BUSINESS AND NATURAL RESOURCES - Sustainable Use of Ecosystems

Jointly taught by Haas School of Business (Haas) and College of Natural Resources (CNR)

COURSE NUMBER: MBA292T.11, EW292T.11, ESPM298
This course is cross-listed with Full Time MBA, Evening Week-End MBA and the College of Natural Resources graduate program.

UNITS OF CREDIT: 1
INSTRUCTORS: **Omar Romero-Hernandez** (HAAS) and **Federico Castillo** (CNR)
E-MAIL ADDRESS: oromero@haas.berkeley.edu, f.castillo@berkeley.edu,
MEETING DAY(S)/TIME: Sundays 04/07 & 04/28, 9:00AM-5:00PM
LOCATION: Haas School of Business, Cheit Building, Room C220
PREREQUISITE(S): None
CLASS FORMAT: A mixture of lectures, cases, and guest speakers
REQUIRED READINGS: Course materials distributed on bSpace
BASIS FOR FINAL GRADE: Case briefs, class participation, and final project.

ABSTRACT OF COURSE'S CONTENT AND OBJECTIVES:

Businesses are operating in an increasingly resource-constrained world. From water shortages to climate change impacts and energy crises, business managers will have to understand not only the immediate risks from these trends but also the strengthening regulations that will inevitably result. Those that respond too late will be at a serious disadvantage. At the same time, there are clear opportunities to improve the bottom line by considering natural resource issues on a daily basis. Companies that understand these imperatives will be able to better navigate an increasingly complex world and the major environmental risks it faces.

The course incorporates business and sustainability aspects into the field of natural resource management. Using economic and ecological concepts students are expected to learn tools, and use them to solve practical natural resource management problems relevant to business and society at large. The course concentrates in four thematic fields: Ecosystem Services, Economic Valuation, Climate Change and Water. In particular, we will relate these topics to a business context. Students are expected to complete assignments distributed in class and based on real and relevant natural resource management problems.

Taking this course will help students to support their decision making process related to the use and conservation of natural resource and the inextricable link to competitive advantage.

Grading Scheme:

Attendance and participation in both sessions is required in both days 9.00 am to 5.00 pm.

Please remember to bring your name cards with you to class.

Please note that office hours will be held after class on both days for as long as needed. There will also be office hours on 04/28 from 8-8:30A, and earlier if needed. We may also be able to meet in person during the intervening 3 weeks, by appointment.

There will be no tests. Final grade will be based on the following:

20% Participation 30% Short Assignments 50% Final project

Students are expected to complete two short assignments in this class. Each short assignment should be completed in the form of case studies. The topics of the case studies need to be addressed using material presented in class and taken from the assigned readings. The student is free to choose the topic or a topic will be assigned. Regardless, the topic and other details need to be consulted with the instructors. A first short assignment is to be completed using class material presented to students during the first day of class. The second assignment is to be turned in a week after the second day of classes. Students are encouraged to consult the instructors as they complete the assignments. Please refer questions on these assignments to Prof. Castillo (f.castillo@berkeley.edu).

Students will form groups of no more than 3 members and complete a final class project. Please choose one of the following two options for your final project:

Option 1. The class project is an in-depth analysis of a topic related to the class. The topic needs to be consulted with the instructors and in the process of completion of the project the students are expected to use and apply methodologies that are part of class material.

Option 2. Perform the Corporate Ecosystem Services Review (ESR) methodology to a specific industry. Details on this methodology are presented in session 1, including examples.

For both options, students need to turn in a Power Point (PPT) presentation containing the following sections:

Option 1. An introduction to the issue at hand, background material, an analysis of the problem, methods used and final outcome. Notes and bibliographical references are to be included in the PP presentation.

Option 2. Case study with the five elements of the ESR methodology: (1) Scope, (2) Identify priority services, (3) Analyze trends, (4) Identify business risks and opportunities and, (5) develop strategies. Please refer questions on these assignments to Prof. Romero-Hernandez (oromero@haas.berkeley.edu).

The following section provides some guidelines on the expected schedule, topics, readings and questions for discussion.

	SCHEDULE Day 1 (April 07th, 2013)	**Readings***
	This schedule is subject to change	Available on bSpace
9.00	**1. NATURAL RESOURCE MANAGEMENT** (OR, FC) Introduction to the course Natural resource management. Corporate Ecosystems Services (OR)	- The Value of Nature and the Nature of Value - Economic returns from the biosphere - The Corporate Ecosystem Services Review These three docs. represent a good introduction on our course and a guideline for incorporating ecosystem services into corporate decisions. This is supporting material for your session. Please review and enjoy it.
10.20	**2. INTRODUCTION TO VALUATION** (FC) 2.1 The consumer problem 2.2 Stated preference methods Cost Benefit Analysis, Travel cost method, Hedonic prices	- Techniques for environmental economic valuation Reference and supporting material in case that your interest goes beyond the session.
11.00	**Break – 15 mins**	
11.15	2.3 Revealed preference methods (FC) Contingent valuation, choice experiments, avoided and replacement cost. Data collection needs **FC: exercise**	How much is an Ecosystem Worth? (Pagiola, et. al. Sections 1-4) Reference and supporting material in case that your interest goes beyond the session.
12.30	**Lunch**	
13.30	2.4 Other methods (OR) Environmental Impact Assessment Life Cycle Assessment	Notes to be provided on bSpace
14.30	**Break – 15 mins**	
14.45	Guest Lecture. Our guest lecturer requires you to: 1. Identify 3 ways a balanced scorecard might be used in an organization you work in or have worked in. I will ask for concrete examples, so please have a bit of detail worked out. 2. What are 1 to 3 key measures of environmental performance that might help or have helped that organization? 3. What are 2 challenges with measuring those measures? What problems will arise if top management or external stakeholders observed those measures?	BalanceScoreCard_Kaplan_and_Norton_2007
16.00	**Case and exercise**	
	Short assignment to take home **Final Project**	Instructors to explain a short assignment and requirements for the final project, including content, format, extension, grading, etc.
16.45	**Class survey**	

Readings will be posted on bSpace. Lecture notes are provided as handouts before each session or as electronic files on bSpace.

	SCHEDULE – Day 2 (April 28th, 2013)	**Readings***
	This schedule is subject to change	To be provided on Day 1
9.00	**3. ECOSYSTEM SERVICES** 3.1 Land use and opportunity cost (include reference) 3.2 Ecosystem services I: Land diversion programs (DZ) Production implications, Cost implications, Distributive issues	bSpace
10.00	**Break**	
10.10	3.3 Ecosystem services II: Working land programs Production implications Cost implications Distributive issues Regulation (Incentives, subsidies, taxes)	bSpace
11.00	**Case study – on natural resources management**	
12.00	**Lunch**	
13.00	**4. WATER** Quality vs. quantity Distribution and storage	bSpace
14.10	**Break**	
14.20	**Water (FC)** Multiple sources: Surface and ground water Institutions Federal and state role in investment Water districts, Water rights in CA and the US Pricing schemes: block, flat and progressive pricing	bSpace
15.00	**5. CLIMATE CHANGE** Climate change, business and natural resources	bSpace
tbd	**Student Final presentation** **Wrap Up**	

	DAY 3 : April 29th, 2013 **Attendance is encouraged (it is also optional and has no relation with final grade)**
	PLEASE JOIN US **ARCS Forum April 29, 2013** Join leading sustainability academics and sustainable business leaders for a day of insightful dialogue Alliance for Research on Corporate Sustainability To bridge the communities of practitioners, researchers, and educators focused on the area of corporate sustainability, the Center for Responsible Business (CRB) and the Alliance for Research on Corporate Sustainability (ARCS) is hosting a one-day Forum as part of its annual academic conference. This year's objective is to spark a useful discussion on business models for sustainability. Join us for an exciting day **filled with insightful dialogue from both sustainable business leaders doing the work and academics who study it!** The morning session will kick-off with an overview of the current status of sustainable business practice and then leave the balance of the day to consider the merits of emerging examples in the areas of market-based approaches, customer engagement and motivating change toward sustainability in companies. The debate will be lively as researchers and practitioners come together to share and compare their science-based findings and real-world experience. Register HERE. Click HERE for the current Forum schedule.

BIOGRAPHICAL SKETCH:

Omar Romero-Hernandez, PhD., Faculty and Senior Research Advisor, Center for Responsible Business.

Former Director of the Center for Technological Development (CDT) at the Autonomous Technology Institute of Mexico (ITAM). Omar is a Chemical Engineer with graduate studies in Economic Policy and Government and a PhD in Process Economics and Environmental Impact from Imperial College, London, UK.

Omar has worked for a diverse range of public and private organizations such as Procter & Gamble, PEMEX (Oil & Gas), Accenture, and the Ministry for the Environment and Natural Resources. In 2001, he was appointed as Professor at ITAM, UC Berkeley Fulbright Professor in Haas (2009) and Energy Biosciences Institute Researcher in 2010. Currently, he is a National Researcher, and author of three books: Renewable Energy Technologies and Policies, Industry and the Environment and Introduction to Engineering – An Industry perspective and several international publications on engineering, business and sustainable development.

He has led various internationally awarded projects in the field of renewable energy, sustainable business strategies and business processes – sponsors include the United Nations, Ministry of the Environment, Industry consortiums, the Stock Exchange and NGOs. In 2010 he was appointed national leader of Mexico's Business Summit task force on Economic Growth and Low Carbon Emissions, which delivers recommendations to the President. Prof. Romero-Hernandez was the recipient of the 2010 Franz Edelman Award, the world's most prestigious award on Operations Research and Management Science.

Federico Castillo, PhD., Researcher and Lecturer, Department of Environmental Science, Policy and Management.

Federico Castillo is an Environmental Economist with a PhD and undergraduate degrees from the University of California, Berkeley. Federico's research is centered on technology transfer and innovation, economic valuation, the socio economic impacts of climate change as well as the economic aspects of protected areas. He is a member of a multidisciplinary team that is developing a research agenda on climate change, agriculture and population issues in the Berkeley Campus. Federico has worked as a consultant for the World Bank, The Tropical Agricultural Research Center, WWF, The Nature Conservancy and other international organizations on a wide range of topics from economic valuation of natural resources to the economic analysis of protected areas. Federico is responsible for teaching an undergraduate class in economic aspects of natural resource management in the Department of Environmental Science, Policy and Management.

Guest faculty:

- Prof. David Zilberman (ARE) – leader on ecosystems valuation
- David Sunding (ARE) – leading water expert
- Prof. David Levine (Haas) - leader on systems valuation

SUGGESTED READINGS:

Please note that these readings are not required. They represent an extra source of references for those of you who may wish to dig further into Natural Resource Management.

Griffin, Ronald. "Water Resource Economics". MIT Press. Cambridge, Massachusetts.

Stokey, Edith and Zeckhauser, Richard. "A Primer for Policy Analysis" W. W. Norton & Company. New York.

United States Department of Agriculture. "Water, Climate Change, and Forests: Watershed Stewardship for a Changing Climate"

Pagiola, Stefano; Bishop, Joshua and Landell-Mills, Natasha. "Selling Forest Environmental Services: Market Based Mechanisms for Conservation and Development" Earthscan Publishing Services. New York. 2002

The Corporate Ecosystem Services Review: Guidelines for Identifying Business Risks & Opportunities Arising from Ecosystem Change. World Business Council for Sustainable Development.

Economic Valuation articles:

Barbier, E. B., Brown, G., Dalmazzone, S., Folke, C., Gadgil, M., Hanley, N., . . . Wells, M. (1995). The Economic Value of Biodiversity. In V. H. Heywood (Ed.), Global Biodiversity Assessment (pp. 823-915). Cambridge: Cambridge University Press.

Chichilnisky, G., & Heal, G. (1998). Economic Returns from the Biosphere. Nature, 391(February), 629-630.

Heal, G. (2000). Nature and the Marketplace: Capturing the Value of Ecosystem Services. Washington, D.C.: Island Press.

Walpole, M. J., Gooddwin, H. J., & Ward, K. G. R. (2001). Pricing Policy for Tourism in Protected Areas: Lessons from Komodo National Park, Indonesia. Conservation Biology, 15(No. 1), 218-227.