



MEMORANDUM

To: Donna E. Shalala, President

From: Tomas A. Salerno
Chair, Faculty Senate

Date: January 30, 2015

Subject: Faculty Senate Legislation #2014-14(B) – Rosenstiel School of Marine and Atmospheric Science New Track for a Master of Professional Science Degree in Natural Hazard and Catastrophe Analytics

The Faculty Senate, at its January 28, 2015 meeting, voted unanimously to approve the amended proposal from the Rosenstiel School of Marine and Atmospheric Science New Track for a Master of Professional Science Degree in Natural Hazard and Catastrophe Analytics. The new curriculum track will be an additional curriculum track to the existing MPS degree program. It was designed to meet the growing need in the field for graduates with analytical skills and applied scientific knowledge required for the analysis of risks associated with natural disasters.

Students can choose from a wide range of elective courses offered from RSMAS and across the University of Miami, including in communication, geophysics, engineering, risk analysis, law, policy and remote sensing, all designed to prepare them to address challenges as future global leaders. The 12-month program includes two semesters of coursework and a 3-6 month internship with private companies or government offices, in which students apply both the theory and practical aspects of their training to real world projects.

The addition of this new track will be important to the continued development and expansion of the MPS program at RSMAS and allow the school to better serve both the student and employer demands in our field.


This legislation is now forwarded to you for your action.

TAS/rh

Enclosure

cc: Thomas LeBlanc, Executive Vice President and Provost
Roni Avissar, Dean, Rosenstiel School of Marine and Atmospheric Science
Brian Soden, Associate Dean for MPS, Rosenstiel School of Marine and Atmospheric Science
Igor Kamenkovich, Associate Professor, Rosenstiel School of Marine and Atmospheric Science

CAPSULE: Faculty Senate Legislation #2014-14(B) – Rosenstiel School of Marine and Atmospheric Science New Track for a Master of Professional Science Degree in Natural Hazard and Catastrophe Analytics

APPROVED:  DATE: 2/25/2015
(President's Signature)

OFFICE OR INDIVIDUAL TO IMPLEMENT: Dean Avissar

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

NOT APPROVED AND REFERRED TO: _____

REMARKS (IF NOT APPROVED): _____



January 15th, 2015

MEMORANDUM

Subject: Addition of a curriculum track for the MPS Program at RSMAS

Dear Colleagues:

The Rosenstiel School for Marine and Atmospheric Science and the Department of Ocean Sciences seeks to enhance the Master of Professional Science (MPS) program through creation of a new curriculum track for the MPS degree in the Department of Ocean Sciences entitled **Natural Hazard and Catastrophe Analytics**. With an intended start date of fall term 2015, the track is designed to develop in its students the analytical skills and applied scientific knowledge required for the analysis of risks associated with natural disasters. We emphasize that we are not seeking to create a new degree program, but rather to add an additional curriculum track to the existing MPS degree program.

This track is intended to meet society's need for a skilled workforce, at the time when impacts of natural catastrophes, such as those due to hurricanes, tornadoes, floods, and earthquakes, are outpacing society's ability to achieve resilience. The World Bank estimates that annual losses from natural disasters approach \$200B, with these costs borne by both the private and public sectors. Analytics of associated risks is, therefore, critically important for modern society and economy and has to be based on the knowledge of geophysics of these catastrophic events, advanced analysis of large datasets, as well as understanding of the societal response. This track offers an educational opportunity for students seeking to fill positions offered by the private and civil sectors to assess risks and exposures associated with natural hazards and catastrophes. Potential employers of these graduates exist in several sectors, including insurance and re-insurance industry, architecture, emergency management, engineering, public health and science.

The goal is to provide students with skills and knowledge necessary for understanding of Earth System natural hazards (atmospheric, oceanic, geological and hydrological) and the data analytics tools necessary to assess the associated risks (statistics, data management, programming, GIS, remote sensing, etc.). To cater to the individual student's career goals, they can choose from a wide range of elective courses offered from RSMAS and across the University of Miami, including in communication, geophysics, engineering, risk analysis, law, policy and remote sensing, all designed to prepare them to address challenges as future global leaders. The 12-month program includes two semesters of coursework and a 3-6 month internship with private companies or government offices, in which students apply both the theory and practical aspects of their training to real world projects.

Background on the MPS Program

Launched in the Fall of 2010, the Master of Professional Science is an innovative graduate degree at the University of Miami, intended for students who seek advanced training in marine and atmospheric science. The MPS is a professional degree, rather than a traditional research-based MS degree. It is designed for students who major in the sciences as undergraduates and seek careers which require both applied scientific knowledge and professional skills. By emphasizing applied training and internships, rather than research, the MPS offers students a direct and more efficient route into business and industry. This program prepares students for science careers in business, government, or non-profit organizations, where employment demands are growing.

The MPS degree currently offers specialization in ~~fifteen~~ fourteen different curriculum tracks within three ~~divisional~~ programs at RSMAS. The tracks currently offered are listed in the table below.

Marine Biology and Fisheries (MBF)	Meteorology and Physical Oceanography (MPO)	Marine Affairs and Policy (MAF)
<i>Fisheries Management and Conservation</i> <i>Science</i>	<i>Broadcast Meteorology</i>	<i>Aquaculture</i>
<i>Marine Mammal Science</i>	<i>Computational Meteorology and Oceanography</i>	<i>Coastal Sustainability</i>
<i>Oceans and Human Health</i>	<i>Weather Climate & Society</i>	<i>Coastal Zone Management</i>
<i>Tropical Marine Ecosystem Management</i>	<i>Weather Forecasting</i>	<i>Exploration Science</i>
		<i>Marine Conservation</i>
		<i>Underwater Archeology</i>

In its first four years, enrollment in the MPS program already exceeds 50 students per year and the program has been tremendously successful in preparing students for entry-level careers in the marine sciences. Over 60% of our students graduate in 15 months or less, and 96% graduate within 20 months of enrolling in the program. Over 80% of our graduates have found employment in their field of study. The attached powerpoint file, prepared for our most recent annual meeting of the MPS External Advisory Board, summarizes additional metrics concerning the performance and student satisfaction with the MPS program

The addition of this new track will be important to the continued development and expansion of the MPS program at RSMAS and allow our school to better serve both the student and employer demands in our field.

Sincerely,

Brian Soden

Associate Dean for MPS
Rosenstiel School for Marine and Atmospheric Science

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



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October 17, 2014

Prof. Brian Soden
Associate Dean for Professional Studies
Rosenstiel School of Marine and Atmospheric Sciences
University of Miami

Dear Brian:

The faculty of the Department of Ocean Sciences approved the *Remote Sensing* and *Natural Hazard and Catastrophe Analytics* MPS tracks by anonymous ballot. Following are the tallies.

Best wishes,

A handwritten signature in black ink that reads "Dennis A. Hansell".

Dennis Hansell
Chairman, Department of Ocean Sciences

	YES	NO	ABSTAIN
Natural Hazards & Catastrophes	23	1	1
Remote Sensing	22	1	1



MEMORANDUM

TO: Professor Tomas Salerno, UM Senate Chair
FROM: Roni Avissar, Dean *Roni Avissar*
DATE: December 26, 2014
SUBJECT: MPS Track in "Natural Hazards and Catastrophe Analytics"

I approve and strongly support the RSMAS proposal to develop a new track in the Master of Professional Science (MPS) Program in "Natural Hazards and Catastrophe Analytics." This new track will leverage existing strengths of RSMAS faculty to provide graduate training in a rapidly growing sector of our field. It combines analytical skills and applied scientific knowledge to analyze risks associated with natural disasters.

This new track will NOT necessitate the recruitment of new tenured / tenure-track faculty as it will rely on existing faculty already employed at RSMAS and not currently occupied to teach in other RSMAS programs. Furthermore, the administrative needs for this new track will benefit from the existing administrative and infrastructure support put in place for the existing MPS Program. Since our MPS program is based on revenues from students' tuition, this track is expected to contribute positively to the budget of RSMAS and will not have any negative impact on the School or the University finances.

Roni Avissar, Ph.D.
Professor and Dean

Phone: 1 305 421-4000 • Fax: 1 305 421-4711 • E-mail: ravissar@rsmas.miami.edu

UNIVERSITY OF MIAMI
GRADUATE SCHOOL



M. Brian Blake, Ph.D.
Vice Provost for Academic Affairs
& Dean of the Graduate School

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MEMORANDUM

DATE: November 25, 2014
TO: Tomas Salerno
Chair, Faculty Senate
FROM: M. Brian Blake
Dean, The Graduate School
SUBJECT: New Track for MPS Degree

A handwritten signature in black ink, appearing to read 'M. Blake'.

The Rosenstiel School of Marine and Atmospheric Science submitted a proposal for a new track for MPS degree – Natural Hazard and Catastrophe Analytics. The addition of the new track was discussed at the meeting of the Graduate Council on Tuesday, November 18, 2014, and none of the Graduate Council members expressed any concerns.

cc: Roni Avissar, Dean
Brian Soden, Associate Dean
Office of Planning, Institutional Research and Assessment



December 11, 2014

To: Dean Brian Blake, University of Miami Graduate School

From: Rana Fine, Professor and Vice Chair RSMAS School Council

A handwritten signature in black ink, appearing to read "Rana Fine".

Subject: New MPS Track in Natural Hazard and Catastrophe Analytics at RSMAS

This is written in support of a new track at RSMAS for the Ocean Sciences Department in the existing Master of Professional Science program. The new curriculum track would be in **Natural Hazard and Catastrophe Analytics**. The School Council **unanimously approved** the new track with a vote of 5-0. We look forward to your favorable consideration.

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MEMORANDUM

DATE: November 4, 2014

TO: Dr. Brian Soden, Professor
Department of Atmospheric Sciences
Rosenstiel School of Marine and Atmospheric Science

FROM: David E. Wiles, Executive Director
Assessment and Accreditation 

SUBJECT: MPS Track in Natural Hazard and Catastrophe Analytics

On October 30, 2014, the Department of Ocean Sciences in the Rosenstiel School of Marine and Atmospheric Science submitted a proposal notifying our office of its intent to offer a new Master of Professional Science (MPS) track option in Natural Hazard and Catastrophe Analytics beginning in the fall of 2015. The track will be comprised of existing courses in the Rosenstiel School, along with other schools and colleges at the University of Miami, and will require the development of 5 new courses (3 core courses and 2 electives):

Core Courses

- OCE XXX—Natural Hazards: Solid Earth and Oceans
- OCE XXX—Natural Hazards: Atmosphere and Oceans
- OCE XXX—Hydrological Hazards

Electives

- OCE XXX—Data Management, Processing and Visualization (or elective)
- OCE XXX—Statistical Methods and Modeling or MAF 518—Coastal Zone Management (or elective)

All courses in the track will be taught by current University of Miami faculty. The 12-month program will include two semesters of coursework and a 3-6 month internship with private companies and government offices. Based on these details, the track addition is not considered substantive in nature and should not require approval from the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) prior to its implementation.

Please feel free to contact our office should you have any further questions (305) 284-9431.

cc: Faculty Senate
Dr. M. Brian Blake, Vice Provost and Graduate School Dean
Dr. Roni Avissar, Dean, RSMAS
Dr. Igor Kamenkovich, Associate Professor, RSMAS

COLLEGE of ENGINEERING



Antonio Nanni, PhD, PE 1251 Memorial Drive
Professor & Chair MEB Room 325
Civil, Arch. & Env. Engineering Coral Gables, FL 33146

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

Date: October 13, 2014

To: B. Soden, RSMAS Assoc. Dean for MPS

From: A. Nanni

A handwritten signature in blue ink that reads "Antonio Nanni".

Ref: Curriculum Track for the MPS Program at RSMAS

I have read with interest your memo and attachments related to the proposal of reference. I found it timely and attractive for current and future UM students.

On Friday, October, 10, 2014, the documentation relative to "Curriculum Track for the MPS Program at RSMAS" was discussed by CAE faculty during their monthly meeting. No objections or conflicts were raised.

I look forward to seeing this program listed in the UM bulletin soon.

Regards

UNIVERSITY OF MIAMI
ABESS CENTER
for ECOSYSTEM
SCIENCE & POLICY



28 October 2014

Dear Members of UM's General Welfare Committee,

I am writing this letter in full support of the new Masters of Professional Science track "Natural Hazard and Catastrophe Analytics" at RSMAS. I believe this track will be attractive for many students, including UM students interested in environmental science and policy who want to find employment in civil and public sectors to assess risks associated with natural disasters. I also see potential for the involvement of Abess Center-affiliated faculty with this new track.

I look forward to seeing this MPS track open for students in the near future.

If you need anything further, please do not hesitate to contact me at kbroad@rsmas.miami.edu or 305-284-2721.

Sincerely,

A handwritten signature in black ink, appearing to read 'KB' or 'Kenneth Broad'.

Kenneth Broad, Ph.D.

Director, Leonard and Jayne Abess Center for Ecosystem Science and Policy

Professor and Chair, Marine Ecosystems and Society, Rosenstiel School of Marine and
Atmospheric Science

Co-Director, Center for Research on Environmental Decisions, Columbia University

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28 October 2014

To: Faculty Senate General Welfare Committee Members

From: Denis Hector, Associate Dean, School of Architecture

A handwritten signature in black ink, appearing to read 'Denis Hector'.

When I first engaged in conversation with Dennis Hansell regarding the framework for the proposed Masters of Professional Science track "Natural Hazard and Catastrophe Analytics," I thought the possibilities were extensive both for graduates of the program as well as for new collaborations across the schools and disciplines. I then spoke with colleagues in the School of Architecture, all of whom agreed that this program could provide a unique opportunity for architecture graduates to pursue advanced study in a field that is closely related to, and measurably advances our work with hazard planning and mitigation.

The potential for students coming from various disciplines to study with faculty from the Rosenstiel School of Marine and Atmospheric Science, Law, and Geography & Regional Studies (among the many options) is unique and is directly related to the strong foundation of interdisciplinary collaborations already established here over that last decade. Furthermore, a program that enables individuals with specialized knowledge to engage in new professional associations through an understanding of the concepts of earth system natural hazards in the context of risk analysis is a distinctive and significant path for future contributions to professional knowledge.

I am confident that architects seeking this degree will easily find success in career paths in private and public sector work because they will possess a skill set that crosses disciplinary boundaries as they navigate the risk/reward ratios for projects and communities facing the impacts of hazard mitigation and climate change. This program also provides an important forum for faculty throughout the university to focus on problem-based methods of inquiry, and the resultant cross-disciplinary research with public policy implications is significant.

I hope that you will give this program your fullest consideration, and that we may soon begin to recruit students into the School of Architecture with the prospect of advanced work through this program. If I may offer any further information that you would find useful, please contact me at dhector@miami.edu or 305- 284-2232.

Thank you for your consideration.

UNIVERSITY OF MIAMI
COLLEGE of
ARTS & SCIENCES



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December 23, 2014

Professor Brian Soden
Associate Dean
Rosenstiel School of Marine and Atmospheric Sciences

Dear Brian,

I am writing to express my strong support for your new professional masters degree program in Natural Hazard and Catastrophe Analytics.

Professor Igor Kamenkovich has met with me several times this fall to explain the details of your program. It is clear that this program will prepare students extremely well for positions in the insurance field, both nationally and abroad.

A major aspect of mathematics as applied to the insurance field is the quantification and analysis of risk. Your curriculum will provide students with the necessary depth of understanding of the risk of rare, catastrophic events.

Our mathematics department develops a large number of undergraduate majors with sturdy foundations in probability and other immediately relevant areas of mathematics. Many of these students hope to pursue careers in the insurance industry, especially in actuarial science and in related areas of data analysis. I am very enthused that they will, upon graduation, have the opportunity of enhancing and broadening their employment credentials through a master's in the analytics of natural hazards.

I heartily endorse the efforts of your Department of Ocean Sciences to establish this timely and valuable professional masters program. We in the Department of Mathematics pledge our support and cooperation.

Sincerely,

Victor C. Pestien
Interim Chair, Mathematics