how buildings impact the occupants who work inside of them. This course will examine a concept that I developed in 2003 called Return on Rent, that looks at published studies and attempts to examine the concept of face rents versus effective rents based on a buildings ability to impact workers in terms of productivity, turnover and sick days.

Ongoing Assignment: Journal of the Built Environment

Throughout history buildings were designed to create not just a sense of place but to instruct your senses on what kind of place you are in – whether It's a cathedral, an office building, hotel, etc. Each of these places has a design that evokes emotion. Today we seem mostly unaware of how these spaces and their design can impact us and our emotions. Your assignment throughout this course is to keep a written journal of the spaces you visit. Notice their function, design, color palette, amount of darkness/light, and notice how you feel when you are inside of the space. How clean is the space, do you smell anything, see anything: flowers, uniforms on staff? What would you change about these spaces if you could? What did you like? What elements would you incorporate into a building if you could? The idea is to reconnect with the built environment. Be creative. Don't be boring and don't be careless in your analysis.

Final Assignment:

You are one of the top three brokerage firms seeking to win business from a developer known in the market to be the largest developer of green projects in your region. They are looking for a brokerage house that understands their business and focus on sustainability. In order to win their business you must develop a marketing plan for their new LEED Gold 200,000 SF downtown building. It is highly recommended that you use the financial benefits of green buildings to lure tenants into this building. It is also highly recommended that you be creative and think outside of the box, as this developer has long felt that

brokers understanding of the green market is very shallow. You should make recommendations for marketing strategies that may be non-traditional, and very creative. It could include creating marketing boards, a video presentation for a website, sample advertisements, broker gifts, events, etc. Plan to be very aggressive in your presentation.

A written marketing plan as well as a 15-20 minute presentation of recommendations will be required.

You will be evaluated based on:

- Overall marketing plan and quality of the write up:
 - Organization, understanding of the problems and issues, comprehensiveness, accuracy, innovation and quality of material.
- Presentation:
 - Organization, understanding of company issues, style, professionalism, creativity and innovation.

Week 1:

Introduction to Return on Rent

Topics:

Concept overview including a theoretical tenant

- Understanding productivity and what impacts worker productivity
- Understanding costs of corporate recruiting and training when losing an knowledge worker
- Understanding the true cost of an employee to an organization

Reading:

“Green Buildings, Organizational Success and Occupant Productivity,” Written by: Judith Heerwagen, Published in a special edition of Building Research and Information, London, U.K., Vol. 28 (5), 2000: 353-367.

Assignment:

Please come to class with the following information regarding the company you work for:

- Rent per square foot that your company currently pays, as well as how many square feet. If you have a NNN lease, please include your average operating expenses. If your company has multiple locations, just select one office for purposes of this analysis.
- The number of employees that work within the office space above.
- Average cost per employee for your organization. If you work for a private company and this information is not available, make an informed guess.
- Your company's factor for health insurance and overhead
- Average number of sick days per employee
- Average annual turnover for your organization

Note: If your company will not make this information available to you, please do your own independent research based on average numbers for this market in terms of rent, knowledge worker salaries, sick days and turnover.

Week 2:

Factors that affect Productivity

Topics:

Indoor Air Quality

- What impacts IAQ during construction and operating of a building
- How can you reduce or eliminate these from a work environment
- What are the effects on worker productivity
- Sample Air Quality Tests – how they work, who performs them

Reading:

Health and Productivity Gains from Better Indoor Environments and their Relationship with Building Energy Efficiency, William J. Fisk, Annual Review of Energy and the Environment, 2000, Vol 25. pages 537-566.

"An Office Building Occupant's Guide to Indoor Air Quality," US EPA, Office of Air and Radiation, Indoor Environments Division, October 1997, pages 1-11.

Reference/Additional Reading:

Building Air Quality Action Plan, US EPA and National Institute of Occupational Safety and Health, June 1998.

Week 3:

Factors that affect Productivity

Topics:

Light and Lighting

- Qualities of light and their effect on human physiology
- Types of lighting and their effect on productivity (natural, overhead, fluorescent, task)
- The link between daylight and productivity

Reading:

Skylighting and Retail Sales, An Investigation into the Relationship Between Daylighting and Human Performance, Condensed Report submitted to Pacific Gas and Electric, August 20, 1999. HESCHONG MAHONE GROUP.

Daylighting in Schools, An Investigation into the Relationship Between Daylighting and Human Performance, Condensed Report submitted to Pacific Gas and Electric, August 20, 1999. HESCHONG MAHONE GROUP.

Week 4:

Factors that effect Productivity

Topics:

Thermal Comfort

Reading:

Effect of Temperature on Task Performance in Office Environment, O. Seppanen, W.J. Fisk, Q. Lei, July 2006

Partial- and Whole-body Thermal Sensation and Comfort, Part I: Uniform Environmental Conditions, E. Arens, H. Zhang, and C. Huizenga, 2006. *Journal of Thermal Biology*, 31, 53 - 59.

Partial- and Whole-body Thermal Sensation and Comfort, Part II: Non-uniform Environmental Conditions, E. Arens, H. Zhang, and C. Huizenga, 2006.. *Journal of Thermal Biology*, 31, 60 - 66.

Week 5:

Corporate values

Topics:

How corporate social responsibility and shared values can impact retention and turnover within an organization

Reading:

Deriving Value from Corporate Values, The Aspen Institute and Booz Allen Hamilton, February 2005.

Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility, by Michael Porter and Mark Kramer, Harvard Business Review, December 1, 2006.

Week 6:Topics:

Costs of Training and Development of Knowledge Workers

Reading:

Knowledge Retention Enhances Performance Based Management, by Dr. Moonja Kim, Business Processes, pages 49-51.

“We want you to stay. Really.” Bernstein, A. (1998). *Business Week*, 22, 67.

Twenty-five years of voluntary turnover research; A review and critique. Maertz, C.P., & Campion, M.A. *International Review of Industrial and Organizational Psychology*: London, (1998) pages 49-86.

Week 7:

Topics:

Building Operations – expenses and management responsiveness to issues
Beyond Green Buildings: Can architecture impact worker health and productivity

Reading:

Greening the Service Profit Chain: The Impact of Environmental Management Practices, Kassinis and Soteriou, *Journal of Production and Operations Management*, Fall 2003.

Case Study: Design Creates Fortune: 2000 Tower Oaks Boulevard, By John D. Macomber and Griffin H. James, Harvard Business School, March 22, 2010.

Week 8:

Topics:

Final paper and presentations

COURSE SYLLABUS:

Reimagining a City: Sustainable Community Development

“Today, more than any time in history, we live in a global economy where quality of place drives the free flow of capital. And the lines between urban, suburban, and rural challenges blur from poverty to housing affordability, strong neighborhoods are increasingly becoming a yardstick with which we measure America’s success.”

Shaun Donovan, Secretary of the US Department of Housing and Urban Development

When Thomas Friedman released his book *The World is Flat* in 2005, he wrote how technology was making developing nations economically competitive, and that outsourcing jobs to other countries will help raise their standard of living and increase their demand for American goods and services; ultimately creating a global country of mutual economic dependency. The book provides an excellent example of the interconnectivity of people and our mutual dependence on each other. Although Mr. Friedman was talking primarily about goods and services, understanding the concept of interconnectedness is paramount to understanding the concept of sustainable development and the local community's effect and ultimate impact on the larger global community.

This course will focus on the core concepts of Green Community Development examining issues of density and transportation, conservation and preservation, energy and resources, and finally the health and sustainability of local and global communities.

Recommended Textbooks:

Green Community, Edited by Susan Piedmont-Palladino and Timothy Mennel

The Grassroots of a Green Revolution: Polling America on the Environment, by Deborah Lynn Guber, MIT Press (2003)

Final Assignment:

A 10 page *term paper* on either (1) a pure theory paper about some aspect of the human/nature relationship in the Western intellectual tradition, or (2) a public policy paper on a contemporary environmental issue and a solution to that issue using course materials.

The *presentation* is to be ten minutes long. In the presentation you should give a synopsis of your semester paper. Powerpoint is optional but not required.

Week 1:

The Green Community in Context

Topics:

- Putting contemporary problems into a global context
- A history of sustainability and what we can learn from designs of the 18th and 19th Centuries
- How technology impacted design in the 20th century
- Personal, economic and social benefits of well-planned/designed dense neighborhoods

Readings:

The Great Disruption, Thomas Friedman, New York Times, March 8, 2009.

Green Community, *The Sustainable City: A Mythical Beast?*, Sir Peter Hall

Grassroots, Introduction: Environmental Concern and the Politics of Consensus

Grassroots, Chapter 1, Do Americans Favor Environmental Protection

Assignments:

Write a brief two page memo on the following:

What aspects of personal space and design are most important to you? What excites you/concerns you about the concept of densely-designed mixed-use neighborhoods? Would you want to live there – why or why not? Specifically I am interested in whether you feel there is an inherent conflict between the ideologies of green communities versus people's desire to actually live there. What are the positive and negative aspects?

Week 2:

Density and Transportation

Readings:

Green Communities, Round, Round, Get Around: Reducing Transportation Burdens in the Green Community, F. Kaid Benfield

Green Communities, Introduction to Connectivity, Fred Hansen

Grassroots, Chapter 2, How Deep is the Public Commitment to the Environment?

Assignment:

Write a 2 page memo on the following: What aspects of your daily life are currently causing environmental pollution?

(Think about How do you dispose of your garbage? Do you sort your recycling? How do you get to work, to school, or into town to socialize with friends? Do you take a bus? Do you drive a car? And what products do you use to clean your house? To store your groceries? What groceries do you buy?)

How much of an impact—positive or negative—do you make on the world?

Week 3:

Land conservation and preservation

Topics:

- Green Communities and the redefining of community wealth
- Managing/Controlling development to build green communities
- Regulation vs. Incentive
- How have land conservation policies changed through time and changing political environments

Readings:

Green Community, *Green Communities and the Redefining of Community Wealth*, By Timothy Beatley, pages 56-63

Green Community, *Managing Development to Create Sustainable Communities*, Douglas R. Porter, pages 70-75.

Grassroots, Chapter 3, *Have Environmental Attitudes Changed Over Time?*

Assignment:

Write a 2-page memo on the following: Examine your life as it exists today and tell me if there are any modifications you could make that would have a positive impact on the environment. Don't say "join the Sahara Club" or some other local interest group. I am interested in you thinking of ways to achieve the exact same life, with less negative impact. Be interesting and realistic.

Week 4:

Energy and Resources

Topics:

- Local sustainable energy sources
- Energy and communities
- How do attitudes towards these issues change over time, i.e. sometimes cheap gas is more important than energy independence. Why?

Readings:

Green Community, *Energy and Communities*, By William Browning, pages 78-82.

Green Community, *Energy and Community Greening*, By Thomas L. Daniels, pages 83-87.

Green Community, *Local Sustainable Energy Sources*, By Erica Heller and Mark Heller, pages 104-115

Grassroots, Chapter 5, *Are Environmental Attitudes Inconsistent?*

Assignment:

Present an annotated bibliography of at least 10 sources, as well as a term paper topic overview of 150 words stating in clear, concise terminology your intended topic, and outline in general terms your strategy for arguing your point.

Week 5:

Local and Global Health

Topics:

- Public health, climate change, and the built environment
- Is environmentalism elitist

Readings:

Green Community, *Healthy Communities, Green Communities*, By Howard Frumkin, pages 118-120.

Green Community, *Climate Change and Public Health*, By James A. LaGro Jr, pages 126-133.

Green Community, *The Impact of the Built Environment on Health – The Brain's Stress Response and the Brain Immune Connection: Implications for Health Care and Urban Design*, By Esther M. Sternbery, pages 144-150.

Grassroots, Chapter 4, *Is environmentalism elitist?*

Week 6:

Local and Global Health

Topics:

- Food and community greening
- Growing crops for biofuel

Readings:

Green Community, *The Spillover Effects of Growing Crops for Biofuels*, By Scott A. Malcolm and Marcel Aillery, pages 88-95

Green Community, *Toward Sitopia*, Carolyn Steel, pages 134-136.

Green Community, *Food and Community Greening*, Thomas L. Daniels, pages 137-143.

Week 7:

The consumer, the marketplace and environmentalism

Topics:

- Elections and the environment
- Motivating the citizen consumer
- Rethinking the strategy of environmental communication

Readings:

Grassroots, Chapter 8, *The Marketplace: Motivating the Citizen Consumer*

Grassroots, Conclusion: *Rethinking Environmentalism*

Week 8:

Final Papers Due

Presentations and Course Review

Conclusion

This study represents both an analysis of the present and a roadmap for the future. Today's graduate business students must be equipped to face the challenges of profitability in a business environment with new resource constraints, new government regulations, and new methods of accounting for production costs and profits.

Businesses need to evolve beyond basic concepts of corporate social responsibility and identify profit centers focused on new technologies, new manufacturing processes, new building practices, and new financial models. They must be ready to educate, renovate, and reinvent the entire value chain, and send a message to our government and the world that we are prepared to take a leadership role in the next industrial revolution that will be efficient, smart, clean and green.

EXHIBIT 1: SLOAN MIT LIST OF INTERNAL CHALLENGES TO SUSTAINABILITY

Exhibit 6. Business Leaders Reported Various Internal Challenges to Sustainability

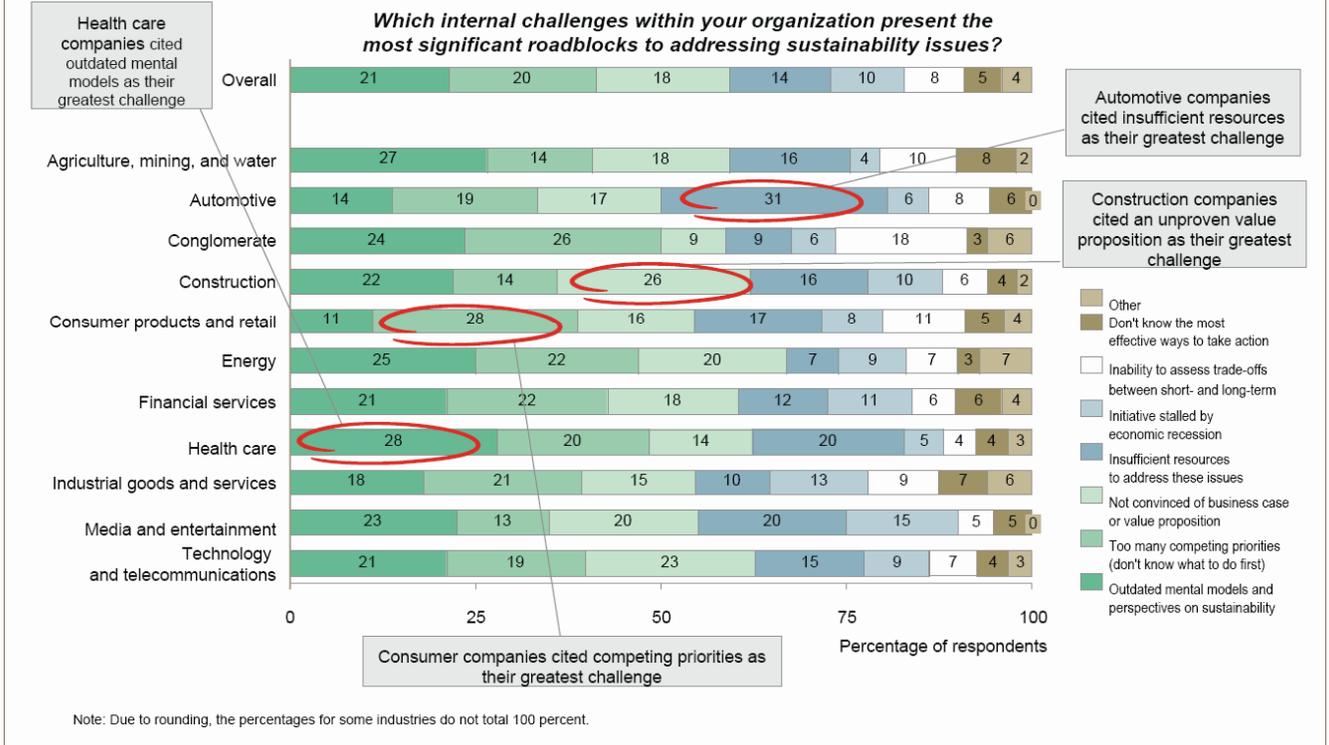


EXHIBIT 2: SLOAN MIT RANK OF CORPORATE DRIVERS TOWARDS SUSTAINABILITY

Exhibit 2. Companies Are Influenced by a Wide Range of Sustainability-Related Issues

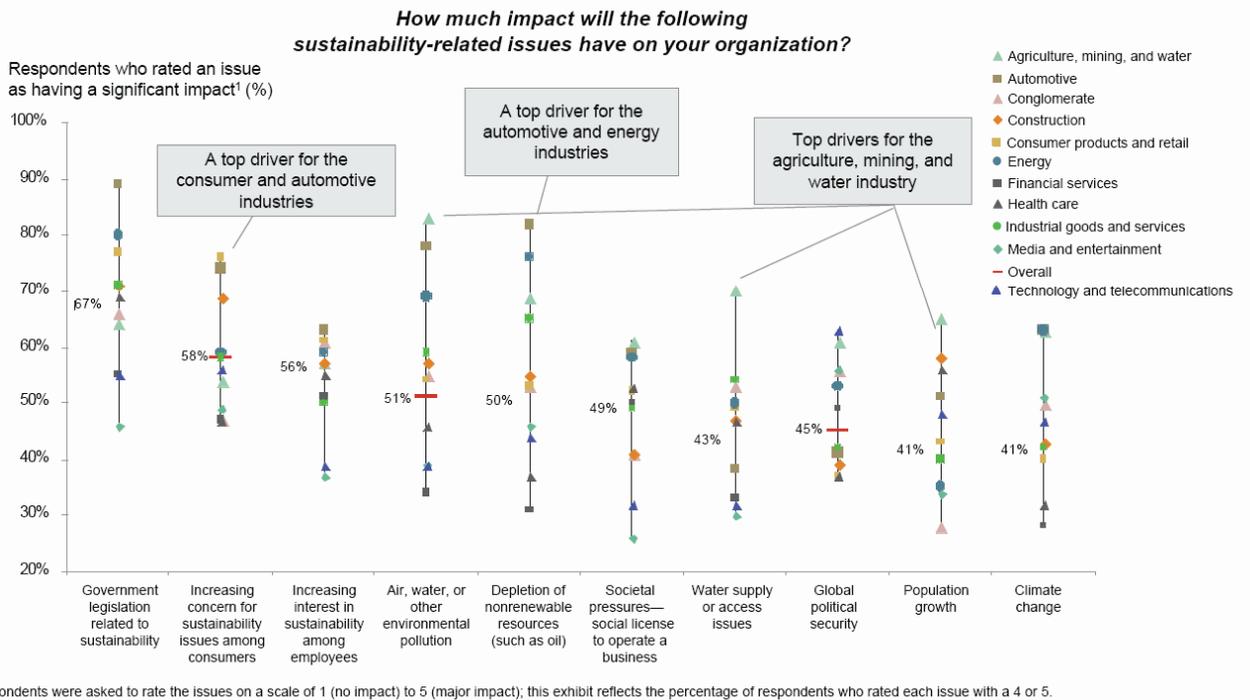


EXHIBIT 3: 2009 BUSINESS WEEK RANKINGS OF TOP MBA PROGRAMS

Rank	School	Grad Poll	Corp Poll	Intel Cap	Tuition & Fees	Pre-MBA \$ (000)	Post-MBA \$ (000)	Selectivity	Job Offers	Gen Mgmt	Analysis	Teaching	Careers
1	Chicago (Booth)	1	2	6	97,165	78.0	105.0	22	94.8	A+	A+	A+	A+
2	Harvard	4	4	9	101,660	77.0	121.0	12	100.0	A+	A+	A	A+
3	Northwestern (Kellogg)	6	1	25	93,918	75.0	110.0	20	97.0	A+	A+	B	A+
4	Pennsylvania (Wharton)	3	5	11	100,860	80.0	120.0	18	95.6	A+	A+	B	A+
5	Michigan (Ross)	10	3	12	90,879	63.5	105.0	20	95.9	A+	A	B	A
6	Stanford	2	9	2	97,842	75.0	125.0	8	96.7	A+	A+	B	A+
7	Columbia	7	6	8	94,104	75.0	110.0	15	94.2	A	A+	A	A+
8	Duke (Fuqua)	13	7	1	95,000	65.0	100.0	30	94.9	A+	A	A	A
9	MIT (Sloan)	5	8	14	93,568	70.0	116.0	15	96.2	B	A+	B	A
10	UC-Berkeley (Haas)	8	11	5	84,055	78.0	110.0	12	94.4	A+	A+	B	A
11	Cornell (Johnson)	15	10	13	93,000	68.0	96.5	19	95.0	A	A	A+	A+
12	Dartmouth (Tuck)	11	16	7	91,905	65.0	115.0	16	95.0	A	B	A+	A+
13	NYU (Stern)	12	13	17	89,184	65.0	95.0	15	94.4	B	A	B	A
14	UCLA (Anderson)	18	18	4	77,126	65.0	100.0	20	91.8	A	A	B	B
15	Indiana (Kelley)	9	19	27	76,440	44.0	92.0	34	96.2	B	A	A+	A+
16	Virginia (Darden)	14	12	38	94,000	63.0	100.0	25	95.4	A+	A	A+	A
17	UNC (Kenan-Flagler)	17	14	19	81,401	60.0	95.0	34	96.0	A	B	A+	B
18	SMU (Cox)	21	17	37	81,384	50.0	90.0	36	83.7	B	B	A+	A
19	Carnegie Mellon (Tepper)	20	21	23	93,844	58.0	102.0	27	96.5	A	A+	B	A
20	Notre Dame (Mendoza)	23	20	24	77,340	49.0	93.5	34	89.9	B	C	A+	A
21	Texas-Austin (McCombs)	22	22	15	81,400	65.0	95.0	27	92.9	A	A	B	A
22	Brigham Young (Marriott)	27	15	41	37,010	50.0	90.0	56	93.9	A	A	A	B
23	Emory (Goizueta)	16	30	28	82,856	57.0	95.0	29	85.8	A	B	A	B
24	Yale	19	33	10	93,098	55.0	97.0	14	94.1	C	C	A+	B
25	USC (Marshall)	25	25	31	88,800	60.0	95.0	23	79.1	A	A	C	B
26	Maryland (Smith)	28	42	3	82,435	53.0	91.0	28	92.0	C	C	B	B
27	U. of Washington (Foster)	30	26	29	64,902	50.0	85.0	30	83.0	B	B	B	B
28	Washington University (Olin)	24	41	16	82,672	50.0	90.0	34	95.7	C	C	A	B
29	Georgia Tech	31	28	26	64,152	55.0	95.0	29	100.0	B	A	B	B
30	Vanderbilt (Owen)	29	27	39	81,076	57.0	91.0	36	85.7	B	B	A	B
2nd Tier	Arizona State (Carey)	35	40	34	59,208	45.0	83.0	24	81.6	A	B	B	B
2nd Tier	Boston U.	36	43	40	73,996	50.0	90.0	28	83.9	B	B	A	C
2nd Tier	George Washington	43	31	44	65,550	47.5	80.0	39	85.4	C	C	C	C
2nd Tier	Georgetown (McDonough)	26	38	42	83,868	55.0	95.0	30	93.3	C	C	C	B
2nd Tier	Thunderbird	38	23	45	78,255	45.0	85.0	75	71.7	A	B	C	C

EXHIBIT 4: ASPEN INSTITUTE'S LIST OF GLOBAL 100 SUSTAINABLE MBA PROGRAMS

Rank	School	Relevant Courses	Student Exposure	For-Profit Impact	Faculty Research
1	U. of Michigan (Ross)	8	23	1	2
2	Yale School of Management	3	4	4	16
3	Stanford	2	14	2	18
4	Notre Dame (Mendoza)	4	5	14	3
6	UC Berkeley (Haas)	7	31	5	4
7	NYU (Stern)	5	10	14	29
8	Columbia Business School	11	59	7	13
9	U. of Virginia (Darden)	31	61	7	5
10	Cornell (Johnson)	13	36	7	23
11	GWU School of Business	5	42	23	26
12	UNC (Kenan-Flagler)	16	44	2	55
13	Simmons	33	2	32	24
14	Duke (Fuqua)	14	49	14	20
15	Wisconsin-Madison	14	8	10	68
16	Duquesne (Donahue)	10	54	14	42
17	U. of New Mexico	45	27	14	20
18	U. of Denver (Daniels)	27	13	23	49
19	U. of San Diego	37	22	6	68
20	Loyola	16	50	42	24
21	Ohio State (Fisher)	23	43	32	34
22	Portland State	52	33	10	42
23	Babson (Olin)	29	28	32	41
24	San Francisco State	33	34	23	55
25	UC Davis	26	32	14	102
26	Georgetown (McDonough)	36	58	42	34
35	Dartmouth (Tuck)	23	75	23	96
38	Carnegie Mellon (Tepper)	45	9	71	85
39	Boston U. School of Management	69	102	14	42
40	Northwestern (Kellogg)	39	98	32	59
57	Arizona State (W.P. Carey)	72	46	103	12
43	Thunderbird School of Global Management	37	87	51	59
46	U. of Southern California (Marshall)	52	109	51	38
56	Vanderbilt	45	101	71	55
60	Massachusetts Institute of Tech. (Sloan)	33	77	32	134
67	U. of Maryland (Smith)	58	84	71	115

EXHIBIT 5: COLLEGE SUSTAINABILITY REPORT CARD GRADES BY UNIVERSITY

	Overall Grade	Admin	Climate Change & Energy	Food & Recycling	Green Building	Student Involvement	Transportation	Endowment Transparency	Investment Priorities	Shareholder Engagement
Univ of Chicago	C	C	C	B	D	C	A	F	A	F
Harvard University	A-	A	A	A	B	B	A	C	A	A
Northwestern	B-	C	C	A	A	B	B	D	A	D
Univ of Pennsylvania	A-	B	A	A	B	A	A	C	A	A
Univ of Michigan	B+	B	B	A	B	B	A	A	A	D
Stanford University	A-	A	B	A	A	A	A	F	A	B
Columbia University	B	B	C	B	B	B	B	B	A	A
Duke University	B+	A	A	A	A	A	A	F	A	B
MIT	B+	B	B	A	A	A	A	F	A	B
UC Berkeley	B	A	A	A	B	A	B	C	C	F
Cornell University	B	A	B	B	C	B	B	B	A	C
Dartmouth College	B+	B	A	A	B	A	B	B	B	A
New York University	B	A	A	A	B	A	A	D	A	F
UC Los Angeles	B	A	B	A	B	A	A	B	C	F
Indiana University	B-	B	B	B	C	A	C	C	A	D
Univ of Virginia	B-	A	B	A	B	A	A	F	A	
UNC Chappel Hill	A-	A	A	A	A	A	A	D	A	D
Southern Methodist	C+	C	C	B	B	B	A	F	A	F
Carnegie Mellon	B	C	A	A	A	A	A	D	A	D
Univ of Notre Dame	B	A	B	B	B	A	B	D	A	C
Univ of Texas, Austin	B-	B	A	B	B	A	A	A	C	F
Brigham Young	D-	F	F	D	F	D	F	F	C	F
Emory	B	A	C	A	A	A	A	C	A	F
Yale	A-	A	A	A	A	A	A	D	A	A
Univ of So. Cal	C+	B	D	B	D	B	A	F	A	D
Maryland	B+	A	B	A	A	A	A	A	A	F
Vanderbilt	C+	B	C	B	B	A	B	F	A	F
Arizona State	A-	A	A	A	A	A	A	B	C	
Boston University	B	B	D	A	B	A	A	C	A	D
Georgetown	B	B	A	B	B	B	C	D	A	A
George Washington	B	A	B	A	B	A	A	F	A	F
Thunderbird	n/a									

EXHIBIT 6: Course Syllabus, University of Michigan, Ross Business School, Competitive Environmental Strategy

STRAT 564/SNRE 513
Competitive Environmental Strategy
FALL 2008

Syllabus

Class Meets: Professor Andrew Hoffman
Tuesday and Thursday Room W7718, Ross School
12:40 pm – 2:10 pm. Email: ajhoff@umich.edu
September 2 – October 9
Room W2760
12 sessions

Course Overview

Something is clearly different on the environment today. The attention that the environment in general, and climate change in particular, is receiving is nearly impossible to miss. The fact is that we are in the midst of what some are calling the “third wave” of corporate environmentalism. The first wave occurred in the late 1960s, with growing concern for the environment being spurred by events like the Santa Barbara oil spill and the first Earth Day. The second wave occurred in the early 1990s, spurred on by issues and events like Bhopal, the Montreal Protocol, Chernobyl and the Exxon Valdez oil spill. The third wave is being driven by several key issues, but none more powerful than the growing concern over climate change.

Each of these waves lasts for a distinct period of time and subsides. This wave will do the same.

However, in the wake of these waves, the business environment is changed in two distinct ways.

First, the framing of the problem and the solution are altered. Second, aspects of this alteration take on a permanence that did not exist before the wave. After the first wave, the notion that environmental pollution is a problem led to the formation of the US Environmental Protection Agency and the acceptance that regulation is necessary to protect the environment. After the second wave, the notion that corporations can address some environmental issues as a matter of strategic interest became accepted, particularly as investor groups, insurance companies and consumers began to alter their behavior based on environmental concerns.

How will things be different after the third wave? The goal of this course will be to explore this question from a political, managerial and technological perspective. It is not our intention to make students fully proficient in the structure of environmental law or the scope of global environmental hazards. As needed, class discussions will be augmented to provide necessary background. We will focus instead on the significance of these developments for corporate organization, markets, and operations. We will look at both established industries and emergent companies employing cutting edge technologies, and consider both national and international implications. This class is not aimed at the environmentalist. There is ample reason for critical thinking in an era when political correctness can cloud the logic of rational discourse. What the student should take away

from the course is a grasp of the complexity of the environmental issue, its opportunities and limitations for the corporate enterprise. In the final analysis, environmentalism is a fact of the business environment, like it or not.

To successfully address this fact, one needs to see that it offers a new lens with which to view taken-for-granted conceptions of basic products and processes.

Some particular questions we will address are:

- Does the so-called "win-win scenario" really exist? Can production efficiency and bottom-line profits be increased through the introduction of new technologies and management systems that are sensitive to environmental considerations?
- How does one evaluate the technical, financial and political aspects of corporate environmental strategy?
- What effects do environmental concerns have on patterns of international trade, marketing, accounting, financial markets, public relations, product development and process design?

Class Format

The course will meet twelve times during the fall term. These sessions are divided into two sections. The first deals with the key drivers of corporate environmental management: regulation, international standards and policy, investors, consumers, industry trade groups and natural resource scarcity. The second section considers how these drivers alter the basic "rules of the business environment." The final session will be a wrap-up that considers what we have covered and where the issue may be heading in the future. In class, we will utilize a variety of teaching methods: lectures, case studies, video, in-class exercises, and computer simulations.

Assignments

Readings and case preparation *are to be completed before* the class meets. Each session's reading assignments will present a variety of viewpoints. While reading these materials you should continually ask yourself: Do I understand the issue being discussed? Can I frame the issue in the perspective of both the environmental critic and the environmental proponent? How might this affect my decision-making as a manager?

Position Papers (Individual).

For most sessions, students will compose a one-page position paper on a broad topic related to the evening's readings. The topics are listed at the bottom of each week's assignment. These papers are meant to challenge you on some fundamental aspects of the environmental issue. Treat them as such. They need not be pro-environment. They must simply present a sound argument taking a stand on the issue. Think of it as something that you might submit to the *Wall Street Journal* or *New York Times* op/ed page. Students can skip seven (out of twelve) papers for the semester without penalty. I strongly suggest that you look at **all** the paper topics before choosing which, if any, to drop.

Class Participation (Individual).

The environment is a topic on which everyone has an opinion. It is pervasively covered in the news, movies, TV etc. However, we want to keep the discussion grounded in rational debate and avoid a tendency towards extemporaneous philosophizing in class. Excellent comments possess one or more of the following attributes: (1) they offer an original and relevant perspective on the issue, (2) they move the analysis forward by building on previous contributions or by revealing fresh insights, (3) they transcend the "I feel" syndrome by including evidence that is based on more than personal experience — in other words, your thinking should reflect and integrate examples from other contexts.

Environmental Business Analysis (Group).

In this assignment you will develop a business plan for a company that will balance environmental protection and business strategy. You must have come to this program or this course with some idea of a company that could satisfy your desire to protect the environment and make a living. What is it? You will form groups of 4 members, pick an industry and develop a proposal that you might present to a bank or venture capitalist to fund. Your plans must be practical and employ existing or emerging technology. The write-up and presentation should be concise and well reasoned with an appropriate amount of research or background information to support the argument. Students are encouraged to be innovative in their proposals and ideas. But, they should maintain a focus on substance over style in their presentations. Some elements of the proposal might include:

- **Financial Considerations:** What are your financial projections? What are the costs of production? Are there financial benefits from pollution reduction? Will it require retooling or the development of new distribution channels? Such financial projections should be realistic with key data explained and documented.
- **Technical Considerations:** A technical evaluation of the process or technology proposed? Is the proposal, in fact, workable?
- **Social Considerations:** An analysis of the effects of the proposal on the work force. Does it require re-training, work-force increases or reductions, union issues, etc.?
- **Marketing Considerations:** A marketing plan for the product including the target audience for the product and a potential advertising strategy. What is your market? How do you know this will sell?
- **Public Relations Considerations:** An analysis of the potential public relations benefits (and problems) of enacting the new process or developing the product.
- **Environmental Considerations:** What environmental benefits might be created by the proposal?
- **Strategic Considerations:** Who are your competitors? Are you displacing any other products or services already on the market?
- **Other:** A discussion of legal, political or scientific issues which might impact the proposal.

You should plan to cover the environmental and economic aspects of the project per the material presented in the course. Your paper should be properly cited in footnotes at the end of the text.

(Please use the style guide at the end of this syllabus.) Your paper should not be more than 15 pages (not including footnotes and up to two attachments), double spaced, 12 point, times roman font with one inch margins.

Final grade is composed of:

- Position papers (5) 30% Due **IN CLASS** on the assigned day.
- Class participation 30%
- Final project 40% Due **IN CLASS** on the last day.

Course Material

There is a course packet of cases and a required text for this course. This reading should be supplemented by steady reading of contemporary environmental issues as published in *The New York Times*, *Wall Street Journal*, *Business Week* etc.

Required: • Hoffman, A. (2000) *Competitive Environmental Strategy*, (Washington DC: Island Press) (CES in the syllabus)

- Reading Packet

EXHIBIT 7: SYLLABUS, YALE SCHOOL OF MANAGEMENT: ENERGY, ECONOMICS AND THE ENVIRONMENT

F&ES 80106b – E₃ Professor Erin Mansur Spring 2007

Yale School of Forestry and Environmental Studies
Course F&ES 80106b: Energy Economics & the Environment (E₃)
Yale School of Management Course 622

Class hours: Mondays and Wednesdays 10:00 - 11:20 p.m.

Class location: 230 Prospect Street

Course Syllabus

Overview

This economics course examines energy issues that pertain to the environment. The objective is to apply economics to particular issues of energy markets, environmental impacts, investment in renewables, and other energy issues such as transportation and conservation. We will review the economics behind a particular energy issue and then have a discussion about a related article or case study. The class places an emphasis on economics methodology and is intended for students with some economics background. Students are required to have completed the F&ES economics requirement of either the Economics of Natural Resource Management (F&ES 84002a) or the Economics of Pollution (F&ES 84001b).

The course has been structured into four sections. The first section of the course will provide an **overview of energy markets**. We will begin by reviewing key economic concepts. We will review energy fundamentals such as energy sources, energy uses, and key definitions. The class will examine the economics of extracting nonrenewable resources. We will examine energy market regulation questions like: What are natural monopolies and how are they regulated? What is PURPA? How successful has regulation and deregulation been of oil, natural gas, and electricity markets?

Second, we will look at **environmental implications of energy**. Here we will discuss some energy-related externalities and examine their regulation. In particular we will ask: What are the externalities of traditional fuel sources like coal? What are some ways that regional pollution has been regulated? What are the economics of climate change?

Next, we will discuss issues of **investment in renewable energy sources**. We will define the technologies of renewables and consider their private and social costs and benefits. The economics of policies, such as renewable portfolio standards, will be examined. We will ask: What issues matter to investors? Where are renewable portfolio standards being implemented? How effective are portfolio standards likely to be in correcting for externalities?

In the final section, we will examine some **other issues in energy economics**. We will examine issues of transportation economics like: What are the CAFE standards and what is the regulated firms' perspective of these standards? We will also discuss issues of inducing energy conservation like: Have demand side management programs been successful?

For each topic, we will begin with a review of some of the key economics concepts that will be useful in examining the issue at hand. The concept will be applied to a short example using qualitative and quantitative techniques. Then, the class will examine a specific application of that week's topic. The class will discuss an academic article or a case study. Some weeks there will be multiple articles or cases discussed. As described below, students will form groups and at least one group per week will be in charge of leading the discussion.

The class enrollment is limited to 25 students. Students interested in taking the class must register for the class and submit a 1-2 page written statement regarding why they are interested in taking the class.

Office Hours and Teaching Assistants

Office hours:

Mondays 2-4pm in 230 Prospect (Room 202)

Tuesdays 2:30-4:30pm in 55 Hillhouse (Room 301)

or by appointment

Phone: (203) 432-6233

E-mail: Erin.Mansur@yale.edu

Class web site: <http://classesv2.yale.edu> (then MGT 622 / FES 80106)

Teaching assistants: Bailey McCallum and Beth Moore

TA office hours and location:

Bailey McCallum Tuesdays noon-1:00 P.M. in SOM Food for Thought

Beth Moore Thursdays 2:30-4:30 P.M. in Sage Lounge

TA review hours and location: Mondays 8:00-9:30 P.M. in Sage 32

Readings

I expect that this class will require about ten hours of work per week. The textbook is:

Thomas Tietenberg. Environmental and Natural Resource Economics, seventh edition, (Boston, MA: Addison Wesley, 2006).

The textbook (TXT) provides an excellent review of important economics concepts in environmental and natural resource economics. Page numbers are based on the seventh edition though you are welcome to use any edition. Most of the additional readings are either on the class web site (classesv2.yale.edu, CWEB) or are contained in a **reading packet** (READER), which is available at RIS. The additional articles with web sites (WWW) are not in the reader because they are quite long. You may want to skim them on-line. The readings are meant to provide a mix of perspectives. Those interested in reviewing general microeconomic concepts may consider looking at an edition of Pindyck and Rubinfeld, Microeconomics, which is available at the library.

Assignments

Understanding economics requires application. **Four problem sets** will be assigned. The questions will require direct application of concepts discussed in class as well as

asking students to apply these concepts to new problems. Students are encouraged to work in groups of two or three to discuss strategy of problem solving. However, write-ups must be done independently.

There will be eight class discussions, approximately one for each topic covered in the class. Every student will be responsible for emailing a question about the reading. In addition, each student will help lead **one of the discussions** at some point in the semester. The discussion leaders will look over the students' questions and some general ones that I provide, and will prepare written answers to the questions ahead of time. Refer to the syllabus to see the list of topics and readings for the discussions. In addition, there will be one closed note **take-home test** that will require application of the concepts learned in class. The test will be given out April 2 and will be due April 9 in class. The test should take no longer than three hours to complete.

Finally, students will write a 15 to 20 page **research report** on some energy policy. Students can work in small groups of two or three. The reports will be due by May 11. No late papers will be accepted. Follow the citation guideline in <http://www.dartmouth.edu/%7esources/>. In addition, during the last three lectures, students will present a summary of their research.

All assignments are due at the beginning of class on the date shown below. Grades will be determined with the following weights:

- Problem sets 15%
- Discussion and class participation 15%
- Research report presentation 10%
- Research report 30%
- Take home test 30%

DUE DATES

March 7: One-page research paper proposal.

April 9: Test covering Lectures 1-16.

May 11: Research paper (due by 5:00 P.M. in room 202, 230 Prospect St.). Problem set	Topic	Date
1	Pricing non-renewables	January 31
2	Regulation and restructuring	February 12
3	Externalities	February 28
4	Climate change	March 28

EXHIBIT 8: SYLLABUS, COLUMBIA BUSINESS SCHOOL: FINANCE AND SUSTAINABILITY

Finance and Sustainability (B9301-001)

The Opportunity

The primary objective of financial professionals is to provide a valuable service – whether it is investment banking, capital markets, commercial banking, or asset management – that earns a profit for the practitioner. Fortunately, the same financial services that generate a profit can simultaneously be used to create sustainable value for society. In recent years, for-profit financial services have been used to improve the environment, reduce poverty, advance developing countries, improve corporate governance, and develop social entrepreneurs. The core financial skills that are necessary to create a sustainable world are identical to the financial skills required to earn a profit in more traditional financial services, but the application of those skills is a new and challenging opportunity. This course will explore the theories and the practical applications which financial professionals can leverage to simultaneously earn a profit and have a positive impact on society. The specific areas we will examine are: *Capital Markets* (to address environmental issues), *Commercial Banking* (to reduce poverty), *Project Finance* (to reduce poverty and create infrastructure development), and *Investment Management* (to improve corporate governance in public companies and to finance socially responsible entrepreneurs).

Course Objectives

This course is designed for both MBA students planning a career in financial services who want to understand the potential impact of their skills on social issues, and for students planning a career in social enterprise who want to understand the application of financial tools. Specifically, the course objectives are to:

1. Understand the theoretical relationship between finance and sustainability.
2. Analyze which financial tools are effective (as measured by both sustainable impact and the ability to earn a profit), and which are not.
3. Construct a model of finance and sustainability that can be practically applied in a variety of social contexts.

Course Description

This is a finance course, designed around a combination of cases and financial tools to reach our course objectives. The course is composed of 4 modules:

I. *Capital Markets* (two classes). Analysis of the use of capital markets in solving environmental problems.

- (i) Catch shares to prevent overfishing
- (ii) Financial tools to tackle climate change

II. *Commercial Banking* (one class). Innovative use of microfinance by banks with the goal of reducing poverty in the developing world

III. *Project Finance* (one class). Traditional approaches through multilateral development banks and recent advances by commercial banks to address the issue of sustainability when making loans in developing countries.

IV. *Investment Management* (two classes). Innovative approaches to socially responsible investing to create sustainable change.

- (i) Socially responsible investing in public equity markets
- (ii) Venture capital investing in developing countries

The last class will complete a model linking finance and sustainability, building upon the lessons learned in the earlier modules.

Course Methodology

This course will rely predominately on the case method. The chosen cases analyze companies that attempt to simultaneously earn a profit and create sustainable social and/or environmental value, in order to understand why certain business decisions and models have succeeded while others have failed. This course requires active class participation, and students' grades will be heavily dependent on the quality of class discussion. Guest speakers will be invited to some classes and will provide an opportunity for students to meet industry specialists. Students are expected to challenge each other and to challenge the professor and our guests.

Grading:

Class participation: 40%

Case write-ups: 30%

Final examination: 30%

Students are required to prepare for each class by reading and analyzing the assigned cases, utilizing the study guidance questions which are provided in the ANGEL system. Students are expected to add thoughtful analysis to each class discussion. Keep in mind that class participation grades will depend upon the quality, not the quantity, of each student's discussion points. Students are required to prepare 3 case write-ups during the course, each of which is a maximum of one page. The final exam will be a take-home case analysis.

Prerequisites: Students must have completed or be concurrently enrolled in B6302 - Capital markets and investments.

Overlap: For students who have completed B9301-120 Carbon Finance, the Finance & Sustainability course overlaps in only one class (Climate Change). Students who have completed Carbon Finance and enroll in this course will be asked to complete an independent assignment in lieu of attending the class on climate change.

EXHIBIT 9: SYLLABUS, DUKE UNIVERSITY, FUQUA SCHOOL OF BUSINESS: CORPORATE SOCIAL IMPACT MANAGEMENT

MANAGEMENT 491.401: CORPORATE SOCIAL IMPACT MANAGEMENT

Instructor: Paul N. Bloom, Ph.D., Senior Research Scholar, CASE (W216 E),
(paul.bloom@duke.edu), 919-660-7914

Meeting Times and Place: Mon, Thu 3:45pm-6:00pm, Classroom B

Course Description:

Corporations are increasingly being challenged to act in ways that serve the best interests of society. Many companies are aggressively seeking strategies that can allow them to “do well by doing good,” leaving a positive “footprint” on the world and avoiding actions that could harm consumers, employees, investors, competitors, suppliers, and the general public. In this course, we will examine how corporations can become more effective at managing their social impact, improving the relationships they have with all of their stakeholders in the process. Among the corporate social impact challenges that will be addressed in the course will be: How to achieve transparency without revealing proprietary information? How to look good on Wall Street when pursuing social initiatives? How to differentiate a company/brand in the marketplace using social involvement (e.g., cause marketing)? How to persuade consumers to engage in socially-beneficial (e.g., healthier, environmentally-friendly) behaviors? How to avoid misinforming consumers about product benefits and shortcomings? How to serve less-advantaged populations at the “bottom of the pyramid” profitably? How to improve operational efficiency through careful environmental management? How to protect the welfare and rights of workers? How to manage and promote employee volunteering? How to avoid antitrust charges of collusion, monopolization, or exclusionary behavior? Recent debates about issues such as obesity, tobacco and alcohol marketing, the withdrawal of Vioxx, immigration, and gasoline prices will receive special attention. Students should obtain (1) improved knowledge about the issues and debates covered in the course and (2) improved ability to apply relevant theories and frameworks for choosing among strategies for creating more desirable social impact.

Schedule:

Date Topic Assignments, Readings, and Links

Case: Ben & Jerry's: Preserving Mission & Brand within Unilever Mon. (Analysis Due)

3/19: Fundamental Issues and Frameworks

Readings:

- Michael E. Porter and Mark R. Kramer, “Strategy and Society: The Link between Competitive Advantage and Corporate Social Responsibility,” *Harvard Business Review*, December 2006, pp. 78-92.
- Joshua D. Margolis and James P. Walsh, “Misery Loves Company: Rethinking Social Initiatives by Business,” *Administrative Science Quarterly*, 2003, pp. 265- 305.

Commentary Due: Critique a web site or annual report of a company, considering its Transparency, completeness, honesty, etc.

Th. 3/22: Looking Good on Wall Street

Readings:

- Dennis A. Rondinelli, "Globalization of Sustainable Development? Principles and Practices in Transnational Corporations," Working Paper, 2006, Duke University's Sanford Institute of Public Policy.
- Xueming Luo and C.B. Bhattacharya, "Corporate Social Responsibility, Customer Satisfaction, and Market Value," *Journal of Marketing*, October 2006, pp. 1-18.

Mon. Case: Girls on the Run International (Analysis Due)

3/26: Differentiation through Social Involvement

Readings:

- Paul N. Bloom, Steve Hoeffler, Kevin Lane Keller, and Carlos E. Basurto Meza, "How Social-Cause Marketing Affects Consumer Perceptions," *MIT Sloan Management Review*, Winter 2006, pp. 49-55.
- Jill M. Ginsberg and Paul N. Bloom, "Choosing the Right Environmental Marketing Strategy," *MIT Sloan Management Review*, Fall 2004, pp. 79-84.

Commentary Due: Propose a campaign a company could pursue to persuade people to: eat better, exercise more, stop smoking, avoid binge drinking, avoid illegal drugs, drive safely, get a colonoscopy, get a PSA test, get a mammogram, use condoms, wear sunscreen, recycle, etc.

3/29: Encouraging Socially Beneficial Consumer Behavior

Readings:

- Paul N. Bloom, Pattie Yu Hussein, and Lisa R. Szykman, "Benefiting Society and the Bottom Line," *Marketing Management*, Winter 1995, pp. 8-18.
- R. Craig Lefebvre, "Theories and Models in Social Marketing," in P.N. Bloom and G.T. Gundlach, *Handbook of Marketing and Society*, Sage Publ., 2004.

Mon. Case: Monsanto's Genetically-Modified Organisms (Analysis Due)

4/2: Misjudging Concerns about Safety or about Exploiting Asymmetric Information

Readings:

- Melissa Grills Robinson, Paul N. Bloom, and Nicholas H. Lurie, "Combating Obesity in the Courts: Will Lawsuits against McDonald's Work?" *Journal of Public Policy & Marketing*, Fall 2005, pp. 307-310.
- Robert J. MacCoun, "Toward a Psychology of Harm Reduction," *American Psychologist*, November 1998, pp. 1199-1208.

Commentary Due: Critique how a company has responded to charges of marketing unsafe, unhealthy, exploitative, overpriced, or otherwise non-satisfactory products or services (i.e., PR, lobbying, codes, etc.).

4/5: Corporate Responses to Safety and Information Disclosure Problems

Readings:

- Paul N. Bloom, "A Decision Model for Prioritizing and Addressing Consumer Information Problems," *Journal of Public Policy and Marketing*, 1989, pp. 161- 180.
- Daniel Laufer and W. Timothy Coombs "How Should a Company Respond to a Product Harm Crisis? The Role of Corporate Reputation and Consumer-based Cues," *Business Horizons*, September-October 2006, pp.379-385.

Case: Unilever in Brazil Mon. (Analysis Due)

4/9: Serving the Bottom of the Pyramid and Developing Markets

Readings:

- C.K. Prahalad and Stuart L. Hart, "The Fortune at the Bottom of the Pyramid," *Strategy+Business*, 2002, pp. 54-67.
- Aneel Karnani, "Mirage at the Bottom of the Pyramid," Working Paper, 2006, University of Michigan. C.K. Prahalad, "Response to Karnani," Working Paper, 2006, University of Michigan.

Commentary Due: Critique a company's corporate sustainability or environmental management initiative or program.

4/12: Profiting from Sustainability and Environmental Stewardship

Readings:

- Stuart L. Hart and Mark B. Milstein, "Creating Sustainable Value," *Academy of Management Executive*, 2003, pp. 56-67.
- Renata J. Orsato, "Competitive Environmental Strategies: When Does It Pay to be Green?" *California Management Review*, Winter 2006, pp. 127-143.

Mon. Case: Heineken NV: Workplace HIV/AIDS Programs in Africa (Analysis Due)

4/16: Taking Care of Employee And Community Welfare

Readings:

- Ann Harrison and Jason Scorse, "Improving the Conditions of Workers? Minimum Wage Legislation and Anti-Sweatshop Activism," *California Management Review*, Winter 2006, pp. 144-160.
- Anil Hira and Jared Ferrie, "Fair Trade: Three Key Challenges for Reaching the Mainstream," *Journal of Business Ethics*, 2006, pp. 107-118.

Commentary Due: Pick a nonprofit organization that makes ample use of volunteers. Identify the different motivations people have for volunteering for this organization. Propose a campaign that would recruit more volunteers, particularly from among corporate employees.

4/19: Promoting Volunteerism

Readings:

- Peter Hirsch and Peter Horowitz, "The Global Employee Volunteer: A Corporate Program for Giving Back," *Journal of Business Strategy*, 2006, pp. 50-55.
- Lea Winerman, "Helping Others, Helping Ourselves," *Monitor on Psychology*, December 2006.

Mon. Case: Forever: DeBeers and U.S. Antitrust Law (Analysis Due)

4/23: Avoiding Collusion, Monopoly, and Exclusion Charges

Readings:

- Darren Bush and Betsy D. Gelb, "When Marketing Practices Raise Antitrust Concerns, MIT Sloan Management Review, Summer 2005, pp. 73-81.
- Renee J. Fontenot and Michael R. Hyman, "The Antitrust Implications of Relationship Marketing," Journal of Business Research, 2004, pp. 1211-1221.

4/26: Course Wrap-Up

Court Simulation (an option for the Final Exam)

Course Requirements:

1. Five individually-written one-page case analyses must be submitted before the cases are discussed in class. Thus, students can choose one case to skip for a write-up during the term, but they should read all six that are covered. Questions to guide the analyses will be provided later. **(25 points @ 5 points each)**
2. Four two-page individually-written commentaries must be submitted. Thus, students can skip writing one of the five possible commentaries during the term. Students should click on the "sign up here" link for a session to sign up for specific issues, as no more than three people should write on an issue. Suggestions for other issues are welcome and encouraged, but before working on an unlisted issue the student should get it approved by the instructor through a quick email exchange. **(40 points @ 10 points each)**

Final Exam Assignment (20 points):

- Option 1: Write an "op-ed" piece (by yourself) intended for the *Wall Street Journal* or similar outlet that presents a case for why a company or group of companies should do something very different than they have in the past related to social impact management. The topic must be approved in advance by the instructor and submitted during the final exam session.
- Option 2: Work in teams of 2 to 4 to prepare a "court simulation." This simulation would have you present opening arguments, witness testimony, and closing arguments (presented from a pre-written script) for both sides of a legal case (e.g., consumer protection, human rights, environmental protection, antitrust). Jury instructions would also be offered, so that a jury would be clear about what issues it should debate. Non-presenting students will be asked to serve as jurors and decide the "winner," receiving class participation credit for their insights and arguments. The entire trial, including jury deliberations, should be intended for completion in 45 minutes.

Class Participation (15 points)

Grade Determination:

SP = 91 or above
HP = 88-90
P = 81-87
LP = 70-80

EXHIBIT 10: COURSE SYLLABUS, UC BERKELY HAAS SCHOOL OF BUSINESS, ENERGY AND ENVIRONMENTAL MARKETS

BA212–Energy and Environmental Markets

The University of California at Berkeley

Haas School of Business

Professors Severin Borenstein & Catherine Wolfram

Spring 2010

Syllabus

Course Description: Beginning in the 1970s, some of the largest industries in developed and developing economies have transitioned from a heavily regulated business environment to a more market-based paradigm. Managers in many transportation, telecommunications, financial and energy companies, among others, have had to devise strategies to cope with changes in regulatory structure and the evolution of new markets and trading platforms. The energy industries feature a complex mix of regulation and market-driven incentives. Over the last decade, industries that had previously been viewed as staid and conservative have been rocked by deregulation initiatives, the California electricity crises, the Enron scandal, volatile commodity prices and the challenge of reducing greenhouse gas emissions. Drawing on the tools of economics and finance, we study the business and public policy issues that these changes have raised in energy markets, and in the environmental markets to which they are closely tied. Topics include the development and effect of organized spot, futures, and derivative markets in energy commodities and pollution permits; the political economy of deregulation; the environmental impacts and policies related to energy production and use; market power and antitrust in energy and environmental markets; and the transportation and storage of energy commodities. We examine the economic determinants of industry structure and evolution of competition among firms in these industries; investigate successful and unsuccessful strategies for entering new markets and competing in existing markets; and analyze the rationale for and effects of public policies in energy markets and environmental markets.

Class Meeting: MW, 11:10AM-12:30PM, C135 Cheit Hall

Office Information: Borenstein: Haas F649, 642-3689;
Wolfram: Haas F651, 642-2588

Email Contact: borenste@haas.berkeley.edu and wolfram@haas.berkeley.edu.

Graduate Student Reader: Howard Chong, hgchong@berkeley.edu.

Office Hours: Office hours will be posted on the course website.

Course Website: <http://courses.haas.berkeley.edu/Spring2010/BA212/>.
Login and password to be distributed in class.2

Grading: 60% exams, 20% OPEC Game, 20% Electricity Strategy Game (ESG). There will be one midterm exam and a final exam (midterm is 20% of grade, final 40% of grade). The midterm exam grade can be dropped if it is lower than your final exam grade (in which case, 60% of the grade will be based on the final exam grade). The grading for the OPEC game and the ESG will be based on the memo each team will write, performance in the game, and your explanation of that performance during game wrap-ups.

Exams: The midterm exam will be March 10 in class. The final exam will be May 12 from 6pm-9pm in Andersen Auditorium.

Course Prerequisites: Required: BA201A or equivalent (MBA-level Microeconomics).

Readings: There is one required textbook: Viscusi, K., Harrington, J., and Vernon, J., *Economics of Regulation and Antitrust*, 4th edition, Cambridge, MA: MIT Press, 2005 (hereafter VHV). We have also listed several readings from an optional textbook: Keohane, N. and Olmstead, S., *Markets and the Environment*, Washington, DC: Island Press, 2007 (hereafter KO).

All other readings are available in the course reader (labeled [R]), on the course website (labeled [W]). The reader is distributed through study.net. Please complete readings for each meeting *before* the day on which the material will be covered.

COURSE SCHEDULE

I. ENERGY MARKETS OVERVIEWS

Class 1 (January 20): Course Overview and Introduction to Oil & Natural Gas Markets

S. Borenstein, "Cost, Conflict and Climate: U.S. Challenges in the World Oil Market." [W]

S. Borenstein and J. Bushnell, "Retail Policies and Competition in the Gasoline Industry," Center for the Study of Energy Markets Working Paper #144, University of California Energy Institute, May 2005, pp. 1-7. [W]

A. Tussing and B. Tippee, *The Natural Gas Industry: evolution, structure, and economics*, Tulsa, OK: Pennwell. 1995, pp. 1-23. [R]

D. Rotman, "Natural Gas Changes the Energy Map," *MIT Technology Review*, November 2009. [R]3

Class 2 (January 25): Overview of Electricity & Environmental Markets

J. Griffin and S. Puller, "A Primer on Electricity and the Economics of Deregulation," in *Electricity Deregulation: Choices and Challenges*, Griffin and Puller eds., Chicago: University of Chicago Press, 2005, pp. 1-11. [R]

Resources for the Future, "Navigating Energy Choices in the 21st Century," *Resources*, Winter 2005. [W]

Jefferies & Company, Inc. "Clean Technology Primer," Introduction. [R]
KO, Ch. 1, "Introduction"

Class 3 (January 27): A Refresher on Pricing, Market Power & Scarcity

S. Borenstein, "Understanding Competitive Pricing and Market Power in Wholesale Electricity Markets," *Electricity Journal*, July 2000, pp. 49-57. [R] S. Borenstein, "The Trouble with Electricity Markets," *Journal of Economic Perspectives*, 2002, pp. 191-203. [R]

S. Borenstein, J. Bushnell and M. Lewis, "Market Power in California's Gasoline Market," Center for the Study of Energy Markets Working Paper #132, University of California Energy Institute, May 2004, pp. 1-11. [W] Reliant transcript. [W]

S. Oster, P. Barta and R. Gold, "As Oil Price Sets New High, Stress Hits Developing Nations," *Wall Street Journal*, 11/1/07. [R]

J. Mouawad, "Oil Refiners See Profits Sink as Consumption Falls," *New York Times*, 5/14/08. [R] KO, Ch. 4, "The Efficiency of Markets"

II. NATURAL RESOURCE MARKETS

Class 4 (February 1): Pricing and Extraction of Natural Resources; Introduction to the OPEC Game

KO, Ch. 6, "Managing Stocks: Natural Resources as Capital Assets"4 OPEC Game Instructions. [W]

Class 5 (February 3): OPEC Meeting

III. REGULATION AND DEREGULATION OF ENERGY MARKETS

Class 6 (February 8): Economic Regulation of Natural Monopoly Markets

VHV, Ch. 11, "Theory of Natural Monopoly," pp. 401-423.

VHV, Ch. 12, "Natural Monopoly Regulation," pp. 429-436.

Class 7 (February 10): Incentive Regulation and Case Study of Diablo Canyon Nuclear Plant

VHV, Ch. 12, "Natural Monopoly Regulation," pp. 436-447.

H. Demoro, "PUC Staff Says PG&E Should Pay for Diablo," *San Francisco Chronicle*, 5/15/87. [R]

E. Herscher and D. Dietz, "Agreement Reached On Diablo Canyon Cost," *San Francisco Chronicle*, 6/28/88. [R]

Class 8 (February 17): Regulation and Deregulation of Non-Monopoly Markets

VHV, Ch 18, "Economic Regulation of Energy: Crude Oil and Natural Gas", pp. 641-646, 671-685

S. Borenstein and J. Bushnell, "Electricity Restructuring: Deregulation or Reregulation," *Regulation*, no. 2, 2000, pp. 46-52. [W]

D. C. Johnston, "Competitive Era Fails to Shrink Electric Bills," *New York Times* 10/15/2006. [R]

IV. LESS REGULATED ENERGY MARKETS

Class 9 (February 22): Deregulation and Competition Policy

VHV, Ch. 7, "Mergers," pp. 203-214.5 J. Bushnell, "Looking for Trouble: Competition Policy in the U.S. Electricity Industry," in *Electricity Deregulation: Choices and Challenges*, Griffin and Puller eds., Chicago: University of Chicago Press, 2005, pp. 256-271. [R]

J. Fialka, "Lawmakers Struggle to Define Gasoline Price 'Gouging'," *Wall Street Journal*, 11/9/05. [R]

Class 10 (February 24): Collusion and OPEC Game Debriefing

VHV, Ch. 5, "Oligopoly, Collusion and Antitrust," pp. 116-147

Class 11 (March 1): The Role of Storage

J. Ball, "Unbridled Energy: Predicting Volatile Wind, Sun," *Wall Street Journal*, 10/2/09. [R]

C. Rangel, "Hawaii Harnesses the Wind," *Wall Street Journal*, 12/23/09. [R]

Class 12 (March 3): Commodity and Futures Exchanges

U.S. Department of Energy, Energy Information Administration, "Derivatives and Risk Management in the Petroleum, Natural Gas, and Electricity Industries," October 2002, Section 2, pp. 3-14. [W]

C. Cummins, "Natural-Gas Prices Thrown in Doubt," *Wall Street Journal*, 11/12/02. [R]

G. Anders, "Combustible Mix: As Oil Prices Swing, Gas-Station Owners Try Futures Market," *Wall Street Journal*, 6/21/05. [R]

P. Krugman, "Fuels on the Hill," *New York Times*, 6/27/08. [R]

Class 13 (March 8): Auction Design and Implementation & Intro to Electricity Strategy Game

"Going, going, gone! A Survey of Auction Types," Agorics, Inc. [W]

"Instructions for the Electricity Strategy Game". [W]

Class 14 (March 10): MIDTERM EXAM

Class 15 (March 15): ESG Divestiture Auction

"ESG Generation Portfolios" [W]

Class 16 (March 17 – Time TBD): Guest Speaker(s) – Panel on Business Models

SPRING BREAK

Class 17 (March 29): Vertical Structures and Business Models

VHV, Ch. 8, "Vertical Mergers and Restrictions."

S. Borenstein and J. Bushnell, "Retail Policies and Competition in the Gasoline Industry," Center for the Study of Energy Markets Working Paper #144, University of California Energy Institute, May 2005, pp.8-end. [W]

L. Meckler, "Pump Games: Fill Up With Ethanol? One Obstacle Is Big Oil," *Wall Street Journal*, 4/2/07. [R]

R. Gibson, "Gas Stations Fume Over Refiners' Sales", *Wall Street Journal*, 12/15/09. [R]

Class 18 (March 31): Energy Transportation and Transmission

D.C. Johnston, "Grid Limitations Increase Prices for Electricity," *New York Times*, 12/13/06. [R]

M. L. Wald, "Making Renewables Reliable," *New York Times*, 11/19/09. [R]

V. ENERGY, ENVIRONMENT AND "ENERGY SECURITY"

Class 19 (April 5): Energy Externalities

VHV, CH. 21, "Environmental Regulation" K. Seelye, "Utility Buys Town It Choked, Lock, Stock and Blue Plume," *New York Times* 5/13/02. [R] 7

I. Parry, "The Uneasy Case for Higher Gasoline Taxes," *Milken Review*, 4th Quarter 2005. [W]

M. Toman, "International Oil Security: Problems and Policies," Resources for the Future Issue Brief No. 02-04, January 2002. [W]

KO, Ch. 5, "Market Failures in the Environmental Realm"

Class 20 (April 7): Environmental Regulation: Prices vs. Quantities

Parry and B. Pizer, "Emissions Trading versus CO2 Taxes versus Standards," Chapter 5 of *Assessing U.S. Climate Policy Options*, 2007, Resources For the Future: Washington D.C., p. 80-86. [R]

KO, Ch. 8, "Principles of Market-Based Environmental Policy"

Class 21 (April 12): Tradable Pollution Permits - from SO2 to CO2 & Carbon in the ESG

J. Kanter and J. Mouawad, "Money and Lobbyists Hurt European Efforts to Curb Gases," *New York Times*, 12/11/08. [R]

A.D. Ellerman and P. Joskow, "The European Union's Emissions Trading System in Perspective," Pew Center on Global Climate Change. [W]
KO, Ch. 10, "Market-Based Instruments in Practice"

Class 22 (April 14): Energy Efficiency and Environmental Standards

K. Gillingham, R. Newell, and K. Palmer, "Energy Efficiency Economics and Policies," *Annual Review of Resource Economics*, 2009, Vol. 1, pp. 597-619. [R]
L. Meckler and K. Lundegaard, "New Fuel-Economy Rules Help the Biggest Truck Makers," *Wall Street Journal*, 8/24/05. [R]
J. Fialka and K. Kranhold, "Lights Out for Old Bulbs? – U.S. Plans a Switch to All Fluorescents for Efficiency's Sake," *Wall Street Journal*, 9/13/07. [R]

Class 23 (April 19): Alternative Energy Sources and Fuel Diversity

National Research Council, *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*, Chapter 6. [R]8

Class 24 (April 21): Innovation Policies and Incentives

R. Buckman and J. Carlton, "Seeking the Green in Clean – Tech-Focused Venture Capitalists Plunge Into Risky Field of Alternative Energy," *Wall Street Journal*, 12/3/07. [R]
L. Abboud, "The Silicon Shake-Up – Solar Companies That Dealt With Shortage Early Prosper," *Wall Street Journal*, 9/21/07. [R]
J. Gertner, "Capitalism to the Rescue," *New York Times*, 10/05/08. [R]

Class 25 (April 26): Hybrid Environmental Regulations

J. Bushnell, C. Peterman and C. Wolfram, "Local Solutions to Global Problems: Climate Change Policies and Regulatory Jurisdiction," *Review of Environmental Economics and Policy*, 2008, pp. 175-193. [W]

Class 26 (April 28): Cost Benefit Analysis

S. Borenstein, "The Market Value and Cost of Solar Photovoltaic Electricity Production," Center for the Study of Energy Markets Working Paper #176, University of California Energy Institute, January 2008. [W]

Class 27 (May 3): Global Climate Change

R. Mendelsohn, "Is the *Stern Review* an Economic Analysis?" *Review of Environmental Economics and Policy*, 2008, pp. 45-60. [W]
S. Dietz and N. Stern, "Why Economic Analysis Supports Strong Action on Climate Change: A Response to the Stern Review's Critics" *Review of Environmental Economics and Policy*, 2008, pp. 94-113. [W]

Class 28 (May 5): Electricity Strategy Game Wrap-up

Class 29 (May 10): Final Review

EXAM AND ASSIGNMENT SCHEDULE

Exams

March 10 Midterm Exam
May 12 Final Exam, 6-9:30PM

OPEC Game

February 1 Introduction to the OPEC Game in class
February 3 First OPEC Meeting, in class
February 4 Initial production quantities due by 10PM
February 5 First day of production in OPEC Game
February 7 Production quantities for second day due by 10PM
February 8 Second day of production in OPEC Game
S-Th, 10PM Change in production quantity due to take effect following
weekday (except Feb. 14th)
February 15 Market closed (President's Day)
February 19 Last day of production in OPEC Game
February 24 OPEC Game Debriefing in class; OPEC Game Strategy Memo
due by 11AM

Electricity Strategy Game

March 8 Introduction to the Electricity Strategy Game in class
March 15 First ESG Divestiture Auction, in class
April 1 Round 1 ESG strategies due by 10PM
April 5 Round 2 ESG strategies due by 10PM
April 8 Round 3 ESG strategies due by 10PM
April 12 Round 4 ESG strategies due by 10PM
April 15 Sealed Bids for Second Phase ESG
Divestiture Auction due by 10PM
April 19 Round 5 ESG strategies due by 10PM
April 22 Round 6 ESG strategies due by 10PM
April 26 Round 7 ESG strategies due by 10PM
April 29 Round 8 ESG strategies due by 10PM
May 3 Emissions Credit Verification by 10PM
May 4 Final Income Statements Distributed
May 5 ESG Debriefing in class; ESG Strategy Memo Due by 11AM

EXHIBIT 11: COURSE SYLLABUS, NEW YORK UNIVERSITY, STERN SCHOOL OF BUSINESS, “LEADING SUSTAINABLE ENTERPRISES”

**New York University
Leonard N. Stern School of Business
Department of Management & Organizations**

LEADING SUSTAINABLE ENTERPRISES: B65.3359 Professors: Frances J. Milliken Phone: (212) 998-0227 Dept. Fax: (212) 995-4235 E-mail: fmillike@stern.nyu.edu	<i>Class meetings:</i> M 6:00-9:00 p.m. <i>Office hours:</i> By appt. <i>Office:</i> 7-60 KMC
se Blackboard site: http://sternclasses.nyu.edu All lecture slides will be posted, as will additional course materials. We will also frequently use it for communication. Make sure you check the site often and check that your email address is correct.	

Course Description and Objectives

This course is about creating, leading, and managing business enterprises that seek to contribute to facilitating sustainable development. Sustainable development has been defined in many different ways. The World Commission on Environment and Development, for example, defines sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” In his book, *The Ecology of Commerce*, Paul Hawken (1993) defines sustainability as “an economic state where the demands placed upon the environment by people and commerce can be met without reducing the capacity of the environment to provide for future generations.”

This course focuses attention on how to create and lead organizations that seek to contribute to sustainable development. In particular, we will look at issues regarding potential roles for business in contributing to sustainability, measuring the effectiveness of an organization in terms of sustainability indices, examples of firms that are creating and executing strategies for competing in a sustainable manner, managing stakeholders, innovating forms of business enterprises (e.g., micro-finance), methods for fostering innovation and change inside the organization that could contribute to sustainability goals as well as the role of leadership.

This course has several basic objectives. The first is to provide you with concepts, frameworks, and ideas for thinking about issues related to sustainable development. The second objective of the course is to expose you to leaders in the area of sustainable business and their ideas as well as to companies that are leading the way. The third is to foster thinking and discussion about the topic and if (or how) you might want to contribute. It is our hope that through exposure to examples and to key ideas, concepts, and theories that you will have the tools to become a leader in the world of sustainable enterprises, should this be the way you choose to direct your career. Learning will be interactive, and each class session will require your participation.

Course Materials

1. Required Reading (at the NYU Professional Bookstore):
 - Esty, D. and Winston, A. 2006. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. New Haven: Yale University Press.
 - May be other required books as well.
2. Recommended Books (at the NYU Professional Bookstore):
 - Hawken, P. 1994. *The Ecology of Commerce*. New York: Collins
 - Sachs, J. 2005. *The End of Poverty*. New York: Penguin Press.
3. Course Website – a lot of the readings will be posted to the Course website.
4. Required Harvard Cases and readings (TBD).
5. Handouts

Course Requirements

Grading:

Class Preparation (Homework, Participation and Reaction Papers) 50%

Team Final Project 50%

Class Preparation: Participation, Homework and “Reaction Papers” - 50%.

This is a course that will use learning methods that require active student involvement.

In order to be an active participant, it will be necessary to read the articles and background text material as well as the case/exercise material assigned for that day. In many of the class sessions, there will be written homework assignments due (generally 2 double-spaced pages).

The purpose of these written homework assignments is to help you practice using the ideas and frameworks introduced in the course and to challenge you to think through your analyses well enough to write them down. The homework will be challenging. You will need to hand in at least 5 of the *written homework assignments* over the course of the semester, two of which are required assignments. For classes in which you are electing to not hand in a written homework or for which there is no formal written assignment, we will still expect you to be prepared to participate in a class discussion or activity based on the reading and the material we have asked you to prepare. You will often not be able to follow the discussion if you have not read the preparation materials beforehand. Thus, attending class but not participating in class will not be sufficient to earn you a good class participation grade. Absences, lateness, and a lack of preparation will all have a negative impact on your class participation grade. If you have difficulty with spoken English, or some other issue that will interfere with your ability to participate, please be sure to talk to us about it early in the semester so that we can arrive at common expectations for your performance. You may also submit up to 2 optional Reaction Papers to supplement your in-class participation. These memos can address your reactions to any class session you choose although it is preferable to hand in these reaction papers within a week of the class session to which you are reacting. These reaction papers should be no longer than 2 double-spaced pages. Your total class preparation grade will be based on the quality of the homework assignments and reaction papers (if any) that you hand in as well as the quality and thoughtfulness of your contributions to the class discussions.

Final Team Project –50% of the final grade.

Each student will be asked to work with a team of 2-3 other students in the class on a final group project, which will involve both a presentation and written component. We are open to possibilities other than the two we suggest below but please make sure to check with us before you get started.

Option 1:

The team project could involve selecting an organization to analyze using the tools that we have covered in the class. The precise nature of this project will be determined but below are some preliminary thoughts.

Pick a company:

- What are the key threats and opportunities the company faces in the short and long-term future regarding the sustainability of its operations?
- Evaluate the company on its sustainability performance – justify the evaluation using known indices of sustainability.
- How does it do in relation to other firms in its industry?
- Make a case as to whether you would be able to recommend the company as a “buy” if you were responsible for managing a sustainable enterprise portfolio.
- If you were a management consultant, what changes would you recommend to the company’s operations to enhance its sustainability performance? Why? Lay out an action plan for how to make those changes.

Option 2:

The team project could involve creating an action plan to change an existing organization to become more “green” in its actions or conceiving of a new organization to solve some environmental problem that has not yet been effectively addressed or where you see the opportunity for more work.

Course Outline

Monday February 9th

Introduction to the Course

Read:

Hawken, chapters 1 and 2

Sachs, foreward and chapter 1

Porter and Kramer, Strategy and Society: The link between competitive advantage and Corporate Social Responsibility, *Harvard Business Review* (12/06)

Supercapitalism by Robert Reich (chapter 5 – Politics Diverted)

GS environmental policy framework (look under “external links” under Goldman Sachs on the course website)

In-class:

Students should be prepared to discuss/debate environmental CSR programs in general and at GS in particular. As a shareholder, are you in favor or opposed to such programs?

As an environmentalist, in favor or opposed?

Class Content:

Faculty/student introductions

Overview of course by FM

Discussion

Monday February 23rd

The Issues

Possible Guest Speaker:

Read:

TBD, Chapters 1-5 in Esty and Winston book;

scan the rest of the book. ??

Required Homework: Prepare 2-page memo:

Your company’s CEO is about to meet with Esty because he may be hired for a consulting assignment. The CEO has asked you to prepare a brief memo (no more than two pages) which very briefly summarizes the book’s arguments, points out any flaws, and provides four good questions for the CEO to ask Esty.

Monday March 2nd

TBD.

Maybe, Brian Dumaine on alternative energy sources. And material on USCAP.

Monday March 9th

Analyzing the issues and measuring performance

Likely Guest Speaker:

B-Lab (either March 2nd or March 9th)

Review:

Esty and Winston, chapters 2 and 7

Read:

Esty and Winston, Appendix 2

Visit: Innovest web-site

Sustainable Asset Management

International Finance Corporation's Performance

Standards in Social and Environmental

Sustainability (available at: <http://www.ifc.org/ifcext/enviro.nsf/Content/EnvSocStandards>

Also, article on social footprint idea

at:<http://www.socialfunds.com/news/article.cgi/article1968.html>

Case:

Herman Miller

Homework:

2-page memo: Pick one of the questions from the case questions to tackle in a two-page memo.

In-class:

Exercise

Monday March 23rd

Creating a Sustainability Strategy: The case of Wal-Mart

Possible Guest Speaker:

Marc Major, BluSkye Consultant, consultants to Wal-Mart as well as to other Fortune 500 on their sustainability initiatives. (see link on course website)

Review:

Esty and Winston, chapters 4 and 5; Porter and Kramer article.

Read:

Lash, J. and Wellington, F. 2007. Competitive Advantage on a Warming Planet. *Harvard Business Review*.

Case:

Walmart's Sustainability Strategy (on Harvard website in electronic course library)

Homework:

Prepare 2 page memo answering case questions (everyone should be prepared with two questions for Marc Major)

In-class:

Exercise

Monday March 30th

TXU and the question of coal

This may change

Possible Guest Speaker:

Mark Brownstein of the Environmental Defense Fund

A) Class discussion of the LBO of TXU

B) Class discussion on future of coal generated electricity in the U.S.

Readings:

Articles are in a file called "The Issue of Coal" on the course website. Read all.

Homework:

Prepare a two page memo on one of the following topics:

A) Assume you are an environmental leader.

Evaluate the TXU LBO transaction; or

b) Assume you were the CEO of a major bank.

What will your policy on coal-based power plants in the U.S. be?

Monday April 6th

**TBD – maybe Sustainable Entrepreneurship
and Intrapreneurship**

This may change.

Visit:

Joinred.com (<http://www.joinred.com/red>)

Read:

New York Times article on Red in the file called "Red" on the course website.

Martin, R. L. and Osberg, S. 2007.

Social Entrepreneurship: The case for definition. *Stanford Social Innovation Review*, 29-39. (in the file called Social Entrepreneurship on the course website.

Homework:

Prepare a two-page write-up on either of the following two topics:

a) Is Red an example of social entrepreneurship according to Martin and Osberg's criteria? Why or why not? Is it important to make the distinctions that Martin and Osberg make? Why or why not?

b) Evaluate the arguments for and against Red. Who are the stakeholders? How do they benefit, if at all? If you worked for a retail clothing store and were approached by Red, would you recommend to your CEO that you join? Why or why not?

Part 2:**Class Discussion:**

Class discussion of the value of endeavors like Red and the role of business in them.

Also, will be time to meet with groups on group presentations/projects

Monday April 13th

Enacting Sustainability Strategies

TBD

Case: UBS and Climate Change

Homework:

Case Questions (TBA)

Monday April 20th

**Reducing Poverty through Micro-Finance
and Peace Initiatives**

Read:

Sachs, Jeffrey. *The End of Poverty*, Introduction and chapters 1, 2, 9, and 14

Bruck, C. 2006. Millions for Millions. *The New Yorker*, October 30, 2006, page 62. (in file called Alleviating poverty)

Anderson, J. and Markides, C. 2007. Strategic Innovation at the Base of the Pyramid. *MIT Sloan Management Review*, 83-88. (in the same file as above)

Case:

Unilever in India (Harvard electronic packet)

Homework (option 1):

Write a two-page memo comparing and contrasting Omidyar's approach to micro-finance with Yunnus' view. Is it possible to reconcile these two positions?

Homework (option 2):

Answer case questions on Unilever (see back page of syllabus)

Read:

Wade-Benzoni, K. 2007 Giving future generations a voice. (handout)

Anderson, *Mid-Course Correction*, chapter 1, chapter 6 (pages 139-144) (handout)

The "Tipping Point" (Harvard Business Review article)

Monday April 27th

TBD

Monday May 4th

Final Project Presentations

Monday May 11th

Final Project Presentations

Case Questions

Homework: Herman Miller case

1. What are some of the key aspects of the environmental issues facing Herman Miller? (Reference Esty and Winston, pgs. 60-63)
2. How would you score Herman Miller in terms of its environmental responsiveness? Use sources and scales to support your conclusion. Be sure to cite your sources.
3. Make the case as to what you think Herman Miller should do and why. Cite arguments from the readings we have done so far for your position.

Homework: Walmart Case

1. In what ways are they a model for other companies? In what ways, not?
2. What aspects of their methods could be applied by other companies successfully? What are the boundary conditions for the application of these methods? Did anything surprise you about their methods?
3. How is Wal-mart doing now with each of these three initiatives (fish, electronics, and cotton)? How much progress have they made since the case was written?
4. Write out two questions that you might want to ask the BluSkye consultant who will be coming to class to talk about the sustainability initiatives at Walmart.

Homework: UBS and Climate Change

TBA

Homework: Unilever in India

1. What are the key ways that the Shakti system of selling is different from HLL's usual system of sales and distribution?
2. Explain how the business objectives align with the societal objectives in this case.
3. What are the risks?
4. Is this sustainable?

Reading:

Scan: “Assessing U.S. Climate Policy Options” (can be accessed on RFF website):
<http://www.rff.org/>

Read: Executive summary and overview

Scan: USCAP website

Required Homework:

Prepare to discuss and debate USCAP

Prepare two page memo: Assume you are the Chief Sustainability Officer at US Steel, Ford Motor, or JP Morgan Chase. Prepare a brief memo to your CEO on whether or not your corporation should join USCAP

EXHIBIT 12: COURSE SYLLABUS, CORNELL UNIVERSITY JOHNSON SCHOOL OF MANAGEMENT, SEMINAR IN SUSTAINABLE DEVELOPMENT

SEMINAR IN SUSTAINABLE DEVELOPMENT NBA 573/AEM 694

Instructors: Alan McAdams, JGSM
Tim Mount, AEM

Time: Friday 1:30 - 3:00
B01 Sage Hall

Credit: 1 Cr: S/U
2 or 3 Crs: Letter

CREDIT (Detail)

The Seminar on Sustainable Development is offered for variable course credit and is open to both undergraduate and graduate students.

Expectations

Attendance: All twelve seminars (videotapes/DVDs will be available for make-ups)

Course Numbers: NBA 573 (JGSM and other Grad Students); AEM 694 for AME grads & undergrads; plus other "Special Project" course numbers as agreed between the student and faculty member.

Assignment of Credit

- 1 hour: 100% attendance plus a minimum of 5 "write-ups*" or an approved 20-page paper or a significant design project**
- 2 hours: 100% attendance plus an in-depth, extended-page paper or a significant design project
- 3 hours: 100% attendance plus a major, extended-page paper or a major design project

* The write-up to be 500-750 words, addressing the "take away" message from the seminar, or an in-depth analysis of the respective seminar's principal thesis.

** Design project to be a presentation of an original idea or concept for devising a plan to execute a special function (e.g. a system for recycling paper on campus, a light rail system for Ithaca, a state-wide system for environmental accounting, etc.).

Example papers from previous years' seminars include community forestry in developing countries; organizational improvement strategies for businesses; residential energy efficiency; sustainable tourism; sustainable agricultural development; brownfields redevelopment; sustainable communities; genetically modified food and public opinion; sustainable development in Africa; food distribution systems in Ithaca and World; growing Agaves for sustainable development; constructing a solar water collector and southwest park development in Ithaca. Other types of projects are also possible. In 1999, one student wrote a play for the course, while another group prepared an analysis of Ecovillage at Ithaca's "ecological footprint." Other students have developed video tapes and web sites.

Date	Speaker(s)	Topic
1-26	¹ Ravi Kanbur, T. H. Lee Professor of World Affairs, AEM Cornell	"How and Why the Measurement of Human Welfare Has Evolved in International Development Organizations: The Significance for Sustainability."
2-2	² McAdams & Mount	Course Introduction and Options, Including Classic Definitions of "Sustainability"
2-9	Juan Ayza, Thomas Vietorisz: Former Senior UN Consultants to Cuba	Sustainability as a Defensive Response: "How the Soviet Union's Collapse Led to Cuba's Transformation to Sustainable Agriculture;" A Demonstration of the Significance of "Indicators of Human Welfare".
2-16	Mount	Global Environmental Considerations: "Why Don't Sensible Things Happen? Missing Markets, Myopic Markets." The Stern Report, the WSJ Reply and Stern's Reply
2-23	McAdams	A Complete Economic Makeover to Sustainability: "How Singapore applied 'Quantum Mechanics' to become the first 'Asian Tiger' accepted by the World Bank as a fully developed nation"
3-2	Norm Scott : Professor, BEE, Cornell	Priming the Pump for Sustainable Energy "Real commitment in Europe: An economically efficient and effective way to go?"
3-9	NYS Expert	"Contrast Track Records of: <ul style="list-style-type: none"> • NY State Energy R&D Agency • NY State Power Authority To those of Europeans. Is There a Better Way?"
	Spring Break	Enjoy the Break!
3-30	Speaker from Florida Power and Light (FP&L). European speaker through Jac Geurts	"Tasks in Creating and Managing Wind Farms in the US." GE Versus European Generators
4-8	Speaker from IEEE-Spectrum	De-mystifying Ethanol
4-15	Speaker from IEEE-Spectrum	Subsidies, Risks and Rewards of Nuclear Energy
4-24	Iskol University Lecture Open to the Public 4 PM, Kennedy Auditorium	Invited: Q&A Discussion with Dr. Jane Lubchenco, (Auditorium, 233 Plant Science; 9-10 AM)

¹ For professor Kanbur to share his experience on this matter with us and before he leaves for his sabbatical overseas, we have scheduled him as the first speaker of the seminar.

² The course introduction and overview have been moved to the second seminar session.

EXHIBIT 13: COURSE SYLLABUS, MENDOZA COLLEGE OF BUSINESS, THE UN GLOBAL COMPACT AND THE FUTURE OF THE ECONOMY

Oliver F. Williams, C.S.C.
March-April 2009
Phone: 1-5761/6072
E-mail: Oliver.F.Williams.80@nd.edu

THE UN GLOBAL COMPACT AND THE FUTURE OF THE ECONOMY MBET 70501-01

In today's interconnected global economy, there is a growing realization that we must restore public trust in business. Integrating environmental, social and governance issues into corporate management is the overriding purpose of the United Nations Global Compact and its ten principles. This is the heart of the corporate sustainability movement and an effective way to restore trust in business.

Take one look at the smog that hangs over the Olympic host city Beijing and it becomes abundantly clear—globalisation and economic expansion come at a price. Resource depletion, worker exploitation, pollution and corruption—this is the dark underbelly of globalization that has raised alarm bells around the world. Thankfully, more and more individuals and organizations are waking up to the social, environmental and ethical costs of a global marketplace and are making a sound business case for a new era of moral capitalism. Leading the way in this regard is the United Nations with its groundbreaking Global Compact initiative. Launched in 2000, the Global Compact now has more than 5600 participants—including 5000 businesses in 120 countries around the world—making it the world's largest voluntary corporate social responsibility project.

OBJECTIVES

1. To introduce the student to the United National Global Compact and why its focus on human rights, labor rights, environmental issues and corruption is so attractive to the many stakeholders of business.
2. To develop the ability to think clearly about how one integrates environmental, social and governance issues into corporate management.
3. To develop a sensitivity to the moral and ethical values that enable companies to restore public trust in business.
4. To understand how a number of companies are implementing the principles of the Global Compact by examining case studies.
5. To examine and understand the changing role of business in society.

BOOKS

The course required one book available at the N.D. bookstore:
Peace Through Commerce: Responsible Corporate Citizenship and the Ideals of the United Nations Global Compact. (PTC).

All other course materials are available on CONCOURSE. Should you have trouble accessing CONCOURSE, contact my assistant, Deb Coch (coch.1@nd.edu).

REQUIREMENTS

There will be two short papers and a research paper. The final grade will be computed on the basis of class participation (20%), the two short papers (40%) and the research paper (40%).

Class Participation

Besides attendance, effective class participation includes: listening skills; analysis ability; questions and comments; and, last but not least, a willingness to risk, testing new ideas.

Two Short Papers

1. Each student group will select two companies from the list below of Communication on Progress Reports. Each class session will have several presentations, about ten minutes long, showing how the company selected is addressing the ten principles of the Global Compact. Each group will make one presentation on a company over the course of the module and submit a two-page paper with each presentation.
2. Each group will select one session where they will present the answers to the questions listed for the session. The group will submit a two-page paper with their answers.

Research Paper

There is one individual written assignment which should be 5-7 pages in length, typed and double-spaced (40%).

Read the article "Is the Compact Raising Corporate Responsibility Standards?" Based on our class readings and your reflection, formulate your answer to the article. Incorporate key readings from the course but do not neglect to include some discussion of the readings from session 3 ("Doing Good..." and Building a new Institutional...") The article is available on Concourse (Due in class on Tuesday, April 28).

COMMUNICATIONS ON PROGRESS REPORTS

Each student group will select companies from this list for the ten-minute presentations. Come to class on Thursday, March 19 with the members of your group selected and the group's first, second, and third choice of a company. Also, each group should submit its first and second choice for the session when they will answer the questions.

Note that there is a direct link to each company's Communication on Progress Report (sometimes called a corporate social responsibility report, a sustainability report, corporate citizenship report, etc.). The direct links can be accessed by going to *Concourse* and selecting "Notable Communications on Progress."

COURSE OUTLINE

Session 1: Tuesday, March 17 — OVERVIEW OF THE GLOBAL COMPACT

- Reading:
1. *PTC*, pp. ix-xx; pp. 1-9.
 2. *Concourse*, PowerPoint presentation on Global Compact.

Session 2: Thursday, March 19— THE PURPOSE OF THE CORPORATION AND THE ROLE OF BUSINESS IN SOCIETY

- Reading:
1. *PTC*, pp. 24-43 (PowerPoint on *Concourse*)
 2. *PTC*, pp. 55-72.
- Question:
3. Smurthwaite (p. 26) quotes Pope John Paul II's encyclical letter *Centesimus Annus*, para. 35: "...in fact, the purpose of a business firm is not simply to make a profit, but is to be found in its very existence as a *community of persons* who in various ways are endeavoring to satisfy the basic needs, and who form a particular group at the service of the whole society." Discuss other authors in this essay who agree with this position. Disagree. What is your position?
 4. What is your judgment on "a *good trust* relationship" between a business and an NGO?

Session 3: Tuesday, March 24 — THE SUSTAINABILITY CHALLENGE: THE CONTEXT FOR THE GLOBAL COMPACT

- Reading:
1. "Doing Good: Business and the Sustainability Challenge," Economic Intelligence Unit of the *Economist*, *Concourse*.
 2. "Building a New Institutional Infrastructure for Corporate Responsibility," (Sandra Waddock), *Concourse*.
- Question:
3. What is sustainability?
 4. Discuss: "The social and environmental issues facing companies today are not going away—and are likely to involve a redefining of relations between business and society. This often involves fundamental political and even moral questions." ("Doing Good," p. 6)
 5. Discuss: "Sustainability is not, however, a checklist of activities. It is a change in attitude that aligns financial, social and environmental goals" ("Doing Good," p. 42)
 6. Discuss: "Whatever the future, it is clear that the corporate responsibility infrastructure that has emerged to date has put enough pressure on multinational companies that many are responding" ("Building a New...", p. 107)

Session 4: Thursday, March 26 —PRINCIPLES ONE AND TWO: HUMAN RIGHTS

- Reading:
1. Human Rights, pp. 1-2, *Concourse*
 2. Principle One, pp. 1-2, *Concourse*
 3. Principle Two, pp. 1-3, *Concourse*
 4. Six Questions for John Ruggie: Where is the Business and Human Rights Agenda Going? *Concourse*, pp. 1-4.
 5. *PTC*, pp. 349-365. (PowerPoint, *Concourse*)
- Questions:
6. Discuss the UN Millennium Development Goals, the Millennium Village Project, and Why GE would become involved in these projects.

7. Do motives for becoming involved matter?

Session 5: Tuesday, March 31—PRINCIPLES THREE TO SIX: LABOR

- Reading:
1. Labor, pp. 1-2, *Concourse*
 2. Principle Three, pp. 1-2, *Concourse*
 3. Principle Four, pp. 1-3, *Concourse*
 4. Principle Five, pp. 1-3, *Concourse*
 5. Principle Six, pp. 1-3, *Concourse*
 6. *PTC*, pp. 107-115.
- Questions:
7. Explain Broad-Based Black Economic Empowerment, its purpose its justification (Reading #6 above).
 8. Discuss some of the programs that the company you are presenting is engaged in with regard to Principles 3 to 6 (From the Communicating on Progress Report).

Session 6: Thursday, April 2 — PRINCIPLES SEVEN, EIGHT AND NINE: THE ENVIRONMENT

- Reading:
1. The Environment, pp. 1-3, *Concourse*
 2. Principle Seven, pp. 1-3, *Concourse*
 3. Principles Eight, pp. 1-3, *Concourse*
 4. Principle Nine, pp. 1-3, *Concourse*
 5. *PTC*, pp. 307-324; PowerPoint, *Concourse*
- Question:
6. Discuss how Ford Motor Company follows Principles Seven, Eight, and Nine. What is Ford's rationale for its social and environmental programs?

Session 7: Tuesday, April 7 — PRINCIPLE TEN: ANTI-CORRUPTION

- Reading:
1. Transparency and Anti-Corruption, pp. 1-4, *Concourse*
 2. Principle Ten, pp. 1-4, *Concourse*
 3. A Case Story: The Corporate Ethics Framework as a Road to Fighting Corruption, pp. 62-67, *Concourse*
 4. PowerPoint, Extractive Industries and Corruption: The Case of Africa's Oil Boom. (By OXFAM), *Concourse*
- Questions:
5. Discuss: "As an extractive industry, we also need to be aware of corruption induced by the lack of transparency in the use of extractive revenues by some countries" (p. 64 of Reading No. 3 above).

Session 8: Thursday, April 9 —THE LEGITIMATE ROLES FOR INTERNATIONAL HUMAN RIGHTS LAW

Outside Speaker: Douglass Cassel, Director of the Center for Civil and Human Rights at the University of Notre Dame Law School.

- Reading:
1. *PTC*, pp. 77-95.
 2. UN Global Compact Note on Integrity Measures (4 pages)
- Questions:
3. In the context of this essay, comment: "In the end we need just enough law but not too much" (p. 89)
 4. What is the purpose of the "Integrity Measures"?

Session 9: Tuesday, April 14 — SOME REFLECTION FROM THE DISCIPLINE OF PEACE STUDIES

Outside Speaker: John Paul Lederach, Faculty of the Joan B. Kroc Institute for International Peace Studies of the University of Notre Dame

Reading: 1. *PTC*, pp. 96-106.

Questions: 2. Discuss: "The gaps identified in peace building potentially may be redressed through a greater connect between actors in the peace process and the business and commerce sector" (p. 105)

Session 10: Thursday, April 16 —DEVELOPING MICRO, SMALL, AND MEDIUM ENTERPRISES (MSMEs)

Reading: 1. *PTC*, pp. 241-262 (PowerPoint on *Concourse*)

Question: 2. Discuss the poverty reduction program through the development of MSME entrepreneurs with the collaboration of the government of Angola, the United Nations Development Program (UNDP), and Chevron. Why would Chevron have been involved and supplied \$25 million for such a program?

Session 11: Tuesday, April 21—HOW THE GLOBAL COMPACT ENVISIONS MAKING THE WORLD A BETTER PLACE: THE CASE OF PETROCHINA

Reading: 1. PetroChina and the UN Global Compact, pp. 1-2, *Concourse*
2. Investors Against Genocide, pp. 1-2, *Concourse*
3. A Response from the UN Global Compact, pp. 1-2, *Concourse*

Questions: 4. What is the role of the UN Global Compact according to "Investors Against Genocide"? According to Georg Kell, Executive Director of the UNGC?
5. What is your judgment on the matter?

Session 12: Thursday, April 23—SOME FINAL THOUGHTS

Outside Speaker: Lee Tavis, Director of the Program on Multinational Managers and Developing Country Concerns, University of Notre Dame

Readings: 1. *PTC*, pp. 421-449.
2. *PTC*, pp. 413-430

Questions: 3. Discuss: Williams and the *Economist* have different rationales for corporate citizenship. Explain.
4. Discuss: "... to try to determine whether being a good citizen, as an individual or as a firm, has cash value in monetary terms is beside the point." (*PTC*, p. 448)
5. "NGOs have become the formal, although varied voice of civil society." Discuss (p. 420)

Session 13: Tuesday, April 28—HOW MUCH SHOULD BUSINESS DO?

- Outside Speaker: Klaus Leisinger. President and CEO of the Novartis Foundation for Sustainable Development.
- Reading: 1. *PTC*, pp. 199-231. (PowerPoint on *Concourse*)
- Question: 2. Discuss: "A new Pareto Optimum could be reached by the *reputation capital* given by civil society, the media, and the wider public—with much higher benefits for the world's poor (Pareto Optimum 2). (p. 230)

EXHIBIT 14: COURSE SYLLABUS, DARTMOUTH COLLEGE, THAYER SCHOOL OF ENGINEERING, INDUSTRIAL ECOLOGY

**ENGS 171
Spring 2010**

INDUSTRIAL ECOLOGY

Course Description:

By studying the flow of materials and energy through industrial systems, industrial ecology identifies economic ways to lessen negative environmental impacts, chiefly by reducing pollution at the source, minimizing energy consumption, designing for the environment, and promoting sustainability.

The objective of this course is to examine the extent to which environmental concerns have affected specific industries, to evaluate the benefits of prevention over compliance, and to discern where additional progress can be made. With the emphasis on technology as a source of both problems and solutions, a broad spectrum of industrial activities is reviewed, ranging from low-design high-volume commodities to high-design low-volume products.

Student activities include a critical review of various articles, participation in class discussions, and a term project in design for the environment.

Prerequisites: ENGS-21 (Introduction to Engineering) and ENGS-37 (Introduction to Environmental Engineering), or permission.

Instructor & Assistants:

Prof. Benoit Cushman-Roisin
134 Cummings Hall
Tel: 646-3248

Teaching Assistants: Hannah Dreissigacker
Brian Mengwasser
Ayrat Safine
Steven Walker

Course Format:

1. Readings (as class preparation)
2. Lectures (leading to informed discussions)
3. Occasional homework sets
4. Occasional guest lecturers and video presentations
5. Term project (in groups of 3 or 4 students)
6. Mid-term and final project reports, and oral presentation

Class Preparation:

The instructor assumes that each student is committed to achieving the highest educational value from the course. Therefore, every student is required to attend all classes and to be actively involved in and a contributor to class activities, by being prepared to raise questions and engage in profitable discussion over the pre-assigned readings.

Suggested Texts (not required):

Pollution Prevention: Fundamentals and Practice
by Paul L. Bishop, McGraw-Hill, 2000
reprinted by Waveland Press, 2004
(excellent topical coverage - highly recommended)

Product Design for the Environment – A Life Cycle Approach
by Fabio Giudice, Guido La Rosa and Antonino Risitano
CRC – Taylor & Francis, 2006
(focus on the product more than the facility - a bit harder to read)

Greening the Industrial Facility: Perspective, Approaches, and Tools
by Thomas E. Graedel & Jennifer A. Howard-Grenville
Springer, 2005
(focus on the facility more than the product)

Course Objectives:

1. Knowledge of fundamental ways by which industry can make progress in the direction of sustainability;
2. Understanding of principles of pollution prevention and design for environment;
3. Ability to perform limited life-cycle assessments;
4. Knowledge of current, 'green' technological initiatives in the auto industry;
5. Ability to decide in the face of incomparable quantities.

Honor Code:

As always, students are expected to observe all aspects of Dartmouth's Honor Principle, described on pages 44–46 of the Organization, Regulations & Courses. Dartmouth College policy requires that any apparent violation of the Honor Principle be reported to the Committee on Standards. The professor does not have any other choice, however uncomfortable he/she may feel.

Grading:

30% Literature critiques
20% Homework
10% Class participation
20% Term project - Phase 1
20% Term project - Phase 2

EXHIBIT 15: COURSE SYLLABUS, GEORGE WASHINGTON SCHOOL OF BUSINESS, ENVIRONMENT, ENERGY, TECHNOLOGY & SOCIETY

**The George Washington University School of Business
Department of Strategic Management and Public Policy**

COURSE TITLE

Environment, Energy, Technology, & Society – SMPP/PPOL 207.80

COURSE DESCRIPTION:

The **identification, investigation, and evaluation** of how **environment, energy, and technology are inter-related**, and how these **interactions influence societal policy** formulation, implementation, and evaluation at the **international, regional, national, industrial, and organizational levels**. Focus on **climate crises and solutions** at each of these levels.

COURSE OBJECTIVES:

1) To collect, process, and utilize information on environment, energy, technology, and society (**EET&S**) **concepts, theories, practices, and trends**; 2) To identify, analyze, and evaluate, the EET&S components of a wide-range of policies, especially those related to **climate change, energy efficiency, and renewable energy** innovation, at **multiple levels**, from global to local, and from **multiple societal perspectives**; 3) To engage in interactions with EET&S **Washington, D.C.-based experts and organizations**, including university stakeholders; and, 4) To apply course information in **individual/team & written/oral EET&S outcome projects**.

COURSE INSTRUCTOR:

Mark Starik, Ph.D., Professor and Dept. Chair of Strategic Management & Public Policy. **Funger 615B**, (202) 994-5621/994-6677 starik@gwu.edu

COURSE METHODS:

Several methods of instruction will be employed in this course, including lectures, guest speakers, in-class and on-line discussion, small group teamwork, quizzes, and projects. GW grading standards will be used (plus/minus). **Ethics (Student Code) violations will not be tolerated.**

COURSE MATERIALS:

Energy for Sustainability, Randolph/Masters, 2008; **Climate Change**, Pittock, 2005; **An Inconvenient Truth**, Gore, 2006; **How to Live a Low- Carbon Life**, Goodall, 2007; and, **Articles, Websites, & Cases**

COURSE ASSIGNMENTS:

Individual Written EET&S Project with updates (25%)
Team Oral EET&S Presentation with updates (25%)
5 Hours EET&S/Community Involvement On-Line Reports (10%)
4 EET&S In-Class Course-Related Discussion Leads (2.5% each)
Bi-Weekly On-Line (Blackboard) EET&S Discussion Entry (5% total)
Bi-Weekly In-Class EET&S Participation/Quizzes (5% total)
Integrative Executive EET&S Summary Memo (20%)

Tentative Course Schedule – Subject to Minor Changes (09/04/08)

Date Topics Readings/Assignments

9/4 Welcome, Intros, Course Handouts, text pickup, event attendance; **student** Syllabus/Processes, Topic and **instructor goals** for the course; course Overview themes. Gore/Scientific American Articles

9/11 Energy Patterns & Trends Randolph/Masters 1-3; Indiv/Team **Project Topics discussions** and explorations; Articles/Websites/Case

9/18 Energy Fundamentals Randolph/Masters 4-6; Indiv/Team **Project topics decisions and selections**; Articles/Websites/Case

9/25 Climate Crises I Pittock, Front + Ch. 1-6; **Individual Project Update I**; Articles/Websites/Case

10/2 Climate Crises II Pittock, Ch. 7-13; **Team Update I**; Articles/Websites/Case

10/9 Climate Solutions I Goodall, Ch. 1-8; **Individual Project Update II**; Articles/Websites/Case

10/16 Climate Solutions II Goodall, Ch. 9-17; **Team Update II**; Articles/Websites/Case

10/23 Renewable Energy Policy I Randolph/Masters 7-12; **Individual Projects Submission Recommended**; Articles/Websites

10/30 Renewable Energy Policy II Randolph/Masters 13-18; **Team Update III**; (On-Line Discussions) **Individual Projects Deadline**; Articles/Websites

11/6 **Teams 1 & 2 Presentations** Attendance and Participation

11/13 **Teams 3 & 4 Presentations** Attendance and Participation

11/20 **Teams 5 & 6 Presentations** Attendance and Participation

12/4 Course Wrap-Up; Exec. Gore/Scientific American Articles Memo Distributed; Evals. (Revisited)

12/11 **Integrative Executive Memo 5pm** in Fungler Hall 615B/Blackboard **Due**; Grades within 72 Hours Assignment/Fax at 202-994-8113; starik@gwu.edu

EXHIBIT 16: COURSE SYLLABUS, MIT SLOAN SCHOOL OF MANAGEMENT, GLOBAL CLIMATE CHANGE: ECONOMICS, SCIENCE, AND POLICY

Lectures: 2 sessions / week, 1.5 hours / session

Calendar

SES #	TOPICS	KEY DATES
1	Introduction and overview	
2	Institutions I: political and analytical organizations	
3	Review of the mathematics of climate analysis	
4	Climate I: past climate, and gases, aerosols and radiation	Homework 1 distributed
5	Economics primer	
6	Climate II: dynamics of the atmosphere and oceans	
7	Economics of the global commons	Homework 1 due Homework 2 distributed
8	Economics I: economic growth, technology and greenhouse gas emissions	
9	Institutions II: the international climate negotiations	
10	Economics II: the economics of greenhouse gas emissions control	
11	Introduction to the Toy Integrated Global System Model	
12	Climate III: interaction of atmosphere, oceans and biosphere	Homework 2 due Homework 3 distributed
13	Analysis of the benefits of greenhouse gas mitigation	

SES #	TOPICS	KEY DATES
14	Economics III: climate policy analysis	
15	Emissions trading and tax systems	
16	Climate machine IV: regional impacts of climate change	
17	Review of methods of uncertainty analysis	Homework 3 due Homework 4 distributed Policy exercise distributed
18	Integrated assessment I: sensitivity and uncertainty analysis	
19	Sea level rise and adaptation	
20	Methods for decision under uncertainty	Policy exercise: preliminary note due
21	Integrated assessment II: deciding global effort and burden shares	Homework 4 due
22	Climate change and the Arctic region	
23	Climate V: unresolved problems in climate analysis	
24	Discussion of homework sets and the policy exercise	
25	Student team presentations	Policy exercise: final memo and report due
26	Final summary and discussion	

Grading

ACTIVITIES	PERCENTAGES
Homework (15% each)	60%
Team project 1	10%
Team project 2	25%
Class participation	5%

EXHIBIT 17: Johns Hopkins Carey School of Business, *Special Topics in Real Estate: Sustainable Real Estate Development and Finance.*

**JOHNS
HOPKINS
CAREY
BUSINESS SCHOOL**

**Special Topics in Real Estate: Sustainable Real Estate
Development and Finance
767.722.52, 3 Credit Hours
Tuesday/Thursday: 5:30 pm–8:00 pm, Saturday: 9:00 am–3:00 pm
Spring 2009
Washington, DC Campus**

Instructor

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Contact Information

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Office Hours

By appointment.

Required Text and Learning Materials

Hudnut III, H., William. (2008). *Changing metropolitan america: planning for a sustainable future*. Washington, DC: Urban Land Institute

Kibert, J. Charles. (2008). *Sustainable construction: Green building design and delivery: Second edition*. Hoboken: John Wiley & Sons, Inc.

Muldavin, Scott. (2009). *Underwriting sustainable property investment*. San Rafael: Green Building Finance Consortium

(Instructor will provide a free electronic version of *Underwriting sustainable property investment*)

Blackboard Site

This course will incorporate materials and resources provided by Blackboard. To access the course site, please log into <http://bb.carey.jhu.edu>
If you need support for Blackboard, please call 1-866-669-6138.

Edward St John Real Estate Department Program Objectives

1. Students discover the roles and relationships of the various professions and content areas involved in the development process.
2. Students learn how to assemble a development project and how to manage the development team and process.
3. Students develop a broad understanding of how projects impact urban communities and the environment.

4. Students gain an understanding of the current regulatory and legal environment and its impact on real estate development.
5. Students learn how to analyze the feasibility of a project.
6. Students are exposed to key issues of financing, accounting, marketing, site selection, and construction of a project.

Course Description:

Ready or not, sustainable development incentives or mandates are coming to a market near you – are you prepared? Over the past decade, there has been a convergence of regulations, legislation, corporate environmental accountability and public opinion that has accelerated the adoption of public policies that promote, encourage, and often require sustainable development practices. This trend has profound implications for most sectors of the commercial and multifamily real estate industries that include: design, engineering, building components, construction, development, valuation, finance, property management, leasing, and sales. This course is intended to equip participants in these sectors with an understanding of the following topics: (1) the forces informing the promulgation of sustainable development public policy; (2) a conceptual understanding of the sustainable development design, development and marketing processes; (3) considerations for underwriting, valuating, and financing sustainable development; and, (4) sustainability certifications and the certification processes.

Course Overview:

The course is intended to appropriately balance theoretical and practical applications of sustainable development that will provide students a basis for objectively analyzing the potential impact of green or sustainability features on new and existing commercial real estate projects. This class was developed to also explore the broader application of sustainability principles on large scale planning efforts and the potential beneficial broader impacts on quality of life and environmental preservation.

Enduring Understandings

1. Understanding of the role that real estate plays in the consumption of energy and production of greenhouse gases that has influenced the development of public policy for sustainable development. This relates to Program Objectives 3 and 4.
2. While sustainable buildings allow for the conservation of energy and other natural resources, these saving can be greatly enhanced through sustainable land use planning practices at the city and regional levels that allow for the better integration of residential, commercial, and open space land uses. This relates to Program Objective 3.
3. Provide an understanding of sustainable building principles and how life cycle cost analysis represents a philosophical departure from traditional first cost analysis. This relates to Program Objectives 1, 2, and 6.
4. Providing constructive working knowledge of sustainable planning, construction, marketing, and certification process. This relates to Program Objectives 1 and 2.

Provide a framework for objectively analyzing and evaluating sustainability features on the financial performance of a commercial real estate project. This relates to Program Objectives 5 and 6.

Learning Outcomes:

L.O. #	Learning Outcome	Program Goal Addressed
1	Understanding the natural resources used to power the US and world economy and the linkage of commercial real estate to the emission of greenhouse gases.	3
2	Understand the forces shaping the public policy regarding sustainability incentives and mandates.	4
3	Understanding the role that regional planning can play in increasing sustainability	3 and 4
4	Understanding of sustainability principles and project lifecycle analysis	1 and 6
5	Understanding of how green features are incorporated into new and existing buildings	1 and 2
6	Understanding the green building certification process.	2 and 6
7	Understanding of how green features factor into the financial performance of a commercial real estate project.	5 and 6
8	Understanding how green building features can be marketed.	6
9	Understanding property management elements of green buildings	6

Assignments

Assignment #1 – Green Building Acceptance Class Survey – A survey that examines the student's perception regarding the acceptance of assumptions regarding sustainable development. The survey will be taken during the first class on May 12 and retaken May 28. On May 30, the Instructor will present the both survey results. On May 30, students will make a five minute presentation to discuss the survey.

Assignment #2 – Green Building Business Plan Paper – Based upon a fact set provided by the Instructor, students will develop a business plan for a green building. The Business Plan will require students to assess operational, financial and marketing considerations for a green building. The paper is limited to 8 pages (APA style) plus financial appendices. Due date: June 23, 2009.

Assignment #3 – Project Life Cycle Exercise – Student will model a specific building expense based upon first cost and project life cycle methodologies. Students will perform a present value analysis for the project life cycle analysis. The exercise is intended to allow students to recognize the total operational cost of a building and its relation to first costs. Students will perform a 1 page write-up of the Exercise coupled with spreadsheet showing the financial modeling. Instructor will provide financial model in Excel format. Due Date: May 21, 2009

Assignment #4 – Interconnectivity of Regional and Project Specific Sustainability – Students will prepare a five page paper (APA style) that examines the interconnectivity of regional sustainability planning efforts with specific sustainable projects. Due Date: June 23, 2009.

Assignment	Learning Outcome	Weight
Attendance and Participation in Class Discussion	1, 2, 3, 4, 5, 6, 7, 8 and 9	15%
Assignment #1 – Survey	4 and 5	10%
Assignment #2 – Business Plan	2, 3, 4, 5, 7, 8, and 9	35%
Assignment #3 – Project Life Cycle Exercise	4	15%
Assignment # 4 – Sustainability Paper	2 and 3	25%

Grading Scale

Percentage	Grade
93+	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
<70	F*

*The grades of D+, D, and D- are not awarded at the graduate level.

Class Session	Date/Time	Topic	Subjects Covered	Instructors	Assignments
1	May 12, 2009 5:30 pm – 8:00 pm	Introduction	<p>Course Overview – topics covered, expectations, grading</p> <p>Student Introductions</p> <p>Sustainability Principles</p> <p>Forces Shaping the sustainability movement</p> <ul style="list-style-type: none"> - Social Conscious Investors - Public Policy - National - State - Local - Corporate Responsibility - Use and Consumption of Energy - Alternative Energy Sources <p>Integrated Design</p>	<p>George Green - MBA All</p> <p>George Green - MBA</p> <p>George Green - MBA</p> <p>George Green - MBA</p>	<p>Reading Assignment: Sustainable Construction – Chapters 1 and 2.</p> <p>Assignment 1 - Green Building Acceptance Class Survey. Due Dates: Survey #1 – 5/12/09; Survey #2 – 5/28/09; Survey #2 presentation – 5/30/09</p> <p>Assignment 2 – Green Building Business Plan Paper. Due Date – 6/23</p>
2	May 16, 2009 9:00 am – 12:15 pm	Project Life Cycle Approach and Sustainability Approaches for Large Scale Land Use Planning Efforts	<p>Project Life Cycle Approach</p> <p>Project Life Cycle Exercise</p> <p>Mr. Hundnut will provide a lecture that address sustainability at the local and regional levels that was described in his book.</p>	<p>George Green - MBA</p> <p>Guest Lecturer: William Hudnut III</p>	<p>Reading Assignment: Sustainable Construction – Chapters 3 and 4.</p> <p>Assignment 3: Project Life Cycle Exercise – HVAC Equipment. Due Date – 5/21</p> <p>Reading Assignment: Planning for a Sustainable Future – Chapters 1, 2, 6 and 9.</p>

Class Session	Date/Time	Topic	Subjects Covered	Instructors	Assignments
					Assignment 4: Interconnectivity of regional and project specific sustainability. 5 page paper. Due Date: 6/23/09
3	May 16, 2009 12:30 pm – 3:00 pm	Green Building Certification	Introduction to Green Building Certification LEED ASHRE 189 Energy Star GreenGlobe	George Green - MBA Guest Lecturer: Mark Heistrecamp – Manager, Market Development Corporate/Investment Real Estate Sector - USGBC George Green - MBA	Reading Assignment: Sustainable Construction – Chapters 3 and 12. USGBC LEED presentation LEED 2009 Construction and Major Renovations Underwriting Sustainable Property - Appendix III-C.
4	May 19, 2009 5:30 pm – 8:00 pm	Green Building - New Construction Building Elements	Introduction Elements of Green Construction	George Green – MBA Turner Construction	Reading Assignment: Sustainable Construction – Chapters 6, 7, 8, and 9 Underwriting Sustainable Property Investment – Appendix III-A
5	May 21, 2009 5:30 pm – 8:00 pm	Green Building - Retrofit	Introduction Green Building Retrofit	George Green Guest Speaker: Leanne Tobias	Reading Assignment: Article – Dollars and Sense of Green Retrofits Article – Adobe Building Case Study Assignment #3 Due - Project Life Cycle Exercise – HVAC Equipment
6	May 23, 2009 9:00 am – 11:30 am	Green Office Building Field Trip	MBA Building Tour Green Building Panel Discussion Builder – Green Building Components/LEED Certification	George Green – Moderator Brian Stolz – Project Manager - Signal Construction Sven Shockey –	Reading Assignment: 1331 L Street Marketing Package

Class Session	Date/Time	Topic	Subjects Covered	Instructors	Assignments
			Architect – Designing Green Features	Architect Smith Group	
7	May 23, 2009 12:30 pm – 3:00 pm		Green Building Finance Valuation – Appraisal Traditional Sustainability Financial Analysis Traditional Real Estate Financial Analysis with Sustainability Sub Financial Analysis Green Building Lending Programs	George Green	Reading Assignment: Underwriting Sustainable Property Investment - Chapter 4 and Appendix 4-A, 4-B, 4-C
8	May 26, 2009 5:30 pm – 8:00 pm	Green Building Marketing	Introduction Leasing Investment Sales	George Green - MBA Cushman & Wakefield	Reading Assignment: Handouts
9	May 28, 2009 5:30 pm – 8:00 pm	Green Building Property Management	Introduction Property Operations Property Management	George Green - MBA Tereza Betz - MBA	Reading Assignment: Handouts Assignment #1 Due – Second Survey
10	May 30, 2009 9:00 am – 11:30 pm	Sustainability Retrofit Site Visit – U.S. Capital Complex	Site Tour U.S. Capital Complex	George Green – MBA Anna Franz – Chief Planner, Architect of the Capital	Reading Assignment: US Capital Planning Materials
11	May 30, 2009 12:30 – 3:00 pm	Presentations of Impressions Survey	Each student provides a 5 minute presentation regarding perceptions of sustainability based upon completing Survey #1 and Survey #2.	George Green - MBA	Reading Assignment: None
12	June 23, 2009 5:30 pm – 8:00 pm	Capstone Session	Review and discussion of course topics and lessons learned	Georg Green - MBA	Reading Assignment: None Assignment #2 Due – Green Building Business Plan Paper. Assignment 4 Due: Interconnectivity of regional and project specific sustainability.

ENDNOTES

¹ www.epa.gov/greenbuilding

² www.dsireusa.org/summarytables

³ “Green Outlook 2009: Trends Driving Change,” Published in November 18, 2008 by McGraw-Hill Construction

⁴ “Living Planet Report 2008,” Published in October 2008 by WWF – World Wide Fund for Nature, Gland Switzerland

⁵ “The New Sustainable Frontier: Principles of Sustainable Development.” Published September 2009 by GSA Office of Governmentwide Policy, pg. 12

⁶ “The Costs and Financial Benefits of Green Building: A Report to California’s Sustainable Building Task Force,” Published in October 2003 by Capital-E, Principal Author: Greg Katz

⁷ “The Cost of Green Revisited: Re-examining the Cost Feasibility and Impact of Sustainable Design in Light of the Increased Market Penetration,” Published July 2007 by Davis Langdon

⁸ “Energy Efficiency in Buildings”, Published October 2008 by World Business Council for Sustainable Development

⁹ “EIA Annual Energy Outlook 2008: With Projections for 2030,” Published June 2008 by Energy Information Administration, US Department of Energy

¹⁰ GSA Public Buildings Service (2008). Assessing Green Building Performance: A Post Occupancy Evaluation of 12 GSA Buildings.

¹¹ Fisk, W. (2000) Health and productivity gains from better indoor environments and their relationship with building energy efficiency. *Annual Review of Energy and the Environment*: 25, 537-66.

¹² “An Investigation of the Effect of Eco-Labeling on Office Occupancy Rates,” Published by the *Journal of Sustainable Real Estate*, Vol. 1, No.1 – 2009. Authors: Franz Fuerst and Patrick McAllister

¹³ “Effect of LEED Ratings and Levels on Office Property Assessed and Market Values,” Published by the *Journal of Sustainable Real Estate*, Vol. 1, No. 1 – 2009. Author: Sofia V. Dermisi

¹⁴ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS.

¹⁵ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS, page 2.

¹⁶ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS, page 3

¹⁷ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS, page 4

¹⁸ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS, Exhibit 6, page 22

¹⁹ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS, Exhibit 6, page 22

²⁰ “The Business of Sustainability: Findings and Insights from the First Annual Business of Sustainability Survey and the Global Thought Leaders’ Research Project,” Published October 2009 by MIT Sloan Management Review, Boston Consulting Group, and SAS, Exhibit 2, page 18

²¹ Department of Construction (2008). Annual Value of Construction Put in Place.

²² www.businessweek.com/bschools/rankings/

²³ Beyond Grey Pinstripes 2009-2010: Preparing MBAs for Social and Environmental Stewardship. Published by The Aspen Institute Center for Business Education

²⁴ www.greenreportcard.org/report-card-2010/

²⁵ <http://www.greenreportcard.org/report-card-2010/executive-summary>

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- ²⁶ http://www.gsb.stanford.edu/news/headlines/new_mba_curriculum.shtml, Stanford Graduate School of Business Adopts New Curriculum Model, June 2006.
- ²⁷ <http://www.stanford.edu/group/fusion/cgi-bin/site/social-m-challenge/>
- ²⁸ <http://csi.gsb.stanford.edu/education-programs>
- ²⁹ <http://explorecourses.stanford.edu/CourseSearch/print?page=0&catalog=&q=MKTG&filter-catalognumber-MKTG=on&descriptions=on&catalog=>
- ³⁰ <http://www.erb.umich.edu/Education/Masters/MBA-MS>
- ³¹ <http://www.netimpact.org/displaycommon.cfm?an=1&subarticlenbr=1909>
- ³² <http://www.netimpact.org/displaycommon.cfm?an=1&subarticlenbr=1909>, see Judging Criteria
- ³³ <http://www.netimpact.org/displaycommon.cfm?an=1&subarticlenbr=1914>
- ³⁴ A Closer Look at Business Education: Climate Change, Published by the Aspen Institute Business Society Program, November 2006, page 2.
- ³⁵ http://www.csrwire.com/press/press_release/18895-The-Giving-Voice-to-Values-Curriculum-Initiative-Is-Now-Available-Online
- ³⁶ http://mba.yale.edu/news_events/CMS/Articles/6708.shtml
- ³⁷ A Closer Look at Business Education: Climate Change, Published by The Aspen Institute Business Society Program, November 2006, page 3
- ³⁸ <http://www.kenan-flagler.unc.edu/Programs/MBA/Academics/casestuaccomplish.cfm>
- ³⁹ <http://www.kenan-flagler.unc.edu/News/DetailsNewsPage.cfm?id=4619>
- ⁴⁰ <http://www.kenan-flagler.unc.edu/cse/career-fair.cfm>
- ⁴¹ <http://www.docstoc.com/docs/9931130/CLIMATE-CHANGE>
- ⁴² <http://www0.gsb.columbia.edu/students/organizations/sec/conference2009/>
- ⁴³ <http://www4.gsb.columbia.edu/entrepreneurship/initiatives/gsvc>
- ⁴⁴ <http://www.drinkmamatini.com/>
- ⁴⁵ <http://www4.gsb.columbia.edu/chazen>
- ⁴⁶ <http://www4.gsb.columbia.edu/realestate/research/housingcrisis/resources>
- ⁴⁷ A Closer Look at Business Education: Climate Change, Published by The Aspen Institute Business and Society Program, November 2006, page 2.
- ⁴⁸ http://www.fuqua.duke.edu/news_events/feature_stories/big_think_new_rules/
- ⁴⁹ <http://nicholas.duke.edu/csi/overview.html>
- ⁵⁰ <http://nicholas.duke.edu/institute/about.html>
- ⁵¹ <http://www.fuqua.duke.edu/edge>
- ⁵² http://blog.accepted.com/acceptedcom_blog/2010/1/25/financial-times-global-2010-mba-rankings.html
- ⁵³ <http://www.docstoc.com/docs/5739865/HAAS-SCHOOL-OF-BUSINESS-UNIVERSITY-OF-CALIFORNIA-BERKELEY-BIENNIAL>, page 22.
- ⁵⁴ <http://www.docstoc.com/docs/5739865/HAAS-SCHOOL-OF-BUSINESS-UNIVERSITY-OF-CALIFORNIA-BERKELEY-BIENNIAL>, page 5
- ⁵⁵ <http://beyondgreypinstripes.org/rankings/school.cfm?cid=421>
- ⁵⁶ http://w4.stern.nyu.edu/admissions/fulltime/innovativecurricula.cfm?doc_id=100146
- ⁵⁷ <http://beyondgreypinstripes.org/rankings/school.cfm?cid=80>
- ⁵⁸ http://www.beyondgreypinstripes.org/search/search_course_results.cfm?keyword=&cids=80&dept=all&disciplines=all&visible=Y&start=26&sCourseType=core
- ⁵⁹ http://business.nd.edu/Ask_More/Integrated_Curriculum/More_Courses/#mbacourses
- ⁶⁰ http://business.nd.edu/Ask_More/Integrated_Curriculum/More_Courses/#mbacourses, Ten Years Hence
- ⁶¹ http://business.nd.edu/Ask_More/Integrated_Curriculum/More_Courses/#mbacourses, UN Global Compact and the Future of The Economy
- ⁶² <http://mba.tuck.dartmouth.edu/pages/clubs/netimpact/>
- ⁶³ <http://mba.tuck.dartmouth.edu/initiative/>
- ⁶⁴ <http://mba.tuck.dartmouth.edu/pages/clubs/netimpact/>
- ⁶⁵ <http://mba.tuck.dartmouth.edu/pages/clubs/bsc/>
- ⁶⁶ http://business.gwu.edu/grad/mba_comp_chart.html
- ⁶⁷ <http://sustainable-future.org/media/press/tepper-cm/index.html>
- ⁶⁸ <http://www.tepper.cmu.edu/news-multimedia/news/news-detail/index.aspx?nid=414>
- ⁶⁹ <http://mitsloan.mit.edu/sustainability/projects.php>
- ⁷⁰ <http://mitsloan.mit.edu/sustainability/certificate.php>

⁷¹ <http://mitsloan.mit.edu/newsroom/podcasts.php>

⁷² <http://mitsloan.mit.edu/sustainability/sip.php>