UNIVERSITY
OF MIAMI
FACULTY SENATE

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MEMORANDUM

To: Julio Frenk, President

From: Tomás A. Salerno
Chair, Faculty Senate

Date: November 21, 2018

Subject: Faculty Senate Legislation #2018-31(B) – Proposal to Create a Master of Science in Sustainable Business Degree, Business School

****

The Faculty Senate, at its November 14, 2018 meeting, voted unanimously to approve the proposal from the Business School to create a new Master of Science in Sustainable Business Degree. The degree will provide students interdisciplinary training in the application of sustainability concepts to management of the firm.

The new degree program will require completion of 32 credit hours that include 20 credit hours in required courses, 3 credit hours for a capstone project, and 9 credit hours in approved electives from RSMAS or the College of Engineering's Civil, Architectural and Environmental Engineering department. The program will be interdisciplinary in nature, with eleven new courses developed for the program, and supported by existing faculty. The degree will be offered on a quarterly basis rather than a semester basis.

The proposed graduate major "represent a significant departure in content" from what the University is currently approved to offer by SACSCOC. Therefore, a prospectus will need to be submitted to SACSCOC for approval prior to implementation.

The Faculty Senate does not approve budget concepts, therefore no budget information is included here.

This legislation is now forwarded to you for your action.

TAS/rh

Enclosure

cc: Jeffrey Duerk, Provost and Executive Vice President for Academic Affairs
John Quelch, Dean of the Business School
Patricia Abril, Vice Dean, Graduate Business Education
David Kelly, Professor and Chair, Department of Economics, Business School

CAPSULE: Proposal to Create a Master of Science in Sustainable Business Degree, Business School

APPROVED: _____ DATE: 12/18/18
(President's Signature)

OFFICE OR INDIVIDUAL TO IMPLEMENT: Dean John Quelch

EFFECTIVE DATE OF LEGISLATION: IMMEDIATELY
(if other than June 1 next following)

NOT APPROVED AND REFERRED TO: _____

REMARKS (IF NOT APPROVED): _____

UNIVERSITY OF MIAMI

Proposal Submission Checklist

Proposals are to be submitted to the Office of Assessment and Accreditation (OAA), if applicable, the Graduate Council (for graduate programs excluding Law and Medical), if applicable, and the Faculty Senate. Refer to the Procedures for Program Changes document for information on the approvals and notifications needed for program changes and the Proposal Submissions Specifications document for an explanation of the process and a list of the materials required.

(Please note that change approvals can take 2 semesters to complete.)

FORM INSTRUCTIONS:
1. Save/download the form as a pdf.
2. After completing the information below, print and scan the form.
3. Insert it with the background materials that are specified, in the order listed, and submit to facsen@miami.edu.
***Please note:** only scanned versions can be accepted.*

Include this checklist at the beginning of each proposal.

KEY CONTACT PERSONNEL INFORMATION

First Name	Last Name	Proponent's Title
Patricia	Abril	Vice Dean, Graduate Business Education

Department, if applicable	School/College
Graduate Business Programs	Miami Business School

E-mail	Phone
pabril@miami.edu	(305) 284-6999

Title of Proposal

Degree Creation: Master of Science in Sustainable Business

(-continue to next page-)

MANDATORY MEMORANDA AND FORMAT

Please check that each item listed below is included in the proposal package of materials, in the ORDER as listed. The applicable title (i.e. Letter of Explanation, Memo from the Dean, etc.) is to precede each section in the materials.

Only proposals conforming to this format will be accepted.

1. This completed checklist.

2. Letter of explanation. (2-3 pages only, double spaced, 12 pt font)

◉ Yes ○ No

If no, explain why:

3. A memo from the dean(s) signifying approval of the faculty of the relevant School(s) / Colleges(s).

◉ Yes ○ No

If no, explain why:

4. A memo that all affected or relevant School / College Council(s) have approved.

◉ Yes ○ No

If no, explain why:

5. A memo from the department chair(s) signifying approval of the faculty of the relevant department(s).

◉ Yes ○ No

If no, explain why:

6. A memo from the Office of Accreditation and Assessment (OAA) if the proposal involves academic programs (degrees, certificates, majors, minors, concentrations, specializations, tracks, etc.) such as new programs, closing programs, or program changes (such as changes in requirements, program length, modality, name, location).

(To be submitted by OAA to the Graduate Council or the Faculty Senate, as appropriate.)

◉ Applicable ○ Not applicable.

If not, explain why:

7. A memo from the Graduate School Dean signifying approval of the Graduate Council (for graduate programs only).
(To be submitted to the Faculty Senate by the Graduate Council.)

◉ Applicable ○ Not applicable.

If not, explain why:

The Graduate Council conditionally approved the proposal pending market and needs analysis and the addition of the criteria for the GRE/GMAT waivers. These requests have been met, accepeted, and incorporated.

8. Academic Deans Policy Council (ADPC) approval, for interdisciplinary issues and as appropriate. Please consult with the Dean of the Graduate School or the Secretary of the Faculty Senate to check if this is needed.

◯ Yes ◉ No

If no, explain why:

Not applicable.

9. Additional required documents as listed on the "Proposal Submissions Specifications," i.e. market analysis, budget information, assessment of library collections, etc. as specified.

List additional documents included:

End form.

DEGREE PROPOSAL

Master of Science in Sustainable Business

Academic Coordinator: David L. Kelly
Department of Economics
University of Miami
Box 248126
Coral Gables, FL 33134
dkelly@miami.edu

Proposal: September 12, 2018
Program Start Date: Fall, 2019

Executive Summary

The Master of Science in Sustainable Business at Miami Business School (MBS) will provide students interdisciplinary training in the application of sustainability concepts to management of the firm. In a sustainable business, financial, environmental, and social goals are integrated throughout the management areas in a way which promotes long term firm value and social good. Students will receive training in the scientific basis through interdisciplinary electives from the Rosenstiel School (RSMAS) and/or Civil, Architectural, and Environmental Engineering (CAE).

The MBS is ideally placed to lead the market in sustainable business education. The MBS faculty has expertise in all three pillars of corporate sustainability: environmental (economics), social (business law, economics, management, and marketing), and governance (business law, finance, accounting). The MBS faculty also has related expertise in areas such as supply chain risk and the RSMAS and CAE faculty provide expertise in the scientific basis. Finally, South Florida is at the epicenter of many environmental problems. While a few programs in sustainable business exist, most are focused on public policy or natural science, and none have the rigorous training that MBS can provide and the market is demanding.

Firms large and small are increasingly focused on sustainability. For example, 85% of S&P 500 firms now issue reports on their sustainability efforts versus 20% 2011, a more than fourfold increase in only seven years. The Master of Science in Sustainable Business degree will satisfy this growing demand with students who receive rigorous training in the business principles of sustainability and the science behind the firms efforts.

MASTER OF SCIENCE DEGREE IN SUSTAINABLE BUSINESS

- **Name of the degree**: Master of Science.
- **Name of the field of study**: Sustainable Business.
- **Responsible administrative unit for the program**: Department of Economics, Miami Business School.
- **Academic Coordinator**: Professor David L. Kelly.
- **Proposed date for implementation**: Fall, 2019.

I Rationale

Firms large and small are increasingly prioritizing their sustainability efforts. With respect to large firms, 85% of S&P 500 firms now issue reports on their sustainability efforts versus 20% 2011, a more than fourfold increase in only seven years.[1] In addition, small firms are emphasizing their sustainability efforts to differentiate their products and emphasize benefits they provide to society. The focus on sustainability in the marketplace can be seen by the size of socially responsible investments. The size of the socially responsible investment assets under management reached $8.72 trillion in 2016, nearly 22% of the total assets under management.[2]

Within the firm, the importance of sustainability has moved beyond sustainability officers to virtually all management areas. Supply chain managers are now increasingly focused on making supply chains more sustainable. Accounting executives are integrating sustainability reporting with traditional accounting reports. How consumers view sustainable products is important for marketing and financial advisers must integrate socially responsible investments with the rest of their clients' portfolios. The proliferation of sustainability issues across management areas strongly suggests the need for a business-focused master program, which can train managers across business disciplines in the application of sustainability concepts to management, marketing, finance, and other areas.

In the academic literature, sustainability-related research is receiving increasing attention from top journals. For example, the *Review of Financial Studies* recently held a conference

[1] See for example, Coppola (2017).
[2] See for example, US SIF Foundation (2016).

for the purpose of a special issue on climate finance. A research driven master program in sustainable business is ideal for disseminating recent advances in sustainability to the next generation of business leaders.

An important consideration for potential master students is job placement. The demand for graduates with training in the business aspects of sustainability is robust. A 2011 study (Muro, Rothwell, and Saha 2011) found 2.7 million jobs (about 2% of total jobs) directly contribute to the production of goods and services with an environmental benefit. The demand is diverse, coming from 41,185 companies in almost every industry.

The MBS is ideally placed to lead the market in sustainable business education. Corporate sustainability consists of three pillars: environment, social, and governance. With regard to environment, MBS economics department has faculty specializing in environmental economics. The business law, finance, and accounting departments have expertise in governance. Faculty in business law, economics, marketing, and management have expertise in the social benefits of firm activity. Further, many faculty have closely related research expertise. For example, MBS management faculty study supply chain risk, and some of the most important risks are risks of environmental accidents and natural disasters. The world class faculty at MBS can provide more rigorous training for sustainable business practices than many competing second tier programs (see section IX for an analysis of competing programs).

The MBS can also tap into an array of related expertise across the university. The Rosenstiel School (RSMAS) is one of the foremost institutions for the study of many marine and atmospheric environmental problems (climate change, hurricanes, etc.), and can provide the scientific basis for a business sustainability program. The Department of Civil, Architectural, and Environmental Engineering (CAE) has expertise in sustainable construction methods and risk and resilience. The ABESS Center for Ecosystem Science and Policy, the new master in Health and the Environment, and other schools and programs across the campus all have courses and/or faculty expertise that relates to business sustainability. This campus wide expertise will ensure that the sustainability program and MBS will be well grounded in the scientific basis.

Finally, Miami and South Florida are at the epicenter of many environmental problems. South Florida has three national parks and the fourth largest coral reef system in the world and is vulnerable to sea level rise and tropical cyclones. Students pursuing a master in sustainability at MBS can see first hand the need for corporate sustainability programs.

II Resources

Library Resources

The University of Miami Library system maintains all necessary journal subscriptions, which include major journals in business, science, and other topics of interest to sustainability students. For example, the *Journal of Environmental Economics and Management* is covered under the library's ScienceDirect subscription. The *Review of Financial Studies*, which published the special issue noted above, is covered under the library's JSTOR subscription.

The MBS maintains a database of business data sources which include databases with sustainability related content. For example, students have access to company financial data and corporate social responsibility reports via Mergent Online. Many firms are now reporting their progress on sustainability with publicly available data.

Facilities, Equipment, and Space

The courses will be scheduled in a way which optimizes the equipment and space available to the school. In particular, the courses will follow the 2-credit quarterly course format of the other MBS master programs, allowing students in other programs to take sustainability classes as electives. In addition, the program requires 3 electives from RSMAS and/or CAE which are already staffed as part of their master degree programs. The capstone/project course is designed to be conducted outside the classroom at a firm.

Additional Faculty

Existing faculty within MBS have been recruited to teach the new courses. Hence, no new faculty are needed.

III Curriculum

Major divisions in which the graduate work will be offered

The MBS departments of accounting (1 course), business law (1 course), management (2 courses), marketing (1 course), economics (5 courses), and finance (2 course) will teach new courses in the program. The program will require 3 electives from RSMAS/CAE which are already being taught as part of other programs. A capstone/project course is existing under the school of business (BUS) designation.

Adequacy of Existing Curriculum

The MBS offers a course in business ethics (BSL 690) which is part of the governance aspect of sustainability. In addition, the MBS offers a project course (BUS 628), which can be adapted to sustainability. The MBS does not offer any courses in most aspects of sustainable business at the graduate level. Therefore, a total of 11 new 2-credit courses will be created.

Additions and deletions to the curriculum

The following courses will be added:

1. ACC 666: "Accounting for Sustainability."
2. ECO 613: "Microeconomics of Sustainability."
3. MGT 667: "Leadership for Sustainable Organizations."
4. ECO 614: "Valuing Public Goods."
5. MKT 653: "Sustainable Marketing of Goods and Services."
6. MGT 646: "Sustainable Supply Chains"
7. ECO 615: "Managing Regulation Compliance."
8. ECO 616: "Sustainability and Market Dynamics"
9. FIN 672: "Sustainable Finance"
10. FIN 654: "Impact Investing"
11. ECO 617: "Enterprise Risk Management."

Interdisciplinary Components

Students are required to take 3 elective courses from RSMAS and/or CAE, which provide the scientific basis for sustainability programs at the firm. See list of electives below. The program anticipates adding additional electives from related programs across the university over time.

In the capstone/project course (BUS 628), students will do a sustainability project for a firm/organization. In this course, students will integrate interdisciplinary aspects of the program within the project. Students will be required to make both the scientific and business case for their sustainability project.

Detailed Description of the Program

The program will consist of 10 (two credit) courses which rethink core business disciplines to focus on sustainability. One course, BSL 690, Legal and Ethical Implications of Business Decision Making, is already in existence. The program will also add 3 (three credit) courses from RSMAS/CAE, which provide an overview of the current scientific consensus on various environmental problems. Finally, there is a capstone/project course for which students will do a sustainability project for a firm/organization. This course, BUS 628, is already in existence. The course will consist of 1 credit for each of the second, third, and fourth quarter. The total is 32 credits.

Fall Semester		Spring Semester	
First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Accounting for Sustainability (2)	Sustainable Marketing of Goods and Services (2)	Managing Regulation Compliance (2)	Sustainable Finance (2)
Microeconomics of Sustainability (2)	Valuing Public Goods (2)	BSL 690: Legal and Ethical Implications of Business Decision Making (2)	Enterprise Risk Management (2)
Leadership for Sustainable Organizations (2)	Sustainable Supply Chains (2)	RSMAS/CAE course (semester course, 3)	
RSMAS/CAE course (semester course, 3)		RSMAS/CAE course (semester course, 3)	
	UMAP-Bus 628 (project course, 3)		
Total Credits			
6 plus half of 3 credit course	7 plus half of 3 credit course	5 plus half of two 3 credit courses	5 plus half of two 3 credit courses

Table 1: Curriculum. Credits are in parenthesis. The total is 32 credits.

Electives (take 3):

- MES 620: Environmental Law and Policy.
- MES 618: Coastal Zone Management.

- MES 610: Environmental Planning and the Environmental Impact Statement.
- MES 714: Population Modeling, Risk Assessment and Management
- MES 720: Coastal Law and Policy.
- MES 533/633: Decision Analysis, Natural Hazards and Catastrophes
- MES 602: Economics of Natural Resources.
- MBE 615: Tropical Marine Ecology.
- ATM 653: Climate Change (math and physics pre-requisites required).
- ATM 614: Weather and Climate.
- RSM 620: Climate and Society.
- RSM 613: Statistical Modeling of Extreme and Rare Events.
- CAE 660: Sustainable Construction.
- CAE 744: Risk and Resilience.
- CAE 681: Energy Efficient Building Design (math and physics pre-requisites required).
- CAE 762: Construction Project Management.
- FIN 654: Impact Investing.
- ECO 616: Sustainability and Market Dynamics.
- CMA 644: Sustainable Design and Construction.

Additional courses are possible subject to approval.

Teaching

The program will primarily be classroom based, with the exception of the 3 credit capstone/project course, BUS 628. This course is a field project at a firm or other organization.

Describe any Seminars and Colloquia

Students will present the results of their capstone/project courses. Additional seminars are expected on an *ad hoc* basis from faculty doing research in sustainability and executives in the sustainability field (e.g. sustainability officers).

Include Learning Outcome Assessment Plan

University of Miami Mission Statement

The University of Miami's mission is to educate and nurture students, to create knowledge, and to provide service to our community and beyond. Committed to excellence and proud of the diversity of our University family, we strive to develop future leaders of our nation and world.

MBS Mission Statement

Our mission is to develop innovative ideas and principled leaders that transform global business and society.

Program Objectives

The Master of Science in Sustainable Business aims to address the growing demand for a master degree in sustainable business.

- Provide rigorous, business focused graduate education to those pursuing a degree in sustainable business.
- Educate students in the scientific basis of sustainability programs.
- Provide students with experiential training in the development of a business sustainability project.

Definition and Assessment of Intended Outcomes

- Outcome 1: Be able to use rigorous, data-driven methods to measure, report, and analyze sustainability programs.
  - Assessment 1: Questions embedded in homework, exams, quizzes, and assignments.

  - Assessment 2: Student exit surveys.

- Outcome 2: Understand the scientific basis behind sustainability programs.
  - Assessment 1: Questions embedded in homework, exams, quizzes, and assignments in science/engineering electives.
  - Assessment 2: Student exit surveys.

- Outcome 3: Develop written and oral communication skills and critical thinking needed to succeed in sustainability-related professions.
  - Assessment 1: Written summary and oral presentation of student experiential projects in BUS 628.
  - Assessment 2: Student exit surveys.

Findings and Discussion

The academic director will compile the findings from the assessments. The faculty teaching in the program will meet regularly to discuss the results and identify areas that need improvement.

IV Faculty

Need for Additional Faculty

The program does not anticipate the need for additional faculty.

Interaction With Other Programs

The program will require 3 RSMAS/CAE courses as electives. Additional electives from related program across the university may be added.

V Students

Number of Students

The goal for the first year is 25 students. This number is expected to grow starting in the second year when there is time for a full recruitment cycle.

Recruiting

The program would be attractive students seeking to become sustainability and risk management officers. Business-focused students interested in supply chain and operations management and marketing would find the program attractive as well. The program would be highly attractive to students with non-traditional backgrounds, such as science and engineering, who want both a rigorous program and a full suite of business skills. The courses would also be attractive to students in other master programs. For example, MBAs may want a concentration in sustainable business, master of science in finance students will find the finance courses useful, and RSMAS and CAE master students might be interested in the business aspects of sustainability.

Admission Requirements

The program will recruit and accept students with strong quantitative skills as the program consists of rigorous business and science courses. A bachelor's degree is required. The program will accept either GMAT or GRE. International students will be required to take the TOEFL. Admissions testing may be waived if either of the following criteria is met:

- the applicant has two or more years experience in a sustainability-related field.
- the applicant has a GPA of 3.5/4.0 or better.

VI Administration

Anticipated need for additional administrative help

None.

Administration and academic direction

Academic administration will be the responsibility of professor David Kelly. Day-to-day administration will be handled by the graduate business programs staff.

VII Budget

Table 3 in Appendix Appendix B gives a breakdown of the budget. The program is projected to incur a small loss in 2019, becoming profitable starting in 2020.

The courses in the program can be taken as electives by other MBS master students (MBA, Master of Finance, etc.) and by students in RSMAS and CAE. Revenue from these students are not included in the budget.

The Miami Business School has obtained revenue sharing agreements with RSMAS and CAE, where each school will keep the revenues for each credit taken at their school. For example, if a student takes 2 RSMAS electives and a CAE elective, RSMAS would receive 2 classes times 3 credits equals 6 credits worth of tuition revenue, and CAE would receive 3 credits worth of tuition revenue.

VIII Transfer of Coursework to Graduate Programs

As noted above, the business courses can serve as electives in other MBS masters programs. Many of the science and engineering courses are requirements or electives for graduate degrees in these programs.

IX Comparison of Existing Sustainability Programs at Other Universities

Differentiating our Program

Our program will have three principles. First, the program will have a business focus: what do managers need to know about sustainability? How are sustainability initiatives integrated with the firm's strategy throughout the organization? This focus will differentiate our program from most other sustainability programs which focus on public policy or natural science, and then add a few business courses.

Second, the program will be data driven and informed by science. Our program will focus on how to achieve the most social benefit at minimum cost to the firm. Science courses and a course in non-market valuation will teach students how to statistically estimate the benefits to society of sustainability programs, which will teach future sustainability officers to focus their efforts on the programs that have the most benefit. The program will be more rigorous/technical than most sustainability programs.

Third, the focus will emphasize environmental issues (sustainability more broadly includes environment, social, and governance). This will differentiate our program from other programs which focus more on other aspects of sustainability. Of course, there is considerable overlap between the three (all require enhanced reporting, for example). Although environmental aspects are emphasized, other aspects are sustainability are certainly not ignored.

Public Policy/Environmental Studies Programs

Many sustainability programs are run out of public policy schools, or have a large public policy component. Such programs focus on training students for careers in government, NGOs, and similar organizations. Sometimes these programs are called master in environmental management. In contrast, our program will focus on training executives such as corporate sustainability officers, risk management officers, and supply chain officers to integrate sustainability throughout the organization.

Examples of public-policy programs:

- Brandeis. Sustainable Development MBA. Although called an MBA, it is in the public policy school with many public policy courses. `http://heller.brandeis.edu/mba/concentrations/sustainable-development.html`
- University of Michigan-Ross. Dual BMBA/MS in environment and sustainability. Joint degree with the public policy school. Environment part is heavy on public policy courses. `https://erb.umich.edu/programs/dual-degree-curriculum/`
- UC-Santa Barbara. Master in environmental management. Separate school, UCSB has no business school. `https://www.bren.ucsb.edu`
- Yale. MBA with School of Forestry and Environmental Studies. Dual degree with business and environmental studies. `https://som.yale.edu/programs/joint-degrees/mba-mem-or-mf-yale-school-forestry-environmental-studies`

Science/Technology/Energy Programs

These programs combine science and engineering courses related to energy and the environment with business courses. The science aspects are emphasized relative to the business aspects. The purpose is to give business credentials to science and engineering graduates.

Examples of programs with a strong engineering/science component:

- Duke, Fuqua. MBA with Energy and Environment Concentration. Emphasizes electric power markets, transportation and primary energy industries, rather than sustainability. `https://go.fuqua.duke.edu/data/fuquaworld/Student_Resources/energy_environment_concentration.html`

- Stanford GSB. Joint MS Environment and Resources/MBA degree program. Heavily focused on science and engineering aspects.

- UC-Berkeley. Engineering and Business for Sustainability (EBS) Certificate. A combination of engineering and economics with some law. `http://sustainable-engineering.berkeley.edu/`

Business Programs

These programs have more of a business focus, similar to our vision. However, many are not run out of a business school. Others are less rigorous or are only certificate programs.

Examples of business programs with sustainability components:

- University of Vermont. MBA completely redesigned around sustainability with emphasis on entrepreneurship. However, less rigorous than our vision. Many courses are one credit. From the website: "The traditional focus on extensive manual calculations and problem sets has be reduced in favor of knowing where to go to get the latest and best quantitative work done."
  `https://www.uvm.edu/business/simba_offering_more_less_time`.

- Arizona State School of Sustainability. Executive Master of Sustainability Leadership.
  `https://schoolofsustainability.asu.edu/degrees-and-programs/graduate-degrees-programs/executive-master-sustainability-leadership/`

- Bard College. MBA in Sustainability. Bard has no regular MBA.
  `http://www.bard.edu/mba/`

- University of Oregon. Sustainable Business specialization within the MBA program. Run through the business school and includes courses on how sustainability interacts with other business subjects. A close fit but not a separate master program.
  `https://business.uoregon.edu/mba/specializations/sustainable-business-practices`

- UNC-Chapel Hill. Master in Sustainable Business. Run through the business school and includes courses on how sustainability interacts with other business courses. A close fit.
  `http://www.cse.unc.edu/index.php/mba/`

- UC-San Diego. Certificate in Sustainable Business Practices. `https://extension.ucsd.edu/courses-and-programs/sustainable-business-practices`. Similar, but not a separate master program.

- University of South Florida. MBA concentration: Building Sustainable Enterprise. Has many similar ideas, but is not a separate master program. `http://www.usf.edu/business/graduate/mba/sustainability.aspx`

The above list is representative, but not exhaustive. It is clear that most programs either focus more on public policy and/or science and not business, are less rigorous, and/or are not a one year master program. Many programs are also at second tier business schools that do not have the world class faculty of MBS.

X Career Prospects

The demand for graduates with training in the business aspects of sustainability is robust. A 2011 study (Muro, Rothwell, and Saha 2011) found 2.7 million jobs (about 2% of total jobs) directly contribute to the production of goods and services with an environmental benefit. The demand is diverse, coming from 41,185 companies in almost every industry. According to a 2015 study published in the Harvard Business Review, "The number of companies with full-time sustainability officers doubled between 1995 and 2003, and doubled again between 2003 and 2008. Other sustainable management occupations can be expected to follow this trend as well."

The most obvious career placement is as a corporate sustainability officer. Salary statistics vary widely for such a position, because sustainability officers may rank anywhere from starting (e.g. manager), to middle (e.g. Director), to the upper tier (e.g. Vice President) of management, depending on the organization. Table 2 includes salary figures which depend on the rank of the position. The study by Greenbiz is especially helpful because it was a survey of recruiters and they were careful to separate positions by rank.

Although the results in Table 2, it is clear that the starting salary is in the range of $90-$100K, with significant opportunity for advancement over time. The salaries are clearly at a level that can support the proposed tuition.

The program will also place students in traditional MBA roles where sustainability has become increasingly important. These fields include accounting, finance, supply chain management, and marketing. Table 2 also includes data on Miami Business School MBA starting salaries, since graduates placed in these roles will likely have similar starting salaries. As

expected, MBS graduate salary data is similar to data for recent graduates/entry level corporate sustainability positions.

Source	Median Salary	Salary range
Chief Sustainability Officer		
Bureau of Labor Statistics	$194,350	
Indeed.com		$84,340 - $129,124
Recruiter.com	$183,800	$144,000 - $216,000
Sustainability Degrees	$166,910	
Greenbiz.com	$220,000	
payscale.com	$92,106	$56,673 - $211,853
Average of all sources	$173,142	$99,796 - $182,385
Sustainability Manager/Director		
Ziprecruiter (Manager)	$75,702	$56,000 - $91,000
payscale.com (Manager)	$71,047	$46,006 – $111,617
greenbiz.com (Director)	$150,000	
greenbiz.com (recent masters grad)		$80,000 - $120,000
Average of all sources	$98,916	$60,669 - $107,539
Traditional MBA Position		
MBS median	$96,985	

Table 2: Salary data.

Appendix A Sustainability and Related Concepts

What is sustainability?

Sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their needs.

Many corporate definitions exist. Sustainability in business aims to create long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments. The goal is to use sustainability concepts to increase value and reduce risk, providing benefits to shareholders and society at large (social benefits).

One example is creating efficiency gains by minimizing the use of costly resources such as energy and other raw materials which have an adverse environmental impact. Minimizing the use of costly resources reduces costs and promotes the reputation of the firm, directly increasing shareholder value. Resources not used by the firm can then be conserved for use by future generations or for other purposes, providing external benefits to society.

Sustainability versus related concepts

Many schools offer courses in the related concept of corporate social responsibility (CSR). While both sustainability and CSR activities both promote the social good, with sustainability the firms efforts are more integrated with with the firm's business and strategy, especially over time. For example, a luxury hotel may take steps to conserve and maintain a local eco-tourism site, promoting the long run interest of both the firm and the local community. Because sustainability efforts are integrated with the firm's strategy, it becomes important across management areas.

Appendix B Budget

Table 3 details revenues and expenses for the first 3 years. Note that both revenues and expenses include elective courses taught at RSMAS/CAE. That is, revenues are for 32 credits and expenses include teaching for all 32 credits, regardless of which school teaches them.

Appendix C Course descriptions, basic information, and outlines for new courses

ACC 666 Accounting for Sustainability

Course Description

Most large firms now report metrics of progress towards the firm's goals with respect to environmental, social, and governance (ESG) aspects of sustainability, often integrating sustainability reporting with financial reporting. The course examines the value of sustainability reporting in terms of indicating efficiency, risk, and brand capital. The course analyzes emerging metrics for sustainability and emerging reporting systems. The course also examines SEC and other regulations for reporting sustainability, and how such reporting is viewed by the investor community.

Course Information

- Tentative Instructor: DJ Nanda.

Appendix C Course descriptions, basic information, and outlines for new courses

- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: this course will use readings and cases.

Course Outline

1. The business case for sustainability
   (a) What is sustainability?
   (b) What is ESG?
   (c) Why do these issues matter to business?
2. Purpose of measurement and reporting
   (a) Benefits
      i. Measurement
      ii. Internal reporting
      iii. External reporting
   (b) Costs

3. Global Reporting Initiative (GRI)
    (a) Materiality assessments
    (b) GRI standards
    (c) Examples of CSR reports
4. Communicating with capital providers
    (a) Evolution of investor demand
    (b) Financial materiality
5. Investor focused regulations and reporting frameworks
    (a) SEC and international regulations
    (b) Stock exchange rules
    (c) Reporting standards
        i. Integrated reporting
        ii. Climate Disclosure Standards Board
        iii. Sustainability Accounting Standards Board (SASB)
        iv. Corporate Reporting Dialogue
6. A closer look at SASB
    (a) Background
    (b) Materiality map
    (c) Approach to climate change
    (d) Examples of SASB reports
7. **Other topic-specific frameworks**
    (a) Task Force on Climate-related Financial Disclosures (TCFD)
    (b) Climate Disclosure Project (CDP) reports
    (c) Social/Human Capital Coalition
8. Enhanced FSA/cases

ECO 613 Microeconomics of Sustainability

Course Description

The course examines production and costs from a sustainability perspective, emphasizing the tradeoffs associated with reducing energy and other natural resources in production processes. Conditions under which reducing natural resources while using more of other inputs reduces total costs without sacrificing production are derived. Extensions are studied in which the same conditions are derived under a more general definition of costs which includes the costs of natural resource use to society and to brand reputation. The course then examines consumer demand for energy efficient products, emphasizing financing arrangements which allow the household to avoid the up front fixed costs of energy efficient durable goods. Finally, the course examines externalities: actions by the firm which impose costs or benefits to society in a way which is not accounted for by prices.

Course Information

- Projected Instructor: Dr. Esteban Petruzzello.
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: Allen, W. Bruce, et. al., *Managerial Economics (8th Edition)*. W. W. Norton & Co., New York, 2012. Supplementary textbook (used also in regulation class): Kolstad, C. K., *Environmental Economics*, Oxford University Press, 2011.
- Stem (CIP) code: 45.0603 Econometrics and quantitative economics.

Course Outline

1. Production and Costs.
   (a) Sustainability as a production input problem.
   (b) The marginal rate of technical substitution.
   (c) Conditions for which reducing resources maintains production but reduces costs.

(d) Conditions for which reducing resources increases production without increasing total costs.

(e) Reducing resource usage by increasing scale.

(f) Resource decisions accounting for the costs and benefits imposed on external stakeholders.

2. Consumer demand.

   (a) Elasticity.

   (b) Short versus long run.

   (c) Demand and product differentiation.

   (d) Demand for energy efficient durable goods.

      i. Up front fixed costs.

      ii. financing.

3. Externalities.

   (a) Pecuniary and non-pecuniary.

   (b) Solutions within the firm: sustainability.

   (c) Solutions imposed by government: Pigouvian taxes.

4. Examples and cases:

   (a) The use of speed delimeters by Walmart to reduce fuel use.

   (b) Commercial airline refueling decisions.

MGT 667 Leadership for Sustainable Organizations

Course Description

This course covers the essentials of front-line leadership in sustainability, from integrating sustainability into an organization, executing organizational strategy, and committing to it for a lifetime. It is an exploration of the most prominent issues in the field of leading for sustainability; for example, leader traits required to promote and support change, how to deal with real world constraints, and ethical considerations. The lectures, along with readings, cases, simulations, and assignments, will further develop students understanding and critical thinking about the leadership tools and strategies that they, themselves, can use in their own organizations.

Course Information

- Projected Instructor: Dr. Marie Dasborough
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: *Leadership: Theory and Practice*, 8th Edition by Peter G. Northouse.

Course Outline

1. Introduction.
   (a) Introduction.
   (b) Unilever Philippines (2017 Harvard Case).
2. Leadership traits and skills.
   (a) Traits.
   (b) Skills.
   (c) Self-assessment and self-development plan.
3. Leadership values.
   (a) Authentic leadership.

(b) Servant leadership.

4. How to effectively lead change.

   (a) Transformational leadership.

   (b) Adaptive leadership.

   (c) Change management simulation.

5. Managing a sustainable workforce.

   (a) Programs for creating a sustainable workforce.

   (b) Aligning managerial incentives with sustainability goals.

   (c) Value of sustainability to the workforce.

   (d) Analysis of "PepsiCo: Performance with a Purpose."

   (e) Three pillars of sustainability: Human, environmental, and talent.

6. Ethical issues for leaders to consider.

   (a) Ethics.

   (b) Volkswagon emissions scandal (2018 Harvard Case).

MKT 653 Sustainable Marketing of Goods and Services

Course Description

The course considers the creation, pricing, promotion and consumer targeting for sustainable products. We start with a broader view considering prosocial marketing, hybrid organizations, and CSR (corporate social responsibility). We then go into the specifics around sustainability addressing such topics as motivating sustainable consumer behavior and product selection, using choice architecture to subtly nudge consumers towards sustainable consumption, and identifying and segmenting the sustainably-minded consumer. The course will also discuss sustainability as a signal about the product (e.g. quality), the brand (e.g. credibility), as well as the consumer (e.g. sustainability as cultural capital). We also delve into issues of pricing sustainable products and sustainability as an externality. This course will use published cases as well as analysis of current businesses to identify the optimal manner in which to market sustainable products and brands.

Course Information

- Projected Instructor: Dr. Claudia Townsend
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: TBA

Course Outline

Outline:

1. Social marketing and Creating demand for sustainable products.
   (a) Creating consumer awareness.
   (b) Choice architecture and nudging consumers towards sustainable behaviors.
2. Product Certification: Green Guides, UNOPS, and Green Labels.
3. Signaling.

(a) For The Product: Sustainability as an unobserved product feature.

i. Greenwashing.

ii. Third party product certification.

iii. Partnering with/donating to social organizations.

iv. Sustainability as a signal of product quality.

(b) For the Firm:

i. Hybrid organizations.

ii. Building reputation.

(c) For the Consumer:

i. To self: the psychology of sustainability.

ii. To others: Sustainability as cultural capital - "the new luxury."

4. Pricing sustainable products.

(a) Value of a sustainable product.

(b) Segmenting customers using sustainable versions of a product.

5. External value of marketing sustainable products. (value to society).

6. Future Trends and the Future of Sustainability.

7. Examples/Cases.

(a) Dolphin-safe tuna: difficulty of verifying sustainability of a product.

(b) Whole Foods: sustainability and product quality and segmentation.

(c) Prius: signal to self.

(d) Tesla: Sustainability as cultural capital.

(e) Veja: Sneakers with a Conscience, (HBR).

(f) Redefining Value Creation in Value Chains: The Social Side of Sustainability (HBS).

(g) The Clorox Company Goes Green (HBR)

ECO 614 Valuing Public Goods

Course Description

While the costs of becoming more sustainable are relatively straightforward for the firm to quantify, the benefits to society (social benefits) are more difficult to determine. Nonetheless, assessing how clientele and other external stakeholders value sustainable practices is important if firms are to prioritize their efforts. This course will introduce students to the world of non-market valuation: the valuation of goods and services for which no true market exists with prices to reveal how much consumers are willing to pay. This class will provide a solid foundation for any manager to begin to understand how to appropriately value sustainable practices, enabling the firm to choose projects that provide the most social benefit net of implementation costs.

Course Information

- Projected Instructor: Dr. Christopher Parmeter
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: This course will use readings and cases.
- Stem (CIP) code: 45.0603 Econometrics and quantitative economics.

Course Outline

1. Introduction.
   (a) Why non-market valuation is essential in business and government.
   (b) Understanding cost-benefit analysis and its criticisms.
2. Statistics Review.
3. Benefit Transfer.
   (a) Value Transfer.
   (b) Function Transfer.

4. The Hedonic Method
5. Survey Methods
6. Meta-analysis
7. Case Studies/Practical Examples

MGT 646 Sustainable Supply Chains

Course Description

This course analyzes problems and solutions associated with building sustainable supply chains. Students will study how to design a supply chain so as to minimize the cost of monitoring suppliers for compliance with sustainability initiatives. The course will develop optimal formal/informal incentive contracts for promoting investment by suppliers in sustainable capital and equipment, including product testing equipment. Supply chain problems such as the hold-up problem, delegation vs. control of suppliers sustainability practices, and supplier auditing are considered in the context of developing sustainable supply chains. Advantages and disadvantages of large suppliers versus local sourcing are considered. Sustainability issues associated with suppliers in developing countries are also considered, including private versus state owned suppliers and the degree of enforcement of local regulations. Differences in the value to external stakeholders and brand reputation between domestic and foreign suppliers are analyzed.

Course Information

- Projected Instructor: Dr. Sammi Tang
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: TBA

Course Outline

1. Course Introduction. What is sustainability?
2. Optimal supply chain monitoring.
3. Delegation versus direct control of sustainability practices in downstream suppliers.
4. Sustainability initiatives in developing countries.
5. External value of a sustainable supply chain.
6. Supplier management.

7. Design for environment.
8. Green sourcing.
9. Sustainable transportation.
10. Closed loop supply chains.

ECO 615 Managing Regulation Compliance

Course Description

Sustainability initiatives must be integrated with a complex set of government regulations. Regulation systems such as standards, tradeable permits, and taxes are analyzed from the firm's point of view. Regulation systems are also studied when compliance costs are uncertain or changing over time. Many modern regulation systems allow firms to earn credits by over-complying, which can be sold or banked for future use. The course will study compliance/credit management, including over the business cycle and when regulation changes over time. The value of compliance/over-compliance to the firm's brand and to society/external stakeholders is integrated into the optimal compliance decision.

Course Information

- Projected Instructor: Dr. David L. Kelly
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: Kolstad, C. K., *Environmental Economics*, Oxford University Press, 2011.
- Stem (CIP) code: 45.0603 Econometrics and quantitative economics.

Course Outline

1. Standards and mandates.
   (a) Standards: regulation rules.
   (b) Lack of flexibility and compliance costs.
2. Standards with banking.
   (a) Credit banking: regulation rules.
   (b) Conditions for optimal credit banking.
   (c) Optimal banking when regulation changes over time.
   (d) Credibility of the regulator.

(e) Banking over the business cycle.

3. Tradeable permits/credits.

   (a) Tradeable credits: regulation rules.

   (b) The market price of credits.

   (c) Conditions for optimal buying/selling of credits.

   (d) Credit trading over the business cycle.

   (e) Credit allocation schemes: auctions and grandfathering.

   (f) Price floors and caps.

4. Taxes.

   (a) Tax regulation: rules.

   (b) Why firms prefer tax regulation.

5. Value of regulation compliance to external stakeholders.

   (a) Using the permit price or tax rate to determine external value.

   (b) Other methods of determining external value.

6. Examples/Cases.

   (a) European and California Carbon Trading Systems.

   (b) CAFE fuel economy standards.

   (c) Tesla: a credit-selling business model.

ECO 616 Sustainability Initiatives and Market Dynamics

Course Description

The course studies the impact of sustainability initiatives on the organization of firms in the market. The course derives conditions under which sustainability initiatives favor market entrants over incumbent firms and the reverse. The course studies the use of sustainability initiatives by firms to segment the market. The value of sustainability initiatives in oligopolistic versus competitive markets are also studied. Finally, the value of sustainability initiatives to external stakeholders and to the firm's brand is integrated with the benefits and costs of changes in the competitiveness of the market resulting from the sustainability initiatives.

Course Information

- Projected Instructor: Kyungmin (Teddy) Kim.
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: Cabral, Luis. *Introduction to Industrial Organization (2nd Edition)*, The MIT Press, 2017. Readings will be also assigned.
- Stem (CIP) code: 45.0603 Econometrics and quantitative economics.

Course Outline

1. Game theory basics.
   (a) Nash equilibrium.
   (b) Sub-game perfect equilibrium.
2. Sustainability and firm entry/exit.
   (a) Entry with a sustainable product and incumbent reaction.
   (b) Fixed costs of sustainability and entry deterrence.
   (c) First mover advantage.

(d) Credible and non-credible threats.

3. Effectiveness of sustainability and market organization.

   (a) Sustainability initiatives in markets with perfect competition.

   (b) Sustainability initiatives in markets with monopolistic competition.

   (c) Market segmentation through sustainability and the effect on competition.

   (d) Price discrimination and sustainable products.

4. Mergers and acquisitions.

   (a) Mergers and regulation compliance.

   (b) Mergers, scale economies, and resource use.

5. External value of sustainability initiatives when market dynamics are affected.

   (a) Benefit to society of sustainability.

   (b) Benefit to society of competition.

6. Examples/Cases:

   (a) DuPont nylon production: methane scrubbers and entry deterrence.

   (b) Whole Foods.

   (c) Chrysler-Fiat merger.

ECO 617 Enterprise Risk Management

Course Description

Tools for the measurement and mitigation of risk are developed. Measurement tools include value at risk measures, expert opinion, and the use of market prices. Mitigation tools include catastrophe bonds, derivatives such as weather derivatives, and adaptations (building resilience). Risks that are relevant to sustainability, such as fat tailed risk and environmental catastrophes, are emphasized. The value of environmental risk reduction to the firm and society are derived.

Course Information

- Projected Instructor: Dr. David L. Kelly
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: TBA
- Stem (CIP) code: 45.0603 Econometrics and quantitative economics.

Course Outline

1. Tools for the measurement of risk.
   (a) Expert opinion.
   (b) Securities Prices.
   (c) Prediction Markets.
   (d) Value at risk (VaR).
2. Risk mitigation tools.
   (a) Insurance.
   (b) catastrophe bonds.
   (c) Derivatives.

(d) Adaptations.

3. Optimal risk mitigation.

4. Monte-Carlo Simulation.

   (a) Long and short run risks.

   (b) Fat-tailed risk.

5. Value to external stakeholders of risk reduction.

6. Examples/Cases.

   (a) Risk Management at a Swiss power company.

   (b) Chevron Environmental Risk Management.

FIN 672 Sustainable Finance

Course Description

This course couples established and emerging corporate theory to study sustainability challenges. After establishing the benchmarks in understanding core corporate principles, the course will move on to understanding responsible investing from a shareholder perspective and how it affects firm performance. The course will also explore the meaning and importance of sustainable business practices that respect and adhere to ethical social responsibility standards through several case studies and simple econometric analysis.

Course Information

- Projected Instructor: Dr. Vidhi Chhaochharia
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook: case based.

Course Outline

1. Introduction
   (a) Course overview.
   (b) Objective of the firm.
   (c) The valuation principle.
2. Time value of money.
   (a) Compound interest and present value.
   (b) Valuation of annuities and perpetuities.
   (c) The effective annual rate.
   (d) Net present value - Introduction.
3. Project choice.

(a) The net present value (NPV) rule.

(b) Internal rate of return (IRR).

(c) Other rules: payback period and profitability index.

4. Fundamentals of capital budgeting.

(a) Determining the right cash flows to discount.

(b) Applying the NPV rule.

(c) Link between firm value maximization and NPV rule for capital budgeting.

5. Introduction to risk and return.

(a) Defining and measuring risk.

(b) Risk and cost of capital.

6. Cost of equity: capital asset pricing model.

7. Cost of capital

(a) Weighted average cost of capital.

(b) Unlevered cost of capital.

(c) Project's cost of capital.

8. Responsible investing.

(a) Concepts, measurement, and topics in sustainable finance.

(b) Shareholder engagement.

(c) Responsible lending.

9. Corporate social responsibility.

(a) Shareholders versus stakeholders.

(b) ESG measurement.

(c) What drives CSR?

(d) The effects of CSR on firm performance.

(e) Academic research.

10. Sustainable business in market competition.

    (a) Sustainable business practice as a tool for competitive advantage in product market competition.

    (b) Internationalization of sustainable finance and business practice.

FIN 654 Impact Investing

Course Description

This course provides an introduction to the emerging field of impact investing, where traditional investment objectives are modified to include social and environmental considerations. The first part of the course exposes students to portfolio theory, asset pricing, and the analytical tools of portfolio management. Subsequently, using these traditional tools of financial investments, students learn to identify and evaluate the impact of social factors on portfolio decisions, financial risk, asset prices, and performance evaluation. Students also learn about the psychology of impact investing that influences the tradeoffs between financial and social returns.

Course Information

- Projected Instructor: Dr. Alok Kumar
- Credits: 2.
- Course meetings: 2 hour lectures, twice per week, 6 weeks.
- Final exam: during the 7th week.
- Textbook:
    1. Zvi Bodie, Alex Kane, and Alan Marcus (BKM), *Investments*, 10th Edition, McGraw Hill.
    2. Muhammad Yunus, *Building Social Business: The New Kind of Capitalism that Serves Humanity's Most Pressing Needs.*
    3. HBS Cases:
        (a) Sustainable Development and Socially Responsible Investing; ABB in 2000.
        (b) The Promise of Impact Investing.
        (c) Impact Investing: The Promise of Real Assets.
        (d) Acumen Fund: Measurement in Impact Investing.
        (e) Doing Right, Investing Right: Socially Responsible Investing and Shareholder Activism in the Financial Sector.

Course Outline

1. Basic investment concepts and portfolio theory.
   (a) Introduction to financial markets and investments.
   (b) Modeling uncertainty and basic statistics.
   (c) Fat-tailed distributions.
   (d) Traditional portfolio theory.
   (e) Portfolio choice with non-wealth utility.
2. Asset Pricing and Performance Evaluation.
   (a) Asset pricing: CAPM and APT.
   (b) Multi-factor asset pricing models.
   (c) Performance evaluation and market timing.
3. Market efficiency and behavioral finance.
   (a) Valuing stocks and bonds.
   (b) Efficient markets hypothesis.
   (c) Psychology and finance.
4. Fundamentals of impact investing.
   (a) Trends in impact investing.
   (b) Charity, philanthropy, and psychology of altruism.
   (c) Preference for impact investing.
   (d) Activist shareholders.
   (e) Socially responsible households.
   (f) Political ideology and SRI preferences.
5. Socially responsible financial investments.
   (a) Impact investing and portfolio distortions.
   (b) Quantifying social returns.

(c) Measuring the impact of impact investing.

(d) Tax implications of impact investing.

6. Impact investing and asset prices.

(a) Impact investing and firm risk.

(b) Impact investing and security valuation.

(c) Impact investing and social value.

(d) Impact investing and mispricing.

(e) Impact investing and arbitrage limits.

References

Coppola, L., 2017, "Flash Report: 85% of S&P 500 Index Companies Publish Sustainability Reports in 2017," Discussion paper, Governance and Accounting Institute.

Muro, M., J. Rothwell, and D. Saha, 2011, "Sizing the Clean Economy: A National and Regional Green Jobs Assessment," Discussion paper, Brookings Institute Metropolitan Policy Program.

US SIF Foundation, 2016, "2016 Report on US Sustainable, Responsible and Impact Investing Trends," Discussion paper, US SIF Foundation Report.

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Research Interests

Environmental economics:

- Optimal climate change policy under uncertainty and learning.
- Design of environmental regulation under uncertainty.
- Economic growth and the environment.
- The effect of government policies on the environment.
- Adaptation to climate change.

Macroeconomics and finance: the effects of learning and uncertainty.

Teaching Interests

Environmental economics, managerial economics, macroeconomics, monetary economics.

Experience

May 2012–Present	Professor, Department of Economics, University of Miami.
May 2003–May 2012	Associate Professor, Department of Economics, University of Miami.
August 2005–August 2008	Chair, Department of Economics, University of Miami.
August 1998–December 2002	Assistant Professor, Department of Economics, University of Miami.
July 1996–July 1998	Visiting Assistant Professor, Department of Economics, University of California at Santa Barbara.
May 1995–July 1998	Postdoctoral Researcher, Department of Economics, University of California at Santa Barbara.
July 1996–July 1997	Visiting Assistant Professor, Department of Environmental Science and Management, University of California at Santa Barbara.
August 1994–May 1995	Visiting Assistant Professor of Economics, Graduate School of Industrial Administration, Carnegie Mellon University.

Degrees

Ph.D., Economics.
Graduate School of Industrial Administration, Carnegie Mellon University, 1995.

M.S., Economics.
Graduate School of Industrial Administration, Carnegie Mellon University, 1991.

B.S., Honors in Mathematical Economics.
Wake Forest University, 1989.

Research

Publications

Fitzpatrick, Luke, and David L. Kelly, "Probabilistic Stabilization Targets," *Journal of the Association of Environmental and Resource Economists,* 4(3):611-657 (June 2017).

Boleslavsky, Raphael, David L. Kelly and Curtis R. Taylor, "Selloffs, Bailouts, and Feedback: Can Asset Markets Inform Policy," *Journal of Economic Theory,* 169:294-343 (May 2017).

Heutel, G. and David L. Kelly, "Incidence and Environmental Effects of Distortionary Subsidies", *Journal of the Association of Environmental and Resource Economists*, 3(2):361-415 (June 2016).

M. Burke, M. Craxton, C. D. Kolstad, C. Onda, H. Allcott, E. Baker, L. Barrage, R. Carson, **K. Gillingham, J. Graff-Zivin, M. Greenstone, S. Hallegatte, W. M. Hanemann, G. Heal, S** Hsiang, B. Jones, David L. Kelly, R. Kopp, M. Kotchen, R. Mendelsohn, K. Meng, G. Metcalf, J. Moreno-Cruz, R. Pindyck, S. Rose, I. Rudik, J. Stock, R. S. J. Tol, "Opportunities for Advances in Climate Change Economics," *Science,* 352(6283):292-293 (15 April 2016).

David L. Kelly and Zhuo Tan, "Learning and Climate Feedbacks: Optimal Climate Insurance and Fat Tails", *Journal of Environmental Economics and Management*, 72:98-122 (2015).

Boleslavsky, R. and David L. Kelly, "Dynamic Regulation Without Payments: The Importance of Timing," *Journal of Public Economics*, 120:169-80 (December 2014).

Bossi, L., Pere Gomis-Porqueras, and David L. Kelly, "Optimal Second Best Taxation of Addictive Goods," *B.E. Journal of Macroeconomics* (Advances), 14(1):75-118 (2014).

Bajona, C. and David L. Kelly, "Trade and the Environment With Pre-existing Subsidies: A Dynamic General Equilibrium Analysis," *Journal of Environmental Economics and Management*, 64(2):253-78 (2012).

Kelly, David L., David Letson, Forrest Nelson, David Nolan, and Daniel Solís, "Evolution of Subjective Hurricane Risk Perceptions: A Bayesian Approach," *Journal of Economic Behavior and Organization*, 81(2):644-63 (2012).

Bartz, Sherry and David L. Kelly, "Economic Growth and the Environment: Theory and Facts," *Resource and Energy Economics,* 30:115-49 (2008).

Kelly, David L. and Stephen F. LeRoy, "Liquidity and Liquidation," *Economic Theory,* 31(3):553-572 (2007).

Kelly, David L., "Price and Quantity Regulation in General Equilibrium," *Journal of Economic Theory,* 125(1):36-60 (2005).

Kelly, David L., Charles D. Kolstad, and Glenn T. Mitchell, "Adjustment Costs from Environmental Change," *Journal of Environmental Economics and Management,* 50(3):468-95 (2005).

Kelly, David L. and Stephen F. LeRoy, "Liquidity and Fire Sales," in Jon Faust, Athanasios Orphanides and David Reifschneider, eds., *Models and Monetary Policy: Research in Tradition of Dale Henderson, Richard Porter, and Peter Tinsley*, Board of Governors of the Federal Reserve System, 249-70 (2005).

Kelly, David L. and Douglas G. Steigerwald, "Private Information and High Frequency Stochastic Volatility," *Studies in Non-linear Dynamics and Econometrics*, 8(1):1-28 (2004). Lead article.

Kelly, David L., "On Environmental Kuznets Curves Arising From Stock Externalities," *Journal of Economic Dynamics and Control*, 27(8):1367-90 (2003).

Kelly, David L. and Charles D. Kolstad, "Solving Infinite Horizon Growth Models With an Environmental Sector," *Computational Economics*, 18:217-23 (2001).

Kelly, David L. and Charles D. Kolstad, "Malthus and Climate: Betting on a Stable Population," *Journal of Environmental Economics and Management*, 41:135-161 (2001). Lead Article.

Kelly, David L. and Jamsheed Shorish, "Stability of Functional Rational Expectations Equilibria," *Journal of Economic Theory*, 95(2):215-250 (2000).

Kelly, David L. and Charles D. Kolstad, "Bayesian Learning, Pollution, and Growth," *Journal of Economic Dynamics and Control*, 23(4):491-518 (1999). Lead Article.

Kelly, David L. and Charles D. Kolstad, "Integrated Assessment Models for Climate Change Control," in Henk Folmer and Tom Tietenberg, eds., *International Yearbook of Environmental and Resource Economics 1999/2000: A Survey of Current Issues*, Cheltenham, UK: Edward Elgar (1999).

Goenka, Aditya, David L. Kelly, and Stephen E. Spear, "Endogenous Strategic Business Cycles," *Journal of Economic Theory*, 81(1):97-125 (1998).

Kelly, David L. and Charles D. Kolstad, "The Role of Population Growth in Controlling Greenhouse Gas Emissions," in *Energy and Economic Growth: Is Sustainable Growth Possible?*, proceedings of the 20th Annual International Conference, Volume 1, pp. 52-65 (1997).

Kelly, David L. and Charles D. Kolstad, "The Climate Change Footprint: Will We See it Before it is Upon Us?," in Nakicenovic, N., W.D. Nordhaus, R. Richels, F.L. Toth, eds., *Climate Change: Integrating Science, Economics and Policy*, WP-96-135, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria (1996).

Book Reviews

Kelly, David L., "The United States in a Warming World: The Political Economy of Government, Business, and Public Responses to Climate Change," *Journal of Economic Literature*, 53(3):685-87 (2015).

Kelly, David L., "Capitalism, Socialism, and the Environment," *Nature and Culture*, 8(2):226-236 (Summer 2013).

Kelly, David L., "Review: Plowshares and Pork Barrels: The Political Economy of Agriculture," *Bulletin of Marine Science*, 79(2):425-7 (September 2006).

Other Publications

McCullough, Michael and David L. Kelly, "Reproducibility: A Trading Scheme to Reduce False Results," *Nature*, 508:319 (April 17, 2014).

Working Papers

Conte, Marc N. and David L. Kelly, 2018, "An Imperfect Storm: Fat-Tailed Hurricane Damages, Insurance, and Climate Policy," *Journal of Environmental Economics and Management*, forthcoming.

Boleslavsky, Raphael, Christopher Hennessy, and David L. Kelly, 2018, "Markets versus Mechanisms," University of Miami Working paper number 2017-11.

David L. Kelly, "Subsidies to Industry and the Environment," National Bureau of Economic Research working paper 14999, May 2009.

David L. Kelly, "Unit Roots in the Climate: Is the Recent Warming Due to Persistent Shocks?," University of Miami Working paper (2000).

Natalia G. Andronova, David L. Kelly, Charles D. Kolstad, and Michael Schlesinger, "Learning About Climate Sensitivity From the Instrumental Temperature Record," University of Miami Working paper (1998).

Funded Research

2011	University of Miami Provost's Research Award: "Dynamic Regulation Without Payments: Timing is Everything."
2010	US Department of Education Center for Competitiveness of US Services for Prosperity and Sustainability: (CIBER) "International Environmental Sustainability and Security Services." "Incidence of Bailouts and Subsidies" and "The Impact of Reduced Trade Barriers on the Environment."
2006	University of Miami School of Business Grant "Hurricane Event Markets." Co-Pi's: David L. Kelly, David Letson, and David Nolan.
2005	Center for Ecosystems Science and Policy Faculty Seed Grant "Hurricane Event Markets." Co-Pi's: David L. Kelly, David Letson, and David Nolan.

2002 James W. McLamore Summer Award "Adjustment Costs, Incomplete Information, and Learning."

2001 James W. McLamore Summer Award "Dynamic Differences in Price and Quantity Regulation."

1999 James W. McLamore Summer Award "Stochastic Volatility and Asset Prices."

1996-7 DOE research grant Uncertainty and learning about damages from climate change (with Charles Kolstad).

1996-7 USDA research grant Climate change impacts on US agriculture (with Charles Kolstad and David Schimmelpfennig).

Awards

Excellence in Research Award, University of Miami School of Business, August 19, 2000.

William Larimer Mellon Fellowship, 1989-1992.

Refereed Conferences and Invited Seminars

2017 Invited Seminar, UC-Santa Barbara: "Markets versus Mechanisms."

2017 23rd Annual Conference, EAERE, "An Imperfect Storm: FEMA, Private Hurricane Insurers, and Climate Change."

2017 Association for Environmental and Resource Economists (AERE) Summer Conference: "Distortionary Taxation and Climate Policy in a Regional Model of Climate and the Economy"

2016 Invited Seminar, Maastricht University: "An Imperfect Storm: FEMA, Private Hurricane Insurers, and Climate Change"

2016 Association for Environmental and Resource Economists (AERE) Summer Conference: "Optimal Experimentation with Geo-engineering"

2015 Conference on the Research Frontiers in the Economics of Climate Change, Stanford University: "Learning and Uncertainty in Climate Change Economics: What Have we Learned and What is Uncertain?" October 9, 2015.

2015 Association for Environmental and Resource Economists (AERE) Summer Conference: "Learning, Fat-Tailed Uncertainty and Irreversible Green Capital Investment."

2015 Association for Environmental and Resource Economists (AERE) Summer Conference: "An Imperfect Storm: FEMA, Insurance, and Climate Change."

2015 Invited Seminar: Georgia State University, "An Imperfect Storm: How FEMA, Private Hurricane Insurers, and Climate Change Can Create Inefficient Coastal Housing Markets and Impose a Burden on Inland Taxpayers," February 24, 2015.

2015 Annual Meeting of the American Economics Association: "An Imperfect Storm: How FEMA, Private Hurricane Insurers, and Climate Change Can Create Inefficient Coastal Housing Markets and Impose a Burden on Inland Taxpayers," January 3, 2015.

2014 Invited Seminar: University of California at Davis, "The Welfare Cost of Stabilization Targets," April 18, 2014.

2014 Invited Seminar: University of California at Berkeley, "The Welfare Cost of Stabilization Targets," April 16, 2014.

2013 Invited Seminar: Fordham University, "The Welfare Cost of Stabilization Targets," November 5, 2013.

2013 Fourteenth Occasional Workshop on Environmental and Resource Economics "Optimal Probabilistic Stabilization Targets," September 13, 2013.

2013 Invited Seminar, University of Arizona: "Dynamic Regulation Design Without Payments: Timing is Everything," February 27, 2013.

2012 Association for Environmental and Resource Economists (AERE) Summer Conference: "Learning, Growth, and the Climate: Does the Fat Tail Wag the Dog?," June 4, 2012.

2012 Invited Seminar, University of Stavanger: "Learning, Growth, and the Climate: Does the Fat Tail Wag the Dog?," May 16, 2012.

2012 Invited Seminar, Notre Dame: "Learning, Growth, and the Climate: Does the Fat Tail Wag the Dog?," April 27, 2012.

2012 Thirteenth Occasional Workshop on Environmental and Resource Economics "Learning, Growth, and the Climate: Does the Fat Tail Wag the Dog?," February 24, 2012.

2011 Association for Environmental and Resource Economists (AERE) Summer Conference: "Dynamic Regulation Design Without Payments: Timing is Everything," June 9, 2011.

2009 Conference on Uncertainty and Learning in the Management of Environmental and Resource Economics, University of California at Santa Barbara, "Evolution of Subjective Hurricane Risk Perceptions: A Bayesian Approach," December 3, 2009.

2009 Eleventh Occasional Workshop on Environmental and Resource Economics, University of California at Santa Barbara, "Evolution of Subjective Hurricane Risk Perceptions: A Bayesian Approach," October 10, 2009.

2009 Latin American Meetings of the Econometric Society, "Optimal Second Best Taxation of Addictive Goods in Dynamic General Equilibrium," October 2, 2009.

2008 Invited Seminar, University of Pennsylvania (Wharton Center for Risk Management): "Evolution of Subjective Hurricane Risk Perceptions: A Bayesian Approach," January 31, 2008.

2007 Invited seminar, Concordia University: "Subsidies to Industry and the Environment," October 19, 2007.

2007 Invited seminar, Ryerson University: "Subsidies to Industry and the Environment," October 18, 2007.

2007 National Bureau of Economic Research Summer Institute, "Subsidies to Industry and the Environment," July 23, 2007.

2006 Ninth Occasional California Workshop on Environmental and Natural Resource Economics: "Subsidies to Industry and the Environment," November 3, 2006.

2006 Invited Seminar, University of Florida (Tropical Research and Education Center): "Subsidies to Industry and the Environment," October 19, 2006.

2006 Invited Seminar, Carnegie Mellon University: "Subsidies to Industry and the Environment," October 6, 2006.

2006 National Bureau of Economic Research Summer Institute Research Sketches: "Free Trade and the Environment With Pre-Existing Subsidies," July 27, 2006.

2006 Invited seminar, University of Calgary: "Free Trade and the Environment With Pre-Existing Subsidies," February 17, 2006.

2005 Eighth Occasional California Workshop on Environmental and Natural Resource Economics, "Free Trade and the Environment With Pre-Existing Subsidies," October 29, 2005.

2004 Invited seminar, McGill University: "Voluntary Over-Compliance With Firms as Quasi-Governmental Institutions," March 26, 2004.

2004 Invited seminar, University of Montreal HEC: "Economic Growth and the Environment: Theory and Facts," March 25, 2004.

2003 Invited seminar, University of Central Florida: "Economic Growth and the Environment: Theory and Facts," 2003.

2001 Sixth Occasional California Workshop on Environmental and Natural Resource Economics: "Price and Quantity Regulation in Dynamic General Equilibrium," October 26, 2001.

2001 National Bureau of Economic Research Summer Institute: "Price and Quantity Regulation in Dynamic General Equilibrium," July 31, 2001.

1999 Invited seminar, University of Texas: "On Kuznets Curves Arising From Stock Externalities," March 12, 1999.

1998 Invited seminar, Florida International University: "On Kuznets Curves Arising From Stock Externalities," October 2, 1998.

1998 International Energy Workshop: "On Climate Change and Economic Growth," Stanford University, June 16, 1998.

1998 Invited seminar, University of Aarhus: "An Economic Model of Conditional Heteroskedasticity," June, 1998.

1998 Energy Modeling Forum Conference: "Integrated Assessment With Endogenous Technical Change and Sustained Growth," June 1998.

1998 Invited seminar, University of Miami: "On Kuznets Curves Arising From Stock Externalities," February 1998.

1998 Invited seminar, University of Tennessee: "On Kuznets Curves Arising From Stock Externalities," February 1998.

1998 Invited seminar, North Carolina State University: "On Kuznets Curves Arising From Stock Externalities," February 1998.

1998 Econometric Society meetings: "An Economic Model of Conditional Heteroskedasticity," January 4, 1998.

1997 Invited seminar, University of Wyoming: "Bayesian Learning, Growth, and Pollution," spring 1997.

1997 Invited seminar, Electric Power Research Institute: "Bayesian Learning, Growth, and Pollution," spring 1997.

1997 Invited seminar, University of California at Santa Barbara: "On Kuznets Curves Arising From Stock Externalities," Fall 1997.

1996 Workshop on Environmental and Natural Resource Economics, University of California at Santa Barbara: "Malthus and Climate: Betting on a Stable Population," May 16, 1996.

1996 Invited seminar, University of California at Santa Barbara: "Bayesian Learning, Growth, and Pollution," Fall 1996.

1995 Invited seminar, Federal Reserve Bank of St. Louis: "Learning to be Rational Using Neural Networks," spring 1995.

1995 Invited seminar, Lehman Brothers: "Valuing and Hedging American Put Options Using Neural Networks," spring 1995.

1994 Neural Networks in the Capital Markets Conference, Caltech University, "Valuing and Hedging American Put Options Using Neural Networks," November 17, 1994.

1994 Invited seminar, Queens University: "Learning to be Rational Using Neural Networks," spring 1994.

1994 Invited seminar, Board of Governors of the Federal Reserve: "Learning to be Rational Using Neural Networks," Fall 1994.

1994 Invited seminar, George Mason University: "Learning to be Rational Using Neural Networks," spring 1994.

1993 Richard Cyert Honorary Conference, Carnegie Mellon University, "Stability of Functional Rational Expectations Equilibria" Sept. 11, 1993.

1993 Invited seminar, Carnegie Mellon University: "Learning to be Rational Using Neural Networks," Fall 1993.

Professional Activities

Discussant

Discussant, 16th Occasional Workshop in Environmental and Resource Economics, UC-Santa Barbara, 2017.

Discussant, 23rd Annual EAERE Conference, 2017.

Panel Discussant, "Stochasticity, Uncertainty, Information, and Learning," Conference on the Research Frontiers in the Economics of Climate Change, Stanford University, October 9, 2015.

Discussant, "Competitive Intergenerational Altruism," Fourteenth Occasional Workshop on Environmental and Resource Economics, September 12, 2013.

Discussant, "Carbon Prices for the Next Thousand Years," National Bureau of Economic Research Summer Institute, July 24, 2012.

Discussant, "Bayesian Econometrics: Past, Present, and Future," Conference on Uncertainty and Learning in the Management of Environmental and Resource Economics, University of California at Santa Barbara, December 3, 2009.

Panel Discussant, *Models and Monetary Policy: Research in the Tradition of Dale Henderson, Richard Porter, and Peter Tinsley,* Board of Governors of the Federal Reserve, March 28, 2004.

Discussant, National Bureau of Economic Research Summer Institute; August 3, 1998.

Editorial Activities

Program committee, Association for Environmental and Resource Economics Summer Conference, May 31-June 2, 2017.

Program committee, Association for Environmental and Resource Economics Summer Conference, June 9-11, 2016.

Program committee, Association for Environmental and Resource Economics Summer Conference, June 3-5, 2015.

Program committee, Association for Environmental and Resource Economics Summer Conference, June 6-8, 2013.

Program committee, Association for Environmental and Resource Economics Summer Conference, June 3-5, 2012.

Program committee, Association for Environmental and Resource Economics Summer Conference, June 9-10, 2011.

Referee for *American Economic Journal: Economic Policy*, *American Economic Journal: Macroeconomics*, *American Economic Review*, *Agricultural Economics*, *BE Journals in Economic Analysis and Policy*, *BE Journals in Macroeconomics*, *BE Journals in Theoretical Economics*, *Canadian Journal of Agricultural Economics*, *Climate Change Economics*, *Climate Change Letters*, *Climate Policy*, *Climatic Change*, *Contemporary Economic Policy*, *Ecological Economics*, *Economics Bulletin*, *Economic Journal*, *Economic Theory*, *Economics Letters*, *Energy Journal*, *Energy Policy*, *Environmental and Ecological Statistics*, *Environmental Research and Public Health*, *Environmental and Resource Economics*, *European Economic Review*, *Geophysical Research Letters*, *Global Environmental Change*, *Human and Ecological Risk Assessment*, *International Economic Review*, *Journal of Agricultural and Resource Economics*, *Journal of the Association of Environmental and Resource Economists*, *Journal of Economic Behavior and Organization*, *Journal of Economic Dynamics and Control*, *Journal of Economic Theory*, *Journal of Environmental Economics and Management*, *Journal of Environmental Management*, *Journal of the European Economics Association*, *Journal of Policy Reform*, *Journal of Population Economics*, *Journal of Public Economics*, *Journal of the Royal Society Interface*, *Macroeconomic Dynamics*, *Natural Hazards Review*, *Nature Climate Change*, *Optimal Control Applications and Methods*, *Resource and Energy Economics*, *Review of Economic Dynamics*, *Review of Economic Studies*, *Southern Economic Journal*, *Weather, Economics, and Society*, and grants for the National Oceanic and Atmospheric Administration and the National Science Foundation.

Dissertation Supervision

Dissertations Supervised:

- Kendall Jackson (current student).
- Christopher Paik (current student).
- Luke Fitzpatrick (2016).
- Zhuo Tan (2013).
- Sherry Bartz (2007).
- Augustine Nelson (2005).

Dissertation committees: Aijun Besio, Jiangze Bian, Lygia Lobo, Ana Maria Vallina, Yue Xue, Ayeisha Brinson, Zhigang Feng, Liang Zhao.

Teaching

Teaching Experience

Managerial Economics (Eco 685) Department of Economics, University of Miami, spring 2005, fall 2012, fall 2013, fall 2014, fall 2015, fall 2016, fall 2017. MBA level course.

Environmental Economics (Eco 345) Department of Economics, University of Miami, fall 2009, fall 2010, fall 2011. Undergraduate elective course.

Graduate Macroeconomic Theory (Eco 521, 621, 603) Department of Economics, University of Miami, fall 1998, spring 1999, fall 1999, fall 2000, spring 2001, fall 2001, fall 2002, spring 2003, fall 2004, spring 2005, fall 2005, fall 2006, spring 2007, fall 2009, spring 2009, spring 2010, fall 2010, spring 2011, fall 2011, spring 2012, fall 2012, spring 2013, spring 2014, fall 2015, fall 2016, fall 2017. Ph. D. level courses.

Monetary Economics (Eco 403) at Department of Economics, University of Miami, fall 1999, fall 2000, fall 2001, fall 2002, fall 2004, fall 2007, spring 2008, spring 2010, spring 2011, spring 2012 and Carnegie Mellon University spring 1995. Undergraduate elective course.

Principles of Macroeconomics (Eco 212) at University of Miami, spring 1999, spring 2000, spring 2001, and spring 2002, spring 2003, spring 2006, summer 2010, summer 2011, summer 2012. Undergraduate course.

Managerial Economics (Eco 691) Department of Economics, University of Miami, spring 2004. MBA level course.

Macroeconomics (Econ 204B) at Department of Economics, University of California Santa Barbara, spring 1997, 1998. Ph. D. level course.

Environmental Cost-Benefit Analysis (ESM 245) at Department of Environmental Science and Management, University of California Santa Barbara, Winter 1996. Masters level elective course.

Environmental Management and Regulation (ESM 204) at Department of Environmental Science and Management, University of California Santa Barbara, fall 1996. Masters level required course in Environmental Economics.

Graduate Seminar in Environmental Economics (Econ 594ER) at Department of Economics, University of California Santa Barbara, 1996. Seminar Ph. D. level course.

Public Finance at Graduate School of Industrial Administration, Carnegie Mellon University, spring 1995. Undergraduate elective course.

Advanced Economic Analysis IV at Graduate School of Industrial Administration, Carnegie Mellon University, spring 1994. Course in computational macroeconomics. Ph.D. level course taught with other GSIA faculty.

Macroeconomics at Graduate School of Industrial Administration, Carnegie Mellon University, fall 1994, Summer term 1993, Summer term 1992, Summer term 1991. Course in macroeconomics with emphasis on international issues for advanced undergraduates.

Service

Service

Chair, Department of Economics, University of Miami, 2006-8.

Director of Graduate Studies, Department of Economics, University of Miami, 1999-2006, 2008-present.

Member of Graduate Faculty, University of Miami, 1998-present.

Comprehensive Standard 3.2.8
Qualified Administrative/Academic Officers

Name of Institution: **University of Miami, School of Business**
Name of Academic Program: **Master of Science in Sustainable Business**

Required Courses

NAME (F, P)	COURSES TAUGHT	ACADEMIC DEGREES & COURSEWORK	OTHER QUALIFICATIONS AND COMMENTS	SUSTAINABILITY AREA
Chhaochharia, Vidhi (F)	Spring Term: FIN 672 Sustainable Finance, 2(G)	PhD (Economics-Business), Cornell University, 2005	Reseach expertise in corporate governance.	Governance
Dasborough, Marie (F)	Fall Term: MGT 667 Leadership for Sustainable Organizations, 2 (G)	PhD (Management), University of Queensland (AUSTRALIA), 2005	Research expertise in leadership, human resources, and workplace issues.	Social
Kelly, David (F) *Program Coordinator*	Spring Term: ECO 615 Managing Regulation Compliance, 2 (G) Spring Term: ECO 617 Enterprise Risk Management, 2(G)	PhD (Economics), Carnegie Mellon University, 1998	Research expertise in climate change policy, design of environmental regulation, economic growth and the environment, adaptation to climate change, and the economics of natural disasters.	Environment
Nanda, D.J. (F)	Fall Term: ACC 666 Accounting for Sustainability, 2 (G)	PhD (Business Administration), University of Rochester, 1997 MS (Management Science), University of Rochester, 1993 BSc (Mathematics), University of Bombay (INDIA), 1986	Research expertise in corporate governance.	Governance
Parmeter, Christopher (F)	Fall Term: ECO 614 Valuing Public Goods, 2 (G)	PhD (Economics), SUNY--Binghamton, 2006	Research expertise in non-market valuation, benefit transfer, and econometrics.	Environment
Petruzzello, Esteban (F)	Fall Term: ECO 613 Microeconomics of Sustainability, 2 (G)	PhD (Economics), Northwestern University, 2015	Research expertise in health economics, externalities, and consumer behavior.	Environment
Tang, Sammi Yu (F)	Fall Term: MGT 646 Sustainable Supply Chains, 2 (G)	PhD (Business Administration), Washington University, 2008	Research expertise in supply chain risk management.	Environment
Townsend, Claudia (F)	Fall Term: MKT 653 Sustainable Marketing of Goods and Services, 2 (G)	PhD (Management), UCLA, 2010	Research expertise in consumer behavior, product attributes.	Environment/Social
Mark Shapiro (F)	Spring Term: BSL 690 Legal and Ethical Implications of Business Decision Making, 2(G)	JD, University of Pennsylvania Law School, 1991	Expertise in insurance, business ethics.	Governance
Daniel Hicks (F)	Fall or Spring Term: BUS 628 Capstone Project	Columbia Journalism School.	Founder Florida Sustainability Project, extensive experience in sustainability consulting.	All

NOTE: three sustainability areas are environment, social, and governance (ESG)

MIAMI
BUSINESS SCHOOL

MEMORANDUM

TO: General Welfare Committee
Faculty Senate

FROM: John Quelch, Dean, Miami Business School

Subject: Support for the Master of Science in Sustainable Business

Date: September 28, 2018

This memo is to document my support for the proposed Master of Science in Sustainable Business.

The Miami Business School is uniquely positioned to lead the market in sustainable business education. Our faculty has expertise in the three pillars of corporate sustainability: environmental (economics), social (business law, economics, management, and marketing), and governance (business law, finance, accounting). Our position is enhanced by our unique location in South Florida, the epicenter of many environmental issues.

As we look towards the University of Miami's centennial in 2025, this degree creation further advances the University's *Relevant* aspiration to translate science and scholarship into solutions for a better tomorrow.

Thank you.

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE

Office of the Dean
Science and Administrative Building 107
4600 Rickenbacker Causeway
Miami, FL 33149-1031
Phone: 1 305 421-4000
Fax: 1 305 421-4711
Web Site: http://www.rsmas.miami.edu

October 8, 2018

Guillermo J. Prado, Ph.D.
Dean, Graduate School
University of Miami

Support for new Master's Degree in Sustainable Business

Dear Dean Prado:

I am writing to express my strong support for the School of Business's new Master's Degree in Sustainable Business.

This School of Business' new initiative uniquely addresses a critical global issue, and coordination between UM Schools is essential to future research efforts. The Rosenstiel School of Marine & Atmospheric Science will accommodate business students in the elective courses as listed in the proposal.

We anticipate that the program will attract high quality students, and complement our existing course participation while enhancing the School of Business offerings.

Please feel free to contact me if you have any questions.

Warm regards,

Roni Avissar, Dean
Rosenstiel School of Marine & Atmospheric Science
University of Miami

UNIVERSITY OF MIAMI
COLLEGE of ENGINEERING

Jean-Pierre Bardet, Ph.D.
Dean and Professor

1251 Memorial Drive
MEB Room 255
Coral Gables, Fl 33146

Ph: 305-284-6035
Fax: 305-284-2885
bardet@miami.edu

MEMORANDUM

TO: Guillermo J. Prado, Ph.D.
Dean, Graduate School

FROM: Jean-Pierre Bardet, Dean

RE: Support for the Master of Science in Sustainable Business

DATE: October 8, 2018

This memo is to document my support for the proposed Master of Science in Sustainable Business.

I concur with Dean Quelch that the Miami Business School is uniquely positioned to lead the market in sustainable business education. (business law, finance, accounting). Their global position is enhanced by their unique location in South Florida, the epicenter of many environmental issues.

As we look towards the University of Miami's centennial in 2025, this degree creation further advances the University's relevant aspiration to translate science and scholarship into solutions for a better tomorrow.

I enthusiastically support the approval of this Master of Science in Sustainable Business.

Thank you,

MIAMI
BUSINESS SCHOOL

MEMORANDUM

TO: General Welfare Committee
Faculty Senate

FROM: W. Brian Barrett, Speaker of the School Council
Anita Cava, Professor, Business Law, Second Vice Chair, School Council
Shirley Dennis-Escoffier, Associate Professor, Accounting,
First Vice Chair, School Council
Howard Gitlow, Professor, Management Science
Karoline Mortensen, Associate Professor, Health Management and Policy
A. Parasuraman, James W. McLamore Chair and Professor, Marketing
Philip Robins, Professor, Economics
Sara Rushinek, Professor, Business Technology
Chester A. Schriesheim, Professor, Management

Subject: Degree Creation: Master of Science Sustainable Business

Date: September 28, 2018

The School Council, at its September 28 meeting, voted unanimously to approve the creation of the Master of Science in Sustainable Business.

Please note that the voting members of the Miami Business School (MBS), the regular faculty per the MBS bylaws, voted to delegate all decisions on curriculum issues to their elected representatives on the School Council for the fall 2018-spring 2019 academic year.

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE

Department of Atmospheric Sciences
Rosenstiel School of Marine and Atmospheric Science
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149, USA

Phone: 305-421-4128 Email: eatlas@miami.edu

September 24, 2018

Dr. David Kelly
Professor
Department of Economics
University of Miami
Coral Gables, FL 33134

Dear Dr. Kelly,

The RSMAS School Council, on behalf of the RSMAS faculty, has reviewed your plan for a Master's Degree in Sustainable Business. The program incorporates a series of courses at RSMAS that are potential electives for the degree. The Council unanimously and enthusiastically supported the program and was happy to have RSMAS contribute to this university-wide, multidisciplinary program. We look forward to contributing to the success of the new degree program.

Regards,

Elliot L. Atlas
Speaker, RSMAS School Council

Cc: Sharan Majumdar, Associate Dean for Graduate Education, RSMAS
Roni Avissar, Dean, RSMAS
John Quelch, Dean, UM Business School
Patricia Abril, Vice Dean, UM Business School
Robyn Hardeman, Secretary of the Senate
Tomás Salerno, President, Faculty Senate

UNIVERSITY OF MIAMI
COLLEGE of ENGINEERING

Antonio Nanni, PhD, PE, FASCE, FACI, FIIFC
Inaugural Senior Scholar
Professor & Chair
Civil, Architectural & Environmental Engineering

1251 Memorial Drive
MEB Room 325
Coral Gables, FL 33146

Ph: 305-284-3461
Fax: 305-284-3492
nanni@miami.edu

September 6, 2018

Guillermo J. Prado, PhD
Dean, Graduate School
Via e-mail: GPrado@med.miami.edu

Cc: J.P. Bardet, CoE Dean Bardet, bardet@miami.edu
E. Andiroglu, MS-CM Director, e.andiroglu@miami.edu
D. Kelly, Economics, dkelly@bus.miami.edu

Dean Prado:

Greetings from the CAE Department.

The Department of Economics in the Business School has shared with us a proposal for a new interdisciplinary Master in Sustainable Business (MBS), which will be submitted for your consideration shortly.

The proposed new program focuses on interdisciplinary training in the application of sustainability concepts to management. It also includes courses relevant to sustainable and resilient construction methods and technological innovation concepts that are embedded in our current MS with concentration in Construction Management offered by the College of Engineering.

I believe that students enrolled in both programs, the proposed one and our existing one, will have significantly improved learning opportunities resulting from the shared course offerings.

As the CAE Department Chair, I fully support of the proposed MBS program.

Sincerely,

Antonio Nanni

UNIVERSITY
OF MIAMI

Assessment and Accreditation
Gables One Tower 1320 S. Dixie Hwy
Coral Gables, Florida 33146

Phone: 305-284-5120
Fax: 305-284-4929
oaa.miami.edu

MEMORANDUM

DATE: October 9, 2018

TO: Patricia Abril, Vice Dean
School of Business

FROM: Patty Murphy, Executive Director
Office of Assessment and Accreditation

PBM

RE: **New MS in Sustainable Business**

On October 9, 2018, the Business School notified my office of its intent to offer a new Master of Science (MS) degree program in Sustainable Business effective Fall 2019.

The proposed MS in Sustainable Business program will require successful completion of 32 credit hours that include 20 credit hours in required courses, 3 credit hours for a capstone project, and 9 credit hours in approved electives from RSMAS or the College of Engineering's Civil, Architectural and Environmental Engineering department.

The program will be interdisciplinary in nature. Eleven new courses will be developed for the program:

1. ACC 666 Accounting for Sustainability (2 credit hours)
2. ECO 613 Microeconomics of Sustainability (2 credit hours)
3. MGT 667 Leadership for Sustainable Organizations (2 credit hours)
4. ECO 614 Valuing Public Goods (2 credit hours)
5. MKT 653 Sustainable Marketing of Goods and Services (2 credit hours)
6. MGT 646 Sustainable Supply Chains (2 credit hours)
7. ECO 615 Managing Regulation Compliance (2 credit hours)
8. ECO 616 Sustainability and Market Dynamics (2 credit hours)
9. FIN 672 Sustainable Finance (2 credit hours)
10. FIN 645 Impact Investing (2 credit hours)
11. ECO 617 Enterprise Risk Management (2 credit hours)

The School is proposing offering this program on a quarterly rather than a semester basis. The program will not be offered via distance education.

Although new courses will be developed, the program will be supported by existing faculty. The program will be coordinated by David L. Kelly, a full-time professor in the Department of Economics in the School of Business. Dr. Kelly earned a PhD in Economics from Carnegie Mellon University in 1995. His research focuses on environmental economics including optimal climate change policy under uncertainty and learning, design of environmental regulation under uncertainty, economic growth and the environment,

the effect of government policies on the environment, and adaptation to climate change. He has published extensively on these topics in scholarly journals such as the *Journal of Environmental Economics and Management.*

The CIP code for the new program will be **30.3301 Sustainability Studies**. This CIP code qualifies this program for the Department of Homeland Security's STEM designation for the OPT visa extension program.

Based on my review the program meets the following SACSCOC criteria:

- The proposed new program meets the SACSCOC requirement of a minimum of 30 credit hours for a graduate program.
- The curriculum covers the literature in the field through its required core coursework.
- It also ensures ongoing student engagement in research and/or appropriate professional practice and training experiences through either a required capstone project/field experience.
- The majority of the program will not be offered via distance education and, in any case, the University is approved to offer 100% distance education programs.
- The program will be offered on the University's Coral Gables and RSMAS campuses.
- The new program will be supported by current qualified faculty.
- The program will be coordinated by a qualified faculty member, David L. Kelly.
- The University is already approved by SACSCOC to award a Master of Science degree; this is a proposal for a new major within an existing degree.
- The University is currently approved to offer the following graduate programs in related areas:
    - Master of Business Administration
    - Master of Accounting
    - Master of Finance
    - Master of Professional Accounting
    - Master of Professional Science in Marine Ecosystems and Society
    - Master of Professional Science in Tropical Marine Ecosystem Management
    - Master of Professional Science in Weather, Climate and Society
    - MS in Atmospheric Sciences
    - MS in Construction Management
    - MS in Environmental Health and Safety
    - MS in Management
    - MS in Marine Ecosystems and Society
    - PhD in Atmospheric Sciences
    - PhD in Business (with concentrations in Accounting, Finance, Management, Management Science, and Marketing)
    - PhD in Economics
    - PhD in Environmental Science and Policy
    - PhD in Marine Ecosystems and Society

However, because the new program will require the development of 11 courses and the capstone project (72% of the credit hours required for the degree), it represents "a significant departure...in content" from what we are currently approved by SACSCOC to offer. Consequently, we will have to submit a prospectus to SACSCOC and get approval prior to implementation. In order to be implemented

in Fall 2019, the program must be approved by the Faculty Senate and the prospectus submitted to SACSCOC prior to January 1, 2019.

Please contact me if you have any questions at pattymurphy@miami.edu or (305) 284-3276.

CC: Faculty Senate
Guillermo Prado, Dean of the Graduate School
John Quelch, Dean of the Business School
David Kelly, Chair, Department of Economics
Karen Beckett, University Registrar
Carrie Glass, Executive Director of Student Financial Assistance and Employment

UNIVERSITY OF MIAMI
GRADUATE SCHOOL

1252 Memorial Drive
P.O. Box 248125
Coral Gables, FL 33124-4629

Phone: 305-284-4154
Fax: 305-284-5441
graduateschool@miami.edu

MEMORANDUM

DATE: October 23, 2018

TO: Tomas Salerno
Chair, Faculty Senate

FROM: Guillermo (Willy) Prado
Dean, The Graduate School

SUBJECT: Proposal – MS in Sustainable Business

The Miami Business School submitted a proposal for a new Master of Science in Sustainable Business. The proposal was discussed at the meeting of the Graduate Council on Tuesday, October 16, 2018, and was conditionally approved pending a market and needs analysis and the addition of the criteria for GRE/GMAT waivers in the proposal.

cc: John Quelch, Dean, Miami Business School
Patricia Abril, Vice Dean, Miami Business School
David Kelly, Chair, Department of Economics, Miami Business School
Office of Assessment and Accreditation