Faculty Senate Agenda
3:30 p.m., November 29, 2017
Miller School of Medicine, Mailman Center
8th Floor Auditorium

Click HERE for a complete package of materials
http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/complete-pkg.pdf

(If you have trouble opening the link within the agenda item, paste the address below each item into your browser to access.)

		Time	Action required
A.	**Introductory Matters**		
A1.	Chair's remarks – Tomás Salerno	3:30	Info Only
A2.	President's Remarks – Julio Frenk	3:40	Info Only
A3.	Student Government representatives remarks	3:55	Info Only
A4.	Approval of proposed Faculty Senate Meeting minutes of October 25, 2017 http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/minutes-October.pdf [GWC – Unanimously approved.]	4:00	VOTE
A5.	Approval of today's agenda	4:05	VOTE
A6.	Other announcements	4:10	Info Only
B.	**General Matters**		
B1.	Rosenstiel School of Marine and Atmospheric Science Proposal for Majors within Existing Degree Programs [materials includes OAA memo]: • Oceanography • Marine Biology and Ecology http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/RSMAS_Departmental_Proposal-revised-from-GWC.pdf – Roni Avissar (Dean), and Marjorie Oleksiak (Assoc. Dean of Undergraduate Studies) [GWC – Unanimously approved with revisions.]	4:15	VOTE
B2.	School of Education and Human Development Proposal to [materials include OAA memo]: • Close the MSED in Sports Medicine with a Concentration in Athletic Training and • Open a New Master's Degree in Athletic Training http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/Ed-sports-med-new-masters.pdf – Kysha Harriell (Clinical Asst. Professor and Program Director, Athletic Training) [GWC – Unanimously approved.]	4:25	VOTE
B3.	Graduate School Proposal to Modify the Policy for the Composition of a Dissertation Committee – Guillermo Prado (Dean, Graduate School) http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/Grad-School-proposalDissertationCommitteeComposition-revised.pdf [GWC –approved by majority.]	4:35	VOTE
B4.	Parking Policy Change for Night and Weekend Enforcement – Richard Sobaram (Director, Parking and Transportation)	4:45	Info only

http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/Parking-Policy-Change-Proposal.pdf

[GWC – offered feedback.]

B5.	Proposal to Amend the *Faculty Manual* to include non-departmentalized schools in School Council Section A5.3 (reference Legislation 2014-32(A)) http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/FM-School_Councils_Draft_Proposal.pdf [GWC –approved by majority.]	4:55	VOTE
B6.	Proposal to Amend the discretionary authority of Senate officers during academic breaks and emergency situations (section C20.6 in the *Faculty Manual)* http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/FM-Discretionary_Authority_Senate_Officers_Draft_Proposal1.pdf [GWC – Unanimously approved as amended.]	5:05	VOTE
C.	**Other Business**	5:15	
D.	**Executive Session**		Officers & voting members only
D1.	Selection of the 2017 - 2018 James W. McLamore Outstanding Service Award [Presentation of GWC's recommendation of awardee.]	5:20	VOTE
D2.	Election of Diane Millette to replace Don Stacks as a member of the Faculty Senate Hearing Panel (the other names were approved at the October 25, 2017 Faculty Senate meeting) Http://fs.miami.edu/_assets/pdf/facultysenate/Documents/17-18-senate/5-Nov-business-17/HPlist-17-18.pdf [GWC –had no objections.]	5:30	VOTE Ballots
D.	**Adjournment**	5:35	VOTE

Note:

- The Wednesday, December 13, Faculty Senate meeting will NOT be held.
- The next meeting will be Wednesday, January 31 on the Rosenstiel Marine Campus.

Item A4

UNIVERSITY
OF MIAMI
FACULTY SENATE

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October 25, 2017
Proposed Faculty Senate Minutes

The meeting, held in the Faculty Club of the Whitten University Center, Gables Campus, opened at 3:30 p.m.

CHAIR'S REMARKS

Senate Chair Tomás Salerno started the meeting by explaining that the President had notified him some time ago, that he would not be in attendance at today's meeting, and the Provost would be stepping in for him today.

The Senate Chair welcomed the Senate back after the disruption caused by Hurricane Irma and expressed his hope that everything has returned to normal. He reminded the members that since the September meeting was cancelled there would be one less Senate meeting this year in which to conduct business.

He also celebrated the tremendous effort of the administration to prepare and recover from the hurricane and added that that it was quite an introduction for the Provost to life in South Florida. The Chair also noted that the General Welfare Committee (GWC) met to debrief on the hurricane recovery efforts. The GWC members complimented some aspects of the recovery efforts and made some recommendations about other aspects to the President and Provost.

The Chair continued by updating the Senate on recent meetings he has attended including the Academic Deans Policy Council chaired by the Provost, in which the Deans also complimented the administration on their hurricane pre- and post-procedures.

In the Board of Trustees meetings, an overview of the total university activities was given at the Executive Committee; the Provost gave an overview of UM rankings at the Academic Affairs committee; and the Finance Committee mainly focused on Miller School of Medicine matters.

The Chair noted that the Provost consulted with the Faculty Senate officers at every step of the way vis-à-vis the Academic calendar revisions. The Chair reminded the attendees that the Senate normally does not approve the academic calendar, and the GWC agreed that the change does not require Faculty Senate approval.

Pre-, during- and post-hurricane efforts were discussed with the President and Provost at a previous meeting with the elected Officers. The Officers also reminded the administration of the legislation from last year requesting a staff ombudsperson. The Faculty Senate Officers also discussed the University's efforts to offer assistance to Puerto Rico and the Caribbean. The

Officers learned that Georgia Tech and UM have established an agreement for emergency evacuation situations.

The Chair also announced that he often consults with deans and faculty members when requested, and that often requires he engage in tough, very straight-forward conversation to ensure faculty are treated fairly.

This year, as with many other areas, the Senate budget was severely cut and would significantly affect our ability to host an awards ceremony of the same caliber that we have held in the past. The Chair shared his desire to be conservative of the university's fiscal resources, but felt this was a critically important event for faculty that should not be compromised. The President readily agreed, and funding for this event has been secured.

Faculty Senate members were encouraged to attend the Awards Ceremony and join in recognizing and supporting their colleagues, as this is "a big part of what the Faculty Senate should be doing."

A moment of silence was observed in honor of the late Board of Trustees member, Robert Mann, who recently passed away. Robert was an exceptional individual and supporter of UM.

Kudos were given to the Chair of the Tenure Review Board, and RSMAS faculty member, Tamay Özgökmen, who was recently awarded over $14 million to advance oil spill science. He also recognized one of the alternate Senate members from the School of Communication, Tony Musca, for completing principal photography of a feature film in Miami.

The Chair announced that Dean Isaac Prilleltensky stepped down as dean but continues to lead the Culture Transformation Initiative and will remain as a faculty member. The School of Education and Human Development is currently searching for a new dean. Vice Provost of Faculty Affairs David Birnbach is leading the search committee.

One notification item came forward with no objections from the last GWC meeting:

The Dual PhD in Biomedical Sciences and MBA for medical students at the Miller School of Medicine who want to pursue a Master of Business Administration (MBA) during their final year of study. The MBA is to be completed in the students' final 1-year of study. This MBA will have the same format as the existing MD-MBA program.

There were no objections to this notice.

Senators were asked to please remind their faculty that the Coral Gables/RSMAS campus has its own faculty ombudsperson, René Sacasas, who offers confidential consultation on university matters. Faculty members can visit the Ombudsperson website for more information. Having a Gables/RSMAS ombudsperson was a Senate initiative that the administration accepted and adopted. The Medical School faculty can consult with ombudsperson Norm Altman, who has been the ombudsperson for some time.

Senators were also reminded that the chair and dean evaluations will be taking place in early to mid-November, which is about two weeks later than usual, due to the disruption caused by

hurricane Irma. As always, Dr. Neider will be summarizing the evaluations pertaining to the Miller School of Medicine chairs, since the Chair does not review his own school's evaluations to avoid potential conflicts of interest.

The Faculty Senate new staff member, Alexandra Marban, Sr. Administrative Assistant was introduced by the Chair. Alexandra is a UM Law School graduate and former Legal intern in the Senate office. Alexandra will be a tremendous asset to the office. The Chair asked the Senate to join him in welcoming her.

Lastly, the Chair reminded the attendees that each semester the President hosts a Faculty Senate meeting. This semester's meeting will be held next week, Wednesday, November 1, on the Gables Campus. There is no set agenda for these meetings; the faculty can ask him questions and the President will be giving a presentation and introducing some other new university leaders. The Wednesday, November 29 Senate meeting, is a business meeting, that will be held on the Medical campus.

PROVOST'S REMARKS

Provost Jeffrey Duerk noted in an effort to support university students displaced from their home institutions in Puerto Rico, the Virgin Islands, and the Caribbean impacted by hurricanes Irma and Maria, all deans have agreed to host faculty and students to the best of their abilities who are able to travel to Miami. The first group would be faculty, the second group – undergraduates, allowing students to enroll to fill open seats. The administration will ask faculty members to allow these students to take classes in independent study format.

The Provost noted that UM housing is at about 99% capacity, so they are working with third party vendors to secure housing for those displaced by the hurricanes at other schools. Faculty can volunteer to offer housing. UM is not charging these students tuition; they are to pay their home institution, which will allow them to transfer their credits to their home institutions for the classes that they complete, but UM cannot guarantee this. UM wants to be a good neighbor, as we may be the ones in need next time. More information can be found on the Provost's website.

These recent storms highlighted the importance of archiving coursework electronically so that it can be accessed remotely. Currently, the Provost is looking into ways to achieve this.

The Provost entertained questions from the floor that included congratulations to the administration for their management of the situation pre- and post-hurricane, an inquiry into the change of name of the summer Provost's awards, and the manner in which funds will be distributed and its potential impact on the humanities; clarification that Georgia Tech is offering its facilities to UM so we can run the university remotely; response to the extent of damage to the facilities from the hurricane; the difference between "coming back" to campus and "campus welcoming members back," and issues of buildings now being "locked-down" earlier than they used to be denying access to students who are working late hours.

STUDENT GOVERNMENT REPRESENTATIVES' REMARKS

A student representative congratulated the administration for their efforts during the hurricane and for their support of our neighbors in the Caribbean.

 # APPROVAL OF PROPOSED MINUTES OF AUGUST 30, 2017
There was a motion to note for the record that the minutes from August 30, 2017 reflected ambiguous language on the agenda item, "PROPOSAL TO MERGE THE DEPARTMENT OF GEOLOGICAL SCIENCES PROGRAMS FROM THE COLLEGE OF ARTS AND SCIENCES TO THE DEPARTMENT OF MARINE GEOSCIENCES IN THE ROSENSTIEL SCHOOL OF MARINE AND ATMOSPHERIC SCIENCE."

A motion was made, seconded, and the agenda was approved unanimously with the above request.

 # APPROVAL OF TODAY'S AGENDA
A motion was made, seconded, and the agenda was approved unanimously.

OTHER ANNOUNCEMENTS
In response to a Senate member's inquiry into who maintains the listserv for the Athletics development emails, the faculty NCAA representative noted that he would inquire with the Athletics Department. Other members noted that this listserv allows recipients to unsubscribe.

General Matters
 # UNANIMOUS CONSENT AGENDA
The following motion came forward with the recommendation of the GWC.

1) # Proposal to Change the Name of the Graduate Program in Physiology and Biophysics TO Graduate Program in Cellular Physiology and Molecular Biophysics, Miller School of Medicine

There were no objections to the approval of this item.

ANNUAL BENCHMARK REPORT ON ADMISSIONS
Provost Jeffrey Duerk announced that there were over 30,000 applications for admission this fall, of which approximately 10,000 applicants were admitted, yielding an admission rate of 36%. Of those, 20% accepted and attended. There are 525 transfer students. The average ACT score was 29, the mean unweighted GPA was 3.5. There was a 48% male to 52% female ratio, 28% (down from 31%) rate of Florida residents, and 15% international students.

The Provost entertained questions from the floor.

 # PROPOSAL TO CHANGE THE PURPOSE AND THE NAME FROM THE DELOITTE INTERNATIONAL FINANCIAL REPORTING INSTITUTE (IFRI) TO THE DELOITTE INSTITUTE FOR RESEARCH AND PRACTICE OF ANALYTICS (DIRPA)
Sr. Vice Dean and Vice Dean, Faculty Development and Research, Anuj Mehrotra introduced himself. There were no questions.

This proposal comes forward with the unanimous approval of the GWC.

A motion was made, seconded, and unanimously approved.

 # PROPOSAL TO SIMPLIFY THE NAME OF THE SCHOOL OF BUSINESS ADMINISTRATION TO THE BUSINESS SCHOOL

School of Business Administration Dean John Quelch explained that the revised name is consistent with the current trend to drop the word administration from the school name. There was discussion that the name may be shortened further for use in social media, but the official name change being proposed is the University of Miami Business School, which received almost unanimous support from the faculty in the School.

This proposal comes forward with the changes suggested by the GWC, with their majority approval.

A motion was made, seconded, and approved with one abstention.

 # FACULTY SENATE ACADEMIC STANDARDS COMMITTEE UNDERGRADUATE ADMISSIONS REPORT

Previous Committee Chair Kysha Harriell explained that this is a faculty sponsored report that dives deeper to specifically answer questions of interest to faculty. She noted that the report was being submitted a semester late because the process for obtaining the data was changed, causing a delay.

The previous committee chair commented that the committee should be able to access the raw data, not just the *report* of the data. The Faculty Senate members, by consensus, requested that this year's report have the data broken down further.

This proposal comes forward with the unanimous approval of the GWC.

A motion was made, seconded, and unanimously approved to accept the report.

[Regular members and voting alternate members only vote.]

VOTE ON GENERAL WELFARE COMMITTEE REGULAR AND ALTERNATE REPRESENTATIVES FROM THE FROST SCHOOL OF MUSIC

The following members from the Frost School of Music were unanimously elected for the GWC by a show of hands:

Brian Powell, regular member
Richard Todd, alternate member.

[Ballots distributed for the election for the following proposed members and will be tallied after the meeting:]

 # COMMITTEE ON PROFESSIONAL CONDUCT

 # HEARING PANEL

Two Senate members pointed out that one of the members on the Hearing Panel had retired, so the list could not be finalized at this meeting.

OTHER BUSINESS
A Senate member exclaimed, and another seconded the remarks, that there had been an agreement with the previous administration, that when there was a significant process change, it would not be done mid-semester, but would be done over the summer. The implementation of Workday in September put a tremendous strain on both faculty and staff.

ADJOURNMENT
The meeting adjourned at 5:55 p.m.

Respectfully submitted,
Robyn Hardeman
Secretary of the Faculty Senate

Elected Senate officers:
Tomás Salerno, Chair;
Linda Neider, First Vice Chair;
JoNel Newman Second Vice Chair

Background materials included with hard-copy minutes.

Item B1

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.)

Include this checklist at the beginning of each proposal.
(Complete the information below, save the form as a pdf, and insert it with the background materials that are specified, in the order listed, and send the package electronically as noted above.)

KEY CONTACT PERSONNEL INFORMATION

First Name	Last Name	Proponent's Title
Marjorie	Oleksiak	Associate Dean of Under

Department, if applicable	School/College
MBE	RSMAS

E-mail	Phone
moleksiak@miami.edu	305-421-4341

Title of Proposal

RSMAS Departmental Majors Proposal

(-continue to next page-)

MANDATORY MEMORANDA AND FORMAT

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

Proposal has been discussed with Patty Murphy in OAA and was submitted to OAA November 6, 20

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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.

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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.

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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.

MBE and OCE departmental major proposals, including market analysis.

End form.

Letter of Explanation

The Rosenstiel School of Marine and Atmospheric Science (RSMAS) is proposing two new departmental majors within its existing degree program. These majors will be offered within RSMAS departments that currently do not offer an undergraduate degree, namely Ocean Sciences (OCE) and Marine Biology and Ecology (MBE). The three other RSMAS departments (Atmospheric Sciences, Marine Geosciences, and Marine Ecosystems and Society) already each operate a departmental-major degree. OCE is proposing a departmental major in Oceanography, and MBE is proposing a departmental major in Marine Biology and Ecology. These Bachelor of Science majors will be for resident students (i.e., the proposed majors are not online majors). Resulting degrees will show up as a Bachelor of Science in Marine and Atmospheric Science both on the students' diplomas and transcripts. The planned effective date is Fall semester of 2018.

The OCE and MBE majors will provide a STEM cognate and build on existing courses within the RSMAS degree program. Thus, many of the classes taken by RSMAS undergraduate students in the first three semesters will be in common, irrespective of the final degree, with specialization occurring later. This common course core will facilitate the transition to the new departmental major degrees and also allow students to easily transition into a specific major should their interests change. New courses and tracks within departments will be phased in over time based on enrollment and student needs. Furthermore, all courses in these proposed majors rely on the expertise of existing RSMAS faculty. The Ocean Science major requires 120 credits, and the Marine Biology and Ecology major requires 125 credits; each major's requirements are

detailed in the attached proposals. At this time, no minors in these majors are proposed; however, minors may be developed at some point in the future.

The development of these two new majors will mean that all RSMAS departments have responsibility for a departmental major, and they are a logical extension of RSMAS' recent reorganization into five departments. The departments already operating their own departmental-major degrees (Atmospheric Sciences, Marine Geosciences, and Marine Ecosystems and Society) formally voted to continue to take academic responsibility for their respective majors. By offering departmental majors in all RSMAS departments (Ocean Sciences, Marine Biology and Ecology, Atmospheric Sciences, Marine Geosciences, and Marine Ecosystems and Society) in addition to maintaining the existing MSC dual-major program, we hope to expand and enhance all of our undergraduate programs. Importantly, the departmental majors and our ability to define major-specific core-course curricula will leverage the strong ongoing research at RSMAS to enhance our undergraduate programs with research-intensive learning approaches. Furthermore, these departmental majors maintain the liberal arts education while allowing students to gain greater depth of learning in their chosen scientific field of interest. Finally, these departmental majors do not preclude students from also pursuing other majors and minors. As is common practice at UM, students will be encouraged to do a dual major or add minors as their interests dictate. As with any new initiative, programmatic success will be assessed and modified to continually improve these undergraduate education programs.

An overview of RSMAS undergraduate programs follows as an introduction to the OCE and MBE departmental major proposals.

Departmental Major Proposal Overview

Building on our recent School departmentalization, the five RSMAS departments are now in a strong position to focus on enriching RSMAS' involvement in our undergraduate program to enhance undergraduate education and learning experiences in the marine and atmospheric sciences. Several options to enhance our undergraduate programs were discussed at the School by different groups, and the final consensus is that each of the five departments will lead its own departmental major program in addition to maintaining our existing Marine Science dual major (MSC). All programs will remain highly coordinated through an Undergraduate Programs Academic Committee (UPAC) to avoid duplication, enhance efficiency, and provide complementary and enriching educational experiences. To develop this important strategic initiative for the School, each department met and approved the departmental major proposals.

RSMAS proposes the operation of departmental majors for each department that takes advantage of a breadth of scientific and liberal education and yet allows us to enhance upper-level course development to strengthen our undergraduate degrees. In addition, RSMAS will continue operating our dual major (MSC). In practice, three of the five departments already have or operate their own departmental-major degree: 1) Atmospheric Sciences (ATM) runs the Meteorology degree, 2) Marine Geosciences (MGS) recently inherited the Geological Science (GS) degrees from the College of Arts and Sciences, and 3) Marine Ecosystems and Society (MES) runs a B.A. degree in Marine Affairs (MAF). These departments formally voted to continue to take responsibility for their respective majors. The most significant changes address Ocean Sciences (OCE) and Marine Biology and Ecology (MBE). Both OCE and MBE propose separate departmental-major degrees to enhance undergraduate education. Although we will have a total of six undergraduate degrees, we anticipate that many of the classes taken by most of the RSMAS undergraduate students in the first three semesters will be in common, irrespective of the final degree, with specialization occurring later. This will facilitate the transition to the new departmental major degrees. To provide an overview of RSMAS' entire undergraduate program, all departmental major programs are summarized below (see *Program Summaries*). Finally, as with any new initiative, programmatic success will be continuously assessed, and logical changes will be made to continually improve our undergraduate education programs.

Rationale

As part of our mission at the Rosenstiel School, we are committed to offer a powerful undergraduate education in the Earth, Marine and Atmospheric sciences. This education provides an intuitive way to educate students in fundamental sciences (physics, chemistry, and biology) and gives students the opportunity to be involved in cutting-edge research to enhance their education, improve their career opportunities and enlighten human society. With this in mind, we reorganized the School into five departments that will be able to better deliver this mission: (1) Ocean Sciences; (2) Marine Geosciences; (3) Marine Biology and Ecology; (4) Atmospheric Sciences; and (5) Marine Ecosystems and Society. We propose to take advantage of this reorganization to strengthen the undergraduate programs by creating departmental majors.

The MSC undergraduate degree program (RSMAS's dual-major program) attracts top students nationally and internationally and greatly contributes to the reputation of the University of Miami. We hope to expand and enhance our undergraduate programs by offering departmental majors in all RSMAS departments (OCE, ATM, MGS, MBE, and MES) in addition to

maintaining the MSC dual-major program. The departmental majors provide for more efficient departmental administration and greater faculty contributions. More importantly, the departmental majors and ability to define major-specific core-course curricula will leverage the strong ongoing research at RSMAS to enhance these programs with research-intensive learning approaches. These approaches will have the dual benefit of enhancing both undergraduate education and research experiences and thus will contribute to our goal of offering our undergraduate students a unique learning experience. Furthermore, the departmental majors allow us to provide students a greater depth of learning in the respective scientific field while still maintaining the strengths of a liberal arts education. Thus, the departmental major programs will capitalize on existing strengths and research expertise in the five departments with the long-term goal of increasing undergraduate enrollment in RSMAS undergraduate programs. This outcome will enrich the vitality of the School and the University of Miami.

Impact on Existing RSMAS Programs

Because departmental majors effectively already exist for MGS, MES and ATM, the new departmental major proposals will not affect these programs. However, we anticipate that the creation of a departmental-major degree in Marine Biology will impact MSC enrollment as many of the students currently choosing the MSC dual major are likely to opt for a Marine Biology departmental major, which more closely aligns with their interests. Similarly, OCE's major will attract students desiring a broader biological, chemical, and physical science ocean-related degree. However, a significant number of students will want to retain the dual-major offered by the MSC program, and consequently, the enhanced options offered by the different programs should lead to an overall increase in the total number of students. Offering more options for undergraduate programs is expected to significantly enhance our capability to reach out to potential students in the various disciplines studied by our existing faculty at RSMAS that are currently not visible to them.

Impact on other University Programs

We anticipate that the creation of two additional departmental-major degrees will only positively impact other University programs by attracting students with additional and diverse interests and backgrounds just as the MSC dual major degree program adds students to other schools and department programs. Importantly, the departmental majors do not reduce the required courses offered by Arts and Sciences. All RSMAS undergraduates will be required to take the breadth of liberal arts and science courses that are currently required with the dual major. The difference is a reduction in the electives and other course requirements needed to sustain two majors. Depending on students' interests, they may pursue majors or minors in any one of a number of other departments. For example, given many students' high interest in medically related careers, regardless of degree, many of the MBE departmental majors also will pursue either majors or minors in other biology related degrees such as Biochemistry and Molecular Biology, Biology, and Microbiology and Immunology. Both MBE and OCE departmental majors interested in the fast growing field of big data analysis will likely pursue major or minor degrees in Computer Science. As the departmental major programs grow and evolve, we expect that new collaborations will be formed both among RSMAS majors and among University-wide majors.

Logistics

Administratively, RSMAS' undergraduate programs will follow RSMAS' graduate programs model. An Undergraduate Student Office (USO) will be administered by the Associate Dean of Undergraduate Education and staff. This staff will grow, as needed, with program growth. Each department will have a Program Director in charge of the department's departmental major program and will coordinate educational goals through the Undergraduate Programs Academic Committee (UPAC) led by the Associate Dean of Undergraduates and chaired by an elected member of the UPAC. Departmental Program Directors are expected to regularly consult with their faculty on the course offerings, program objectives and enhancements. With consultation and cooperation among the Program Directors, the UPAC will oversee the enhancement of all undergraduate programs. The UPAC also will assess overall program success and work to continually improve all undergraduate education programs.

The new departmental majors are proposed to begin in Fall 2018. The transition to departmental majors will be gradual, taking advantage of the MSC dual major program to ensure all existing student needs are met and relying on informed decisions of new students or transfer of existing students to new departmental majors.

Market Analysis and Marketing

More than 100 industry executives polled in 2016[1] generally agree that academic institutions can better prepare the talent pipeline by providing students with practical skill development and hands on experimentation as well as opportunities to solve complex problems, connecting students to real world research applications, and providing training in soft skills: communication, collaboration and teamwork, and leadership. Our new departmental major programs are designed to address these needs by providing students with research-intensive educational experiences, which also entail strong communication skills, teamwork and leadership (e.g., the capstone research projects and the courses leading up to these projects will require students to collaborate in independent authentic research enhancing these skills). Thus, undergraduate students will be well prepared for careers in science and other public and private sector employment as well as for admission to graduate schools.

The development of upper-level courses that focus on research intensive learning and authentic research will be strong incentive for attracting students from other competing Marine Science programs. RSMAS will leverage its strength in research and follow the National Academy of Science's and A.A.A.S'[2] advice to provide research intensive learning experiences that should attract students who would be considering other marine science degree programs.

Finally, marketing RSMAS as an "oceanography" institution has not been done in the past, and the oceanography departmental major provides both a new educational and marketing opportunity. This departmental major provides a concrete educational program to educate students in oceanography and the application of this science to global climate change and the resulting problems facing coastal communities.

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[1] 2016 Talent Integration: California Workforce, BayBio Institute and Biocom Institute. The BayBio Institute became the California Life Sciences Institute in 2015.

[2] Froyd, J. E. 2008. White Paper on Promising Practices in Undergraduate STEM Education. The National Academy of Sciences, Engineering and Medicine.
Brewer, C. A., and D. Smith. 2011. Vision and change in undergraduate biology education: a call to action. American Association for the Advancement of Science, Washington, DC.

Program Summaries

The overriding theme of the proposed RSMAS departmental majors is the inclusion of research opportunities and the incorporation of practical applications of knowledge to real world problems, in addition to mastering a broad set of fundamental knowledge. Additionally, these majors allow students to gain a greater depth of learning in their field of interest. Existing and proposed departmental major programs are summarized to provide an overview of all Marine Science related majors.

Marine Affairs

The Bachelor of Arts degree in Marine Affairs is designed for students planning either non-technical careers with government agencies or private industries directly or indirectly concerned with the ocean, or graduate studies in such areas as business, law, economics, political science, education, or communication. Students are required to complete the University's general education requirements in addition to core requirements for the Marine Affairs major and a chosen minor. Required courses include:

Biology: BIL 150, 160
Chemistry: CHM 111, 112
Economics: ECO 211
Geological Science: GSC 110 *or* 111
Marine Science: MSC 111, 112, 217, 230, 313 *or* 314, 310 *or* 340, 345, 460 plus 9 credits of approved electives
Approved course in computer programming *or* Statistics (*e.g.,* MSC 204)
Upper Division Electives: (6 credits)
Minor: (12-15 cr)

Atmospheric Sciences

The Bachelor of Science degree in Meteorology is based on the recommendations of the American Meteorological Society and is also aligned with the National Weather Service requirements for forecasters. An emphasis is placed on a solid mathematical and physical foundation, and the required curriculum allows its seniors to graduate with a minor in mathematics. Due to the requirements in Math and Physics, double majors with each of those programs are relatively easily achieved (with even the occasional triple major). Another double major is available in Broadcast Meteorology, in coordination with and administered by the School of Communications. The program offers a Minor in Meteorology, which requires 15 credits of introductory ATM courses. Meteorology majors can also pursue Minors in Broadcast Journalism and in Climate Science and Policy. Required courses include:

Marine and Atmospheric Science (32 credits): ATM 103, 220, 243, 303, 305, 405, 406, 407 409, MSC111
Mathematics: MTH161, MTH162, MTH210, MTH224, MTH310, and MTH311 *or* MTH320.
Physics: PHY205, PHY206, PHY207, PHY208.

Chemistry: ATM 265 (Atmospheric Chemistry) *or* CHM111 and CHM113.
Computer Science: CSC120

Geological Sciences

The Geological Science degrees are transitioning to the Rosenstiel School. MGS seeks to better integrate geology undergraduates into the Rosenstiel School environment with a more cohesive curriculum, enhanced opportunities for students to participate in cutting-edge research in the company of graduate students and faculty, and a richer educational experience for majors in the marine and atmospheric sciences.

For a B.S. in Geological Sciences, students must complete a core curriculum of 35 credits:

Geological Science GSC 110 or 120, 114 or 115, 111, 260, 360, 380, 410 or 420, 440, 480, 482 and 561.

In addition, the B.S. candidates must complete a 4 credit summer field course (GSC 580 or an approved field course through another university) and must choose a minor from the following: Biology, Chemistry, Computer Science, Ecosystem Science and Policy, Marine Science, Mathematics, or Physics.

For a B.A. in Geological Sciences, students must complete a core curriculum of 32-34 credits:

Two courses in the GSC 101, 102 or 111, 103 or 110 or 120 series;
GSC 114 or 115; 260; 360; 482; two of 380, 410, 440; 420 or 480; 482; and 561

In addition, B.A. students are strongly encouraged to take the summer field course (GSC 580) and/or field courses offered during spring break (GSC 231 or GSC 311).

For a B.A. in Earth Systems, students must complete a core curriculum of 17-18 credits:

GSC 101, 102 or 111, 103 or 110 or 120, 105, 106, 107, 114 or 115, 301, and
6 credits from GSC 131, 132, and 133; and
Marine Science 101.

In addition, a minimum of 15 additional elective credits must be taken from Geological Sciences, Biology, Chemistry, Marine and Atmospheric Science, and Environmental Science.

Marine Biology and Ecology

The Bachelor of Science degree in Marine Biology and Ecology provides a rigorous education where students learn by participation in authentic research and have a closer personal educational experience by working directly with faculty in small classes that develop and explore scientific principles important for their careers and their future impact on societal problems. The departmental major is designed to teach fundamental concepts and precepts in marine biology and ecology. Required courses are described in the attached departmental major proposal and include:

Biology 150, 151, 160, 161, 250 (*or* MSC 318), 255, 330 (*or* MSC 366)
Chemistry 111, 112, 113, 114, 201, 205
Geological Science 111 *or* Marine Science 215, 216 *or* 301, 302
Marine Science 111, 112, 230, 232, 320, 323, 318 (*or* BIL 250), 366 (*or* BIL 330)
Marine Biology and Ecology 366 *or* Marine Science 422
Marine Science 318 Ecological Genetics *or* BIL250 Genetics
Marine Science 3XX Research Fundamentals
Mathematics 161, 162
College Physics *or* University Physics
Statistics

In addition to these required courses, students must complete 12 or more credits of elective, 300+ level Marine Biology and Ecology courses, some of which will be offered as research-intensive learning course sets incorporating active learning strategies. Finally, students seeking honors will complete a two-semester independent project doing active research that will include experimental design, sample collection, statistical analysis, data processing and presentation, interpretation and report writing *or* one semester of research following participation in the "*Saltwater Semester"*.

Oceanography

The Bachelor of Science degree in Oceanography provides not only knowledge, but also hands-on skills in ocean related fields to their undergraduate population. In some tracks, students are expected to engage in a senior capstone project, or alternatively, they can seek internships as a transition to work outside of the universities. Required courses are described in the attached departmental major proposal and include:

Mathematics MTH 161 or 171 and MTH 162 or 172
Physics PHY 205, 206, 208
Chemistry CHM 111, 113, 112, 114
Biology BIL 150, 151
Marine Science MSC 111, 112, 204, 220 or 346,

One additional class in marine and/or environmental policy, and one of these cognates:

Marine Policy
Environmental Politics & Policy
Global Sustainability, Living on a Finite Planet
Social & Scientific Perspectives on Global Environmental Change

In addition to these required courses, students must specialize in a track, taking 10 courses from a suggested curriculum including an Honors Thesis.

Marine Sciences Dual Majors

The Marine Science dual major program is an interdisciplinary program dealing with the study of

the world's oceans: their physical and biological constituents, the influence of oceanic resources on human society and the conservation and future development of those resources.
The program offers the following dual majors:

Marine Science/Biology
Marine Science/Chemistry
Marine Science/Physics
Marine Science/Computer Science
Marine Science/Mathematics
Marine Science/Microbiology and Immunology
Marine Science/Biochemistry and Molecular Biology
Marine Science/Meteorology
Marine Science/Geological Sciences

MSC dual majors take a core set of common courses, and, depending on the dual major, then take courses specific to the dual major. The common Marine Science courses include:

Marine Science 111, 112, 215, 230, 232, 301, 216 *or* 302, and 12 elective credits in Marine Science, at least 6 of which must be at the 300-level or higher

UNIVERSITY OF MIAMI
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MEMORANDUM

TO: Tomas Salerno, Chair of University of Miami Faculty Senate
FROM: Roni Avissar, Dean

Marjorie Oleksiak, Associate Dean for Undergraduate Programs
DATE: November 06, 2017
SUBJECT: New Undergraduate Programs in Oceanography and Marine Biology

The purpose of this memo is to emphasize our unambiguous and enthusiastic support for the departmental major proposals put together by the faculty in Ocean Sciences and Marine Biology and Ecology and request that these majors be approved by the Faculty Senate. These departmental majors will enrich opportunities for our students and allow them to gain a greater depth of learning in their fields of interest. Additionally, the research conducted at RSMAS will be integrated with our undergraduate programs to deliver a quality, powerful undergraduate education that will be exciting and valuable for students and faculty alike. In addition to the proposed new departmental majors, all school departments will be formally taking academic responsibility for the departmental majors they currently administer. Thus, all RSMAS departments will provide leadership for their respective departmental majors. This leadership will serve to strengthen and enhance learning opportunities for RSMAS students.

As explained in the attached document, with our recent adoption of the Geology Undergraduate Programs, three of our five departments are currently aligned with an undergraduate program that they have agreed to be academically responsible for (see attached memos from the chairs of (1) Atmospheric Sciences; (2) Marine Ecosystem and Society; and (3) Marine Geology). Our two other departments, namely Ocean Sciences and Marine Biology & Ecology, however, do not currently "own" such a program.

The purpose of the attached proposal is to request the approval for the creation of two new undergraduate programs, one that will align with the Department of Ocean Sciences (Oceanography) and one that will align with the Department of Marine Biology & Ecology (Marine Biology & Ecology). We trust that these two programs have a tremendous potential of bringing to UM very talented students who have not been aware of and/or attracted to our school in the past. We are convinced that this will be quite beneficial for the students, RSMAS and UM in general, and we could not be more excited and more supportive of this opportunity.

Each program will be formally supervised by a Program Director, who will become, as part of her or his appointment, a member of the Undergraduate Program Academic Committee (UPAC). UPAC will be run by a chair elected by the program directors. All programs are administratively supported by the Undergraduate Students Office (USO) that is supervised by the Associate Dean for Undergraduate Programs. This office is currently in place and operating. We will recruit more employees for that office if and as needed due to the increase of students. We currently have enough faculty members to teach in these programs though new recruitment of faculty (within the existing faculty allocation) will be given preference in the programs that attract more students. Thus, the financial needs and allocation to RSMAS will grow

proportionally to the number of its students and no major change in budget (except for the allocation of TA's) is currently needed.

As you can see in the attached memos, RSMAS is very supportive of this proposal. It has been approved by all five departments, unanimously approved by the School Council, and unanimously approved by the School Leadership (which at RSMAS consists of the five department chairs, the five associate deans, the Director of CIMAS, the School Council Speaker, and our three senators).

We respectfully request the Senate approval to allow us to develop and offer these two new undergraduate programs. Thanks in advance for your consideration, and we are happy to answer any questions.

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE

MEMORANDUM

To: University of Miami Faculty Senate

From: Peter J Minnett, Professor, Ocean Sciences
Speaker, RSMAS School Council

Peter Minnett

Subject: School Council Support for RSMAS Undergraduate Programs

Date November 4, 2017

Over many meetings in the past year or so, the addition of two departmental majors by the Departments of Ocean Sciences and Marine Biology and Ecology has been discussed extensively by the School Council, and we provided opinions and guidance to the Departments and Chairs. The School Council noted that all Departments had approved the proposal to the Faculty Senate and unanimously endorsed this outcome.

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

Phone: 305 421-4078 Email:dhansell@rsmas.miami.edu

MEMORANDUM

To: Dr. Roni Avissar, Dean
From: Dr. Dennis A. Hansell, Chairman
Date: November 3, 2017
Subject: Vote tallies on OCE's proposed undergraduate major *Oceanography*

Dean Avissar:

The Department of Ocean Sciences held votes of the faculty on two motions addressing their proposed development of an undergraduate major entitled *Oceanography*. The motions and results of the votes follow:

Motion 1: OCE approves the single major proposal as described in the "Proposal submitted to the UM Faculty Senate for the Establishment of an *Oceanography (OCE)* Major"

YES	(23)
NO	(2)
ABSTAIN	(0)

Motion 2: The department of OCE will be responsible for and administer the *OCE* single major

YES	(24)
NO	(1)
ABSTAIN	(0)

The majority of the OCE faculty support the two motions.

UNIVERSITY OF MIAMI
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Department of Marine Biology and Ecology
Rosenstiel School of Marine and Atmospheric Science
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149, USA

Phone: 305-421- 4614 Email: clangdon@rsmas.miami.edu

Memorandum

To: Dr. Roni Avissar, Dean

From: Dr. Chris Langdon, Chairman

Date: November 4, 2017

Re: Vote tallies on MBE's proposed Marine Biology and Ecology departmental major

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During the week of Nov 2, 2017, the faculty of the Department of Marine Biology and Ecology held a discussion and vote on the following motions:

Motion 1: MBE approves the departmental major proposal as described in the "Proposal submitted to the UM Faculty Senate for the Establishment of a Marine Biology and Ecology (MBE) departmental major."

Motion 1 passed with a vote of 12 yes, 1 no. (Vote held by email)

Motion 2: The Department of Marine Biology and Ecology will be academically responsible for the Marine Biology and Ecology departmental major.

Motion 2 passed with a vote of 9 yes, 0 no. (Vote held at monthly meeting, only 9 present at time of vote).

Chris Langdon, Chair

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www.rsmas.miami.edu/research/departments/marine-geosciences

MEMORANDUM

From: Sam Purkis (Chair - Department of Marine Geosciences)

To: Faculty Senate

Date: 10/23/2017

Dear Tomás Salerno - Chair, Faculty Senate

This memo to inform that the faculty of the Department of Marine Geosciences (MGS) have voted *unanimously* in support of the motion that we intend to be academically responsible for the existing Geological Sciences undergraduate program (GSC) within the RSMAS framework of each department offering a single major undergraduate program.

We look forward to nurturing and being part of this exciting new initiative.

Sincerely,

Prof. Sam Purkis
Chair of the Department of Marine Geosciences

UNIVERSITY OF MIAMI
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Rosenstiel School of Marine and Atmospheric Science
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Phone: 305-421-4930 Email: dnolan@rsmas.miami.edu

Memorandum

To: Marjorie Oleksiak, Associate Dean of Undergraduate Programs
Cc: Roni Avissar, Dean of RSMAS

From: David S. Nolan, Chair, Department of Atmospheric Sciences

Date: October 26th, 2017

Re: ATM Vote on Responsibility for the Meteorology Major

During the week of October 23rd, 2017, the faculty of the Department of Atmospheric Sciences held a discussion and vote, by email, on the following motion:

"The Department of Atmospheric Sciences will be academically responsible for the Meteorology Major."

The motion passed with a vote of 8-0, with the chair not voting.

UNIVERSITY OF MIAMI
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Department of Marine Ecosystems and Society
Rosenstiel School of Marine and Atmospheric Science
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149, USA

Phone: 305-421-4884 Email: jault@rsmas.miami.edu

Memorandum

November 4, 2017

TO: Dr. Roni Avissar, Dean of RSMAS

FR: Dr. Jerald S. Ault, Chairman of MES

RE: MES Faculty Vote on Responsibility for the Marine Affairs UG Major

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During the week of October 23rd, 2017, the faculty of the Department of Marine Ecosystems and Society held a discussion and vote, by email, on the following motion:

"The Department of Marine Ecosystems and Society will be academically responsible for the Marine Affairs Major."

The motion passed with a vote of 13-0.

UNIVERSITY OF MIAMI
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Associate Dean of Graduate Studies
Graduate Studies Office
Rosenstiel School of Marine and Atmospheric Science
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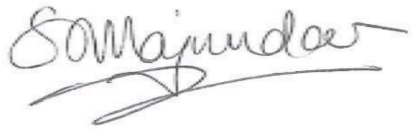
4600 Rickenbacker Causeway
Miami, FL 33149, USA

Phone: 305-421-4155 Email: smajumdar@rsmas.miami.edu

Dear Faculty Senate,

This letter is to express my enthusiastic support for the establishment of two new undergraduate majors in Ocean Sciences (OCE) and in Marine Biology and Ecology (MBE). The programmatic alignment with the respective M.S. and Ph.D. programs in their departments will provide substantially improved synergies between the undergraduate and graduate programs. In particular, the Research Intensive Learning activities highlighted in the proposed undergraduate programs will also likely involve many of our graduate students. I am highly supportive of our graduate students being provided with new structured opportunities to mentor undergraduates and collaborate on lab research, to enhance their own professional development and educational training. I am looking forward to working with the new programs moving forward.

Sincerely,



Sharanya J. Majumdar
Associate Dean of Graduate Studies
RSMAS

UNIVERSITY
OF MIAMI

MEMORANDUM

DATE: 11/8/2017

TO: Marjorie Oleksiak, Associate Dean of Undergraduate Studies
RSMAS

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

RE: **New Undergraduate Majors in BSMAS Program: Oceanography and Marine Biology & Ecology**

On November 6, 2017 RSMAS notified my office of its intent to create two new undergraduate majors in the existing Bachelor of Science in Marine Atmospheric Science (BSMAS) degree program effective in Fall 2018: 1) Oceanography; and 2) Marine Biology and Ecology.

The proposed BSMAS in Oceanography program will require completion of 120 credit hours including the University's general education requirements. Six tracks will eventually be developed within the major: Climate Science, Marine Environmental Chemistry, Microbial Oceanography, Coastal Impacts, Big Data in Ocean Applications, and Oceanography.

The proposed BSMAS in Marine Biology and Ecology will require completion of 125 credit hours including the University's general education requirements.

These new undergraduate majors do not "represent a significant departure, either in content or method of delivery" from what we are currently approved by SACSCOC to offer due to the following:

- The proposal involves the creation of new majors within an existing degree offered by the University.
- The program length for the two new bachelor's degree programs meets the SACSCOC requirement of a minimum of 120 credit hours.
- The new majors will be composed of existing courses.
- The new majors will be supported by current qualified faculty.
- The University is currently approved to offer the following programs in related areas:
    - MPS in Applied Remote Sensing
    - MPS in Computational Meteorology and Oceanography
    - MPS in Marine Mammal Science
    - MPS in Natural Hazards and Catastrophes
    - MPS in Tropical Marine Ecosystem Management
    - MS in Marine Biology and Ecology
    - MS in Meteorology and Physical Oceanography

  - MS in Ocean Sciences
  - PhD in Marine Biology and Ecology
  - PhD in Meteorology and Physical Oceanography
  - PhD In Ocean Sciences
- 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 campuses.

SACSCOC only requires notification of new programs that represent a significant departure from our current programs. Therefore, no notification or approval is required for this change.

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

CC: Faculty Senate
Roni Avissar, Dean of the Rosenstiel School of Marine and Atmospheric Science
Karen Beckett, University Registrar
Ray Nault, Executive Director of Student Financial Assistance and Employment

Proposal to UM Faculty Senate for the Establishment of a *Marine Biology and Ecology (MBE)* Major

1. RATIONALE

A. Signature Program Aligned with New Undergraduate Education Mission

The Department of Marine Biology and Ecology (MBE) seeks to develop a departmental major that teaches fundamental concepts and precepts in marine biology and ecology. The departmental major will be structured to enhance students' abilities to take advantage of advanced, upper-level research oriented courses. The opportunity to do active research is embodied both in in Research Intensive Learning (RIL) courses and the senior Capstone Research Project.

Research Intensive Learning (RIL) courses provide a more vigorous undergraduate education by applying the principles, theories and practices of active learning detailed by National Research Council, National Academy of Science, National Science Foundation, National Institution of Health, Howard Hughes Institution, American Association for the Advance of Science and the President's Council[1-8]. These courses provide a greater faculty-to-student ratio and thus a richer student experience in undergraduate research. RIL courses have students participating in fieldwork, laboratory experiments and data analyses while learning theory, tools and how to apply these to active research. The basic design for RIL courses is reflected in the "*Saltwater Semester*", where students take integrative sets of RIL courses to master biological fields. The *Saltwater Semester* takes advantage of having undergraduates at the Rosenstiel School of Marine and Atmospheric Science (RSMAS) for two full days a week where the students will focus on a specific Program of Study. An example is the Marine Genetics and Genomics Semester (three courses: Conservation Genetics, Marine Genomics, and Computational Biology) where students discuss textbook lessons and primary literature to help design experiments, complete the fieldwork for their experiment and use genomics and bioinformatics to address relevant and important marine biological questions. Other potential RIL course sets include Marine Ecology and Conservation, Environmental Physiology and Toxicology, Marine Health and Biomedicine as well as MBE's participation in the "*Galapagos Semester*". By unifying MBE's undergraduate program into a departmental major, we can enhance the number and frequency of RIL courses. Thus, this initiative provides a foundation to invoke more active learning and better prepare MBE's undergraduate students to achieve upper-level education goals and pursue science related careers.

The other advanced, upper-level research oriented experience that MBE departmental majors will provide is a Senior Capstone Independent Project. The focus of the Senior Capstone Independent Project is to provide the honors students with the tools required to design and complete an

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[1]Fang D & Meyer RE (2003) Effect of two Howard Hughes Medical Institute research training programs for medical students on the likelihood of pursuing research careers. *Acad Med* 78(12):1271-1280; [2]Handelsman J*, et al.* (2004) Education. Scientific teaching. *Science* 304(5670):521-522; [3]Labov JB (2004) From the National Academies: the challenges and opportunities for improving undergraduate science education through introductory courses. *Cell Biol Educ* 3(4):212-214; [4]National Research Council (2005) *How Students Learn: Science in the Classroom.* (National Academy Press., Washington, DC); [5]PCAT (2012) *President's Council of Advisors on Sceince and Techonolgy: Engaging to Excel. Report to the President: producing on milling additional college graduates with degres in science, technology, engineering and mathematics.*, (President EOot); [6]Freeman S*, et al.* (2014) Active learning increases student performance in science, engineering, and mathematics. *Proc Natl Acad Sci U S A* 111(23):8410-8415; [7]Bradforth SE*, et al.* (2015) University learning: improve undergraduate science education. *Nature* 523:282-284; [8]Science AAftAo (2015) Vision and Change in Undergraduate Biology Education: Chronicling Change, Inspiring the Future. *American Association for the Advancement of Science*.

independent active research project. In preparation for the completion of their independent project, students will master a specific set of skills and tools, and understand the literature that forms the foundation for any scientific endeavour. The Senior Capstone Independent Project takes advantage of the skills taught in RIL courses (*e.g.*, statistics, laboratory practices, field specific techniques) allowing student to make significant and important scientific contributions. Importantly while a Senior Capstone Independent Project is necessarily focused on a specific topic, the skills learned are applicable to a wide breadth of future endeavours. Understanding the scientific method and the ability to do experimental research, analyze data and communicate (both orally and written) will enhance our undergraduates' careers and contributions to society.

In summary, the MBE undergraduate departmental major provides a rigorous education where students learn by doing and have a closer personal educational experience by working directly with faculty in small classes that develop and explore scientific principles important for their careers and their future impact on societal problems.

B. Market Considerations

Sixty-one universities and colleges around the country offer a B. S. in Marine Biology (eight are shown Appendix I). UM's location in Miami and in the subtopics is clearly going to attract to the program many students interested in working with tropical organisms and ecosystems. The proximity of RSMAS with its state-of-the-art facilities and research active faculty will also be highly attractive. However, to capitalize on these advantages, the MBE departmental major program needs to emphasize an enhanced undergraduate research experience because this is what will attract the top students in the country who know they want to prepare themselves for admission to graduate school and careers in science and other public and private sector employment. The top five Marine Biology programs in the country offer research courses that teach sophomores what research is all about and the basic skills they will need. These programs also offer a wide range of elective courses for students in their junior and senior years to spend time in faculty labs developing specific laboratory skills and ultimately reaching the point where they propose and carry out an independent research project and disseminate the results. The structure of the MBE departmental major will provide a foundation of courses that teach the fundamental concepts and precepts and will also remove obstacles to taking advance upper-level RIL courses so that undergraduates can perform active research.

2. RESOURCES

A. Human Resources

The MBE departmental major program has the full participation and support of existing faculty. In addition, it will require an Academic Director, who is expected to be an MBE faculty member and who will manage the overall academic effort. The Undergraduate Studies Office (USO) based in the Unger Building on the Coral Gables Campus, where most of the undergraduate teaching takes place, will service the needs of all RSMAS undergraduate programs, including the MBE program. As the size of the undergraduate population increases, the USO will proportionally increase as well. If the MBE program develops as anticipated, clearly the faculty size and the number of graduate students capable of providing teaching assistance to the classes offered by the program will increase as well but within the RSMAS allocation for faculty lines. Obviously, if the program grows much above expectation, additional allocation will be discussed with the Provost

B. Libraries

The Office of Information Technology at the University of Miami provides technical assistance, including support for supported software, desktop environments and peripherals, network connectivity, computer password maintenance, and hardware and software configurations. UM libraries rank among the top research libraries in North America. The Richter Library and UM's main library house collections that serve the arts, architecture, humanities, social sciences, and the sciences. RSMAS also maintains a world-class library focused on the marine sciences, with a dedicated librarian for RSMAS faculty, staff, and students. This librarian and her staff provide extensive support for literature searches, locate educational resources in print and in digital formats, and provide support for all information-related work in education. Students have unlimited access to the library collections via the Internet.

C. Laboratory Facilities, Equipment, Space

Students in the MBE departmental major program will have access to unique facilities and research opportunities that will significantly enhance their educational experience at RSMAS. The MBE department is housed in the brand new, state-of-the-science Marine Technology and Life Sciences Seawater (MTLSS) building. This is the only building at UM with direct access to running seawater required for marine animal and plant husbandry. The laboratory facilities at the MTLSS building include those run by individual faculty where controlled experiments are routinely conducted on the impacts of multiple disturbances (*e.g.*, light, temperature, salinity, nutrients, acidification, and contaminants) on marine vertebrates, invertebrates, and plants. In addition to the faculty laboratories, students will have access to fully equipped (*e.g.*, microscopes, scales, glassware, aquaria) teaching labs where directed and independent studies can be conducted. The MTLSS building is home to two unique facilities that provide additional educational and research opportunities to students: the National Resource for *Aplysia* and the SUSTAIN (SUrge-STructure-Atmosphere INteraction) research facility. The *Aplysia* facility is the only laboratory in the world where the sea hare, *Aplysia californica*, is cultured and raised for scientific research. The relatively simple nervous system of *Aplysia* offers an ideal model for research on neurophysiology, brain function, memory and learning, and aging. The SUSTAIN facility is the only place in the world with a wind-wave-storm surge simulator capable of generating Category 5 hurricane-force winds in a 3D test environment. Designed by the world's leading aquarium architects, the new seawater tank provides students and scientists with access to critical observations within a realistic, but scaled and controlled environment. Finally, the MTLSS building also has numerous spaces for holding small-group discussions and meeting rooms for student presentations.

The students in the MBE departmental major program also will have access to the UM Broad Key research station. This research station is located a short boat-ride away from the RSMAS campus on a small island in the Florida Keys and it is surrounded by diverse mangrove, seagrass, and coral reef ecosystems that can be easily accessed from the shoreline. The station is routinely used as a teaching resource in graduate and undergraduate classes and can host daily trips or overnight stays for up to 16 students. The station is equipped with teaching and laboratory facilities as well as kayaks and paddleboards for easy access to nearby natural ecosystems.

For another exotic and rewarding academic experience, MBE students can participate in the study abroad program being taught by MBE, MES, MGS and OCE faculty in the Galapagos Islands.

UGalapagos offers a field-oriented semester of study. Through an academic partnership with the Intracultural Outreach Initiative, located in the community of Puerto Villamil on Isabela Island, UM offers a full six-course (17 credit) semester experience tailored to the needs and interests of students.

UM/RSMAS also has a fleet of small boats (16-25 ft) that are used for teaching and research activities in Biscayne Bay and the reefs of the Florida Reef Tract. Students in the MBE departmental major program will get the opportunity to gain hands-on boating experience and training and obtain their Motorboat Operator certification (MOCC). In addition, UM has a shallow draft research vessel, the RV Walton Smith (a 96-foot-long catamaran), that is used by UM and non-UM scientists for scientific cruises in Florida and the Caribbean.

RSMAS has a very active research diving program with > 150 certified research divers conducting research in all marine habitats and locations in Florida and around the world. Students will have the opportunity to get their scientific diving certification (AAUS) as part of their program, allowing them to participate in the hands-on field research being conducted by UM scientists.

D. Undergraduate Research Support

Research Intensive Learning (RIL) courses and the senior Capstone Research Projects have students actively engaged in fieldwork and open-ended experiments. These activities will require supporting funds that will be allocated by the Dean's Office.

3. CURRICULUM

A. Program Outcomes

The MBE departmental major curriculum will provide the rigor, flexibility, depth and integration to enable students to:

1. Design their course of study that provides both depth and breadth in marine biology and ecology and related science courses.
2. Undertake active research experiences, which will allow them to gain a strong understanding of the scientific process.
3. Learn from the diverse and outstanding group of professors, researchers, and classmates.
4. Prepare themselves for the public and private sector employment, graduate school, and successful careers.

B. Student Learning Outcomes

Students completing the MBE departmental major will be able to:

1. Master a broad set of fundamental biological knowledge including how to search for, understand, and synthesize primary scientific literature, and understand how fundamental biological principles relate to the marine environment.
2. Solve problems competently by identifying the relevant features of the problem and developing a strategy to solve the problem.
3. Use computers and computational approaches to acquire and process data as well as use software to analyze data.
4. Understand and synthesize the objectives of research experiments, properly conduct experiments, and appropriately record, analyze, and communicate the results.

5. Effectively communicate the concepts, results, and implications of their laboratory experiments and independent research both orally and in the written form to experts in the field, scientists in other disciplines, and the general public.

Learning outcome assessment will be based on questions embedded in tests, projects, and laboratory reports, all according to uniform rubrics. Additional assessment may be based on the oral and written presentation of the Capstone Independent Project, when applicable. These assessments may be supplemented by additional direct measures incorporated into a Senior Exit Exam and via indirect measures collected from questions on the University-administered Graduating Senior Survey. Additional details are provided in Appendix II.

C. Program Structure

The Marine Biology and Ecology departmental major will entail 125 credits.
**Courses currently listed as Marine Science (MSC) but have been developed and consistently taught by MBE faculty will be re-coded as Marine Biology and Ecology*

(i) Core course requirements (required coursework toward the degree; 68 credits)

MSC 111, 112 (4 cr) Introduction to Marine Science
MSC 230, 232 (4 cr) Marine Biology*
MSC 3XX (1 cr) Research Fundamentals*
Zoology
MSC 320 (3 cr) Marine Vertebrates
or MSC 323 (3 cr) Invertebrate Zoology
Genetics
MSC 318 (3 cr) Ecological Genetics*
or BIL 250 (3 cr) Genetics
Ecology
MSC 366 (3 cr) Tropical Coastal Ecosystems*
or MSC 422 (3 cr) Marine Ecology of the Galapagos*
or BIL 330 (3 cr) Ecology
Biology
BIL 150, 151, 160, 161 (10 cr) Introduction to Biology
BIL 255 (3 cr) Cell and Molecular Biology
BIL 360 (3 cr) Comparative Physiology
Chemistry
CHM 111, 112, 113, 114 General Chemistry (8cr) plus CHM 201, 205 Organic I, (4 cr)
or CMH 121, 113, 221, 114, 222, 205 Chemistry for BioSciences (15 cr)
Physical Science
GSC 111 (4 cr) Earth System History
or MSC 215, 216 (4 cr) Chemical Oceanography
or MSC 301, 302 (4 cr) Physical Oceanography
Mathematics
MTH 162 (4 cr) Calculus II (and any prerequisite)

Physics

College (10 cr)

PHY 101, PHY 102 PHY 106 Laboratory I, PHY 108 Laboratory II

or University Physics (10 cr)

PHY 201, PHY 202 with PHY 106 laboratory and PHY 108 Laboratory II

Statistics (3 cr) (one of four choices: MSC 204, PSY 291, BIL311 or MTH 224)

(ii) Elective 300+ level Marine Biology and Ecology courses (12 or more credits; Appendix III). Within those 12+ credits, students will be required to complete one 300+ level laboratory or field course. Students are encouraged to focus on 300 level and above courses in their program of study (Appendix IV). Different fields of study will be offered as RIL course sets incorporating active learning strategies during the RSMAS *Saltwater Semester* at the dynamic RSMAS research campus taught by MBE faculty who are leaders in these fields and during a semester at the Galapagos at the Intracultural Outreach Initiative, located on Isabela Island and taught by faculty from MBE, MES, MGS and OCE. The skills taught and experience gained in RIL courses (*e.g.*, statistics, laboratory practices, field specific techniques) will prepare students to make significant and important scientific contributions during their Senior Capstone Independent Project (see below).

(iii) *The Saltwater Semester* is offered on RSMAS campus as an intense research experience with 8 to 12 contact hours per week. Courses within different Programs of Study (Marine Ecology and Conservation, Marine Genetics and Genomics Environmental Toxicology and Physiology or Marine Health and Biomedicine) will be offered Saltwater Semester. These courses are a blend of lectures and active research, which have resulted in student authored peer-reviewed publications.

(iv) Senior Capstone Independent Project (3- 6 credits). Building on the skills and experience gained from the RIL courses, students that receive Departmental Honors designation will be expected to complete a two-semester independent project doing active research that will include experimental design, sample collection, statistical analysis, data processing and presentation, interpretation and report writing *or* one semester of research following participation in the "*Saltwater Semester.* Students will be required to write a proposal outlining a project that aligns with one of the MBE faculty of the Saltwater Semester. Projects will be mentor by individual faculty with oversight by the MBE Academic Director and two or more faculty members who will make up the evaluation committee for each student.

(v) General Science Electives (6 to 9 credits) within the areas of Biology (BIL), Biochemistry and Molecular Biology (BMB), Ecosystem Science and Policy (ECS), Computer Science (CSC), Microbiology and Immunology (MIC), and Neuroscience (NEU) (Appendix IV).

(vi) Free Electives (6 to 9 credits) to be taken from any school within the university

(vii) General Education Requirements (24 credits) to satisfy the areas of proficiency and areas of knowledge required of all University of Miami undergraduate students:

ENG 105, 106 (6 cr) English Literature, English Composition

Arts and Humanities (A&H) cognate (9 cr)

People and Society cognate (P&S) (9 cr)

D. Teaching and Faculty

Required courses in the MBE departmental major will be taught by existing and new tenure-track faculty hires in MBE (future faculty hires will be necessary for program growth and subsequent involvement in RIL courses and Capstone Independent Projects) as well as University faculty (Biology, Chemistry, Geology, Physics, Marine Geosciences, Mathematics, Ocean Sciences, … *etc*.). New faculty hires will be required to address increases in predicted teaching loads associated with enrolment into the MBE departmental major program. It is anticipated that all MBE faculty-taught courses will incorporate active learning components, *i.e*., primary literature or case-study reading and discussion, individual and team projects, and project or assignment presentations. Capstone Research Projects will be will be mentor by individual faculty with oversight by the MBE Academic Director of the program and evaluated by and two or more faculty members who will make up the evaluation committee for each student.

E. Academic Advising

Academic advising related to degree requirements and Programs of Study will be coordinated by the Academic Director of the program with active faculty representation in each of the Programs of Study. Capstone Research Project advisors will provide active mentoring to students pursuing research in their laboratories.

F. Learning Outcomes Assessment

See Appendix II.

4. STUDENTS

The MBE departmental major program is targeted at, and designed for students with a strong interest in academic research, graduate school, and professional careers that require critical thinking skills. For these high performing students, this program will develop competencies with which to successfully advance their careers in the field of marine biology and ecology.

A. Admission and Retention

Students will be admitted through the University of Miami Admissions office. Currently, students with an interest in marine biology enroll in the rigorous RSMAS Marine Science/Biology double major program. The proposed RSMAS MBE departmental major program will give students more flexibility than the existing Marine Science/Biology double major program, allowing for the opportunity to become more diversified. At the same time, the proposed MBE departmental major program will have a strong emphasis in field and laboratory research technique, analysis, critical thinking and science writing taught by leaders in the field. We believe that the combination of flexibility, diversity and in-depth research training at a state-of-the-art marine research station will attract many new students to RSMAS who would have decided to go to competing programs (see Section 1B Market Analysis and Appendix I). Our program may also appeal to STEM-oriented students interested in attending other programs within the University of Miami (for example, Biology, Ecosystem Science and Policy, Marine Science/Biology, Microbiology and Immunology, Neuroscience). Because of the rigor and integrative nature of the program, we anticipate similar retention as the Marine Science/Biology program. Further, students who seek to be credentialed in additional fields will be encouraged to conduct double majors between Biology and Chemistry, Microbiology and Immunology, Neuroscience Computational Sciences, etc.

B. Teaching and Research Assistants

Teaching assistants (TAs) will be required for the RIL and other research intense courses with significant experimental or field components. The predicted TA needs for courses administrated by MBE faculty are listed below:

	AY 2018	AY 2019	AY 2020	AY 2021	AY 2022
Marine Science 232 Marine Biology Lab	3	3	4.5	6	6
Marine Science 366 Tropical Marine Ecology Field Course	1	1	1	1	1
Marine Science 3XX Research Fundamentals	0	1	1.5	1.5	2
Marine Science 323 Invertebrate Zoology	0	1	1	1	1
Marine Science 326 Marine Genomics	0	0.5	0.5	0.5	0.5
Marine Science 422 Galapagos Marine Ecology	1	1	1	1	1
Marine Science 463 Marine Conservation Genetics	0	0.5	0.5	0.5	0.5
Marine Science 465 Marine Comparative Immunology + lab	0	1	1	1	1
Marine Science 466 Environmental Physiology	0	0.5	0.5	0.5	0.5
Marine Science 403 Marine Environmental Toxicology	0	0.5	0.5	0.5	0.5

5. ADMINISTRATION

A. Estimated administrative increments imposed by the program

The proposed MBE departmental major program (together with all other undergraduate programs administered by RSMAS) will benefit from the excellent administrative framework already supporting the existing undergraduate programs within RSMAS. Administrative staff for the current RSMAS programs are housed on the Coral Gables campus in the Ungar 210 suites and include the Associate Dean of Undergraduate Studies, an Academic Director, an Associate Academic Director, two full-time staff and several part-time student workers. This Undergraduate Students' Office (USO) will be strengthened by recruiting new staff members, as needed based on the growth of the overall student population serviced by this office.

B. Proposed arrangements for administration and for academic direction of the program

Day to day administration of the program will be carried out by the Academic Director, who will report directly to the RSMAS Associate Dean of Undergraduate Studies. All programmatic changes (*e.g.*, course additions, curriculum changes) will be brought to the MBE faculty for approval. The Associate Dean of Undergraduates will, in consultation with the RSMAS Academic Directors of undergraduate programs, ensure cohesion among RSMAS undergraduate programs.

6. COMPARISONS

The table in Appendix I provides a contrast of our proposed program with those offered by six comparable peer schools and primary competitors.

APPENDIX I

Table 2: Comparison of select existing programs in other academic institutions.

COMPARISON PROGRAMS				
Institution	**Type of Program**	**Focus**	**Requirements**	**Unique features**
University of California Santa Cruz	Marine Biology B.S.	Basic processes that shape life in the marine environments	Adv courses required: Genetics, Evolution, Mar Ecol	Sequence of UG research courses from Exploring Research to Independent Research to Senior Thesis
UCLA	Marine Biology B.S.	Marine organisms and their environment	Org Chem 1 and 2 not required but mentions that some graduate/professional programs may still require it.	Marine Biology Quarter field research taught at off campus location (4 courses, 16 cr)
University of Rhode Island	Marine Biology B.S.		Org Chem 1 and 2 or Org I + Biochem 120 cr	
Florida International University	Marine Biology B.S. Org Chem 1 and 2 required		Org Chem 1 and 2 required 120 credits, >48 must be upper division, 9 cr outside the major	
Stony Brook University of Marine & Atmospheric Sciences	Marine Sciences B.S.	Honors program in Marine Sciences.	Students must contact director of undergraduate studies to design & approve an acceptable course of study prior to declaring major**.**	Semester-by-the-Sea, field courses, research of coastal & oceanic environments.
Coastal Carolina University	Marine Science B.S.	Students not required to complete a minor or cognate. However, they may elect to minor in any field.	Minimum grade of "C" or better is required to maintain major.	Students may double major in any program which offers a B.S. degree.
University of South Carolina	Marine Science B.S.	Interdisciplinary, major can be declared end freshman year/beginning of sophomore year.	Admitted as freshman. A cumulative grade point average of 2.8 & a minimum grade of C in all marine science core courses is required	*Students are also required to undertake at least three weeks of independent field research, at the Baruch Marine Field Laboratory in Georgetown, SC or via an alternative of their choosing.*
Texas A & M University at Galveston	Marine Science B.S.	Electives in the junior & senior year allow students to obtain a broader back ground.	Admitted as freshman.	Students can be eligible for a secondary teaching field in Physical Sciences, pending a passing score on the state certification test.

APPENDIX II

Mission Statement and Program Objectives

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 the world.

Rosenstiel School of Marine and Atmospheric Science Mission

Our mission at the Rosenstiel School is to train the next generation of Earth scientists while conducting cutting-edge research and creating the knowledge that we communicate to our students and our community.

Program Objectives

The MBE departmental major curriculum will provide the rigor, flexibility, depth and integration to enable students to:

1. Design their course of study that provides both depth and breadth in marine biology and ecology and science related courses.
2. Undertake active research experiences, which will allow them to gain a strong understanding of the scientific process.
3. Learn from the diverse and outstanding group of professors, researchers, and classmates.
4. Prepare themselves for the public and private sector employment, graduate school, and successful careers.

Assessment of Intended Outcomes:

- Student Learning Outcome 1. Master a broad set of fundamental biological knowledge including how to search for, understand, and synthesize primary scientific literature, and understand how fundamental biological principles relate to the marine environment.

  Assessment Measure 1: Final exams in Marine Biology, Ecological Genetics, and Marine Ecology will be reviewed for randomly selected students for appropriate content knowledge.

  Assessment Measure 2: Embedded questions in program coursework exams.

  Assessment Measure 3: For Honor students, capstone research thesis oral and written presentation as assessed by a common rubric.

- Student Learning Outcome 2. Solve problems competently by identifying the relevant features of the problem and developing a strategy to solve the problem.

  Assessment Measure 1. For Honor students, capstone research thesis oral and written presentation as assessed by a common rubric.

  Assessment Measure 2: Embedded questions in program coursework exams.

- Student Learning Outcome 3. Use computers and computational approaches to acquire and process data as well as use software to analyze data.

  Assessment Measure 1: For Honor students, capstone research thesis oral and written presentation as assessed by a common rubric.

  Assessment Measure 2: Projects in modeling and laboratory-based courses will be reviewed for randomly selected students for appropriate content knowledge.

- Student Learning Outcome 4. Understand the objectives of research experiments, properly conduct experiments, and appropriately record, analyze, and communicate the results.

  Assessment Measure 1: For Honor students, capstone research thesis oral and written presentation as assessed by a common rubric.

  Assessment Measure 2: Select questions of Senior Exit Survey.

- Student Learning Outcome 5. Effectively communicate the concepts, results, and implications of their laboratory experiments and independent research both orally and in the written form to experts in the field, scientists in other disciplines, and the general public.

  Assessment Measure 1: For Honor students, capstone research thesis oral and written presentation as assessed by a common rubric.

APPENDIX III

Marine Biology and Ecology RIL courses organized by Program of Study. Note that undergraduate students with the necessary prerequisites and in accordance with the policy statement in the University of Miami Academic Bulletin are eligible to take graduate level MBE courses. **Courses currently listed as Marine Science but have been developed and consistently taught by MBE faculty will be re-coded as Marine Biology and Ecology*

(a) Marine Ecology and Conservation

MSC 366 (3 cr) Tropical Marine Ecosystems*
MSC 365 (1 cr) Tropical Marine Ecosystems Field Course*
RSM 521/621 Object Oriented Programming and Agent-Based Modelling

(b) Marine Genetics and Genomics

MSC 326 (3 cr) Marine Genomics*
MSC 463 (3 cr) Marine Conservation Genetics*
MBE 535 (3 cr) Practical Computing for Biologists*

(c) Environmental Physiology and Toxicology

MSC 327 (3 cr) Marine Animal Neurophysiology and Behavior*
MSC 403 (3 cr) Environmental Toxicology*
MSC 404 (1 cr) Marine Organismal and Environmental Health Research Trip*
MSC 466 (3 cr) Environmental Physiology + Lab*
MBE 586/MBE 686 (3 cr) Environmental Fish Biology
RSM 580/RSM 680 (3 cr) Techniques in Respirometry of Aquatic Organisms

(d)) Marine Health and Biomedicine

MSC 465 (4 cr) Marine Comparative Immunology + Lab*
MBE 576/676 (3 cr) Diseases of Marine Organisms

(e) Galapagos

MSC 420 (3 cr) Political Ecology of the Galapagos
MSC 421 (3 cr) Terrestrial Biology and Adaptations of the Galapagos*
MSC 422 (3 cr) Marine Ecology of the Galapagos*
MSC 423 (3 cr) Marine Conservation Biology and Fisheries of the Galapagos*
MSC 424 (3 cr) Origin and Geology of the Galapagos Islands
MSC 425 (2 cr) Galapagos Community-Based Research and Service

APPENDIX IV

General Science Electives within the areas of Biology, Biochemistry, Ecosystem Science and Policy, Healthcare Sciences, Marine Biology and Ecology, Microbiology and Immunology, Marine Science, and Neuroscience that fall into the different Programs of Study. Undergraduate students with the necessary prerequisites and in accordance with the policy statement in the University of Miami Academic Bulletin are eligible to take graduate level courses appropriate for the different MBE fields of study. **Courses currently listed as Marine Science but have been developed and consistently taught by MBE faculty will be re-coded as Marine Biology and Ecology*

(a) Marine Ecology and Conservation

BIL 539 (3 cr) Conservation and Protected Areas
MSC 220 (3 cr) Climate and Global Change
MSC 313 (3 cr) Coastal Law
MSC 340 (3 cr) Ocean Policy
MSC 410 Marine Conservation*
MSC 415 (3 cr) Coral Reef Science and Management*
MSC 350 (3 cr) Survey of Marine Mammals
MSC 316 Global Primary Production
MBE 515/615 (3 cr) Tropical Marine Ecology
MBE 518/618 (3 cr) Reef Coral Biology, Ecology and Conservation
MBE 521/621 (3 cr) Field Techniques Instrumentation Tropical Marine Ecology

(b) Marine Genetics and Genomics

BMB 401 (3 cr) Introduction to Biochemistry
BIL 455 (3 cr) Developmental Biology
BIL 565 (3 cr) Evolution and Development
MSC 318 (3 cr) Ecological Genetics*
NEU 400 (3 cr) Neurogenetics
NEU 468 (3 cr) Developmental Neuroscience
MBE 529/629 (3 cr) Population Genetics & Genomics

(c) Environmental Physiology and Toxicology

BMB 401 (3 cr) Introduction to Biochemistry
BIL 268 (3 cr) Neurobiology
BIL 365 (3 cr) Endocrinology
BIL 343 (3 cr) Animal Communication
BIL 352 (3 cr) Techniques and Scanning Electron Microscopy
MSC 328 (3 cr) Introduction to Aquaculture
MSC 350 (3 cr) Survey of Marine Mammals
NEU 342 (3 cr) Neural Mechanisms of Disease

d) Marine Health and Biomedicine

ECS 309 (3 cr) Microbes and the Environment

Healthcare Sciences (HCS) 206 (3 cr) Introduction to Public Health
HCS 208 (3 cr) Introduction to Epidemiology
HCS 309 (3 cr) Health and Environment
MSC 300 (3 cr) Water Resources: History, Management and Policy
MSC 462 (3 cr) Marine Biomedicine
MSC 371 (1 cr) Readings in Marine Invertebrate Disease*
MSC 371 (1 cr) Readings in Shark Immunology*
MBE505/605 (3 cr) Marine Mammal Disease and Medicine

A Proposal for OCE Single-Major Undergraduate Program

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1 Executive Summary

Our objective is to develop a new educational structure to train the next generation of talented and driven individuals, who will contribute to the global community, and help shape the future societies. The program will capitalize on existing strength and expertise in the Ocean Sciences Department, and expand teaching and advising opportunities for its members.

We are proposing to initiate a new *single-major Oceanography* undergraduate program. This single-major program will co-exist with the well-established double-major MSC program and will attract students who want to concentrate on specific future-looking applied tracks that provide both the fundamental background and specific skills that are in high demand in the modern job market. Our main purpose is to develop a future-looking new program to address growing environmental concerns, and socioeconomic impacts on coastal regions globally.

Six tracks are proposed within the new single-major Oceanography Program. These tracks will come online gradually (over the next 3 to 5 years) as the major grows and will potentially include *Climate Science, Marine Environmental Chemistry, Microbial Oceanography, Coastal Impacts, Big Data in Ocean Applications and general Oceanography.* Each track consists of 10 specialization courses that will be taken during junior and senior years, after following closely the existing MSC courses during the freshman and sophomore years. The curricula consist mostly of existing courses that are offered within the University, but we propose the addition of 17 new courses with program growth. These courses are intended to provide not only knowledge, but also hands-on skills to the undergraduate population. These tracks will provide more in-depth marine science training with opportunities for experiential learning, preparing students to apply their knowledge to solve problems on current issues facing society, or to pursue further research in graduate school. In some tracks (but not all), students are expected to engage in a senior capstone project, or alternatively, they can seek internships as a transition to work outside of the university.

2 Motivation

A new undergraduate program for the Ocean Science Department is motivated by two factors:

a) **The need for safe and sustainable coastal societies:** There have been significant changes in modern societies leading to a tenuous balance with the oceanic environment. Ever since the beginning of the industrial revolution about 200 years ago, modern societies focused on production of goods and services with emphasis on steady growth of consumption. This idea certainly improved the standard of living and the world population grew from 1 to 7 billion people during that time. Major population centers naturally developed along the coast, with the ocean being a conduit for transportation and commerce as well as providing food and resources. This essential role of the ocean in society is reflected today by the fact that 80% of people live on the coast and the world's largest cities are located near the water. According to the UN Atlas of the Oceans, about two-thirds of the world's population live within 60 kilometers of the coast, and this number is rising. Growing population and development in coastal zones increases society's vulnerability to natural and anthropogenic hazards and adds additional stress on the coastal environment. Nevertheless, awareness about the ongoing changes in coastal environment, and societal impact on water resources have been slow to develop.

Extreme vulnerability of ocean and coastal zones is becoming increasing clear. Driven by anthropogenic climate change and natural climate variability, the sea level is rising globally, with regional changes often overstripping the global increase. These regional changes lead to largely irreversible and potentially catastrophic damage to coastal communities, inundating large swaths of land, compromising the freshwater supply, transportation, water drainage and natural ecosystems (e.g. Everglades), and dramatically amplifying damage from storms and other extreme events. Regardless of any mitigation measures that the global community may take in the future, understanding of these changes and adaptation to them is urgently needed for all coastal communities. These issues are particularly critical to South Florida, which is already experiencing adverse effects of sea-level rise, with the potential for negatively impacting real-estate values, tourism and economic development.

Pollution from natural and anthropogenic causes is another major threat to coastal communities and local economies. For instance, more than 400,000 people were without clean drinking water as a results of toxic algal blooms in Lake Erie in 2014. In 2016, a third of Lake Okeechobee was covered in algal blooms, mostly from nutrient runoff from fertilized farm lands and gulf courses. Releasing Okeechobee water through canals led to a situation in which the algal blooms blanketed Florida beaches in the summer of 2016. The Deepwater

Horizon oil spill event in 2010, the largest accidental marine oil spill in history, led to $60 billion in damages and penalties to be paid by BP, an amount comparable to Florida's $80 billion annual tourism industry. In the aftermath of the Fukushima earthquake and nuclear reaction meltdown in 2011, one million tons of debris washed ashore near the US West Coast across the entire Pacific Ocean only two years later, raising awareness that human societies are all connected and exposure to nuclear materials might have been transported over large distances as well. Since 2010 it has been shown by water regulatory agencies, with the help of RSMAS and UM faculty, that FPL's Turkey Point nuclear power plant cooling canals are leaking the radioisotope tritium into the coastal aquifer and Biscayne Bay. The City of Miami built water collection canals in order to avoid flooding during king tides and started pumping them into Biscayne Bay, a practice with perhaps long-term consequences for water quality and public health in the most expensive and popular locations in Miami. Due to the expansion of the Panama Canal, entrance to Port of Miami has been also modified, but due to the changes in the circulation, it appears that some of the coral reef habitat was destroyed.

Such familiar examples are too many to list here. Nevertheless, it is clear that human activities are having an immediate negative impact on the marine environment. *As such, sustainable coastal societies require trained individuals who understand the global and regional coastal environmental vulnerability, can analyze and interpret observational data and model predictions, and work out science-based solutions by working together with the industry, governments, and non-profit organizations, as well as possessing excellent communication skills. These individuals are expected to be able to see the "big picture", thus need to obtain a wide skill set to operate across different groups.*

b) **The need to modernize undergraduate programs:** Modernization of undergraduate programs at universities is a growing need, because of increasing complexity of problems facing societies and growing demand for highly educated workforce. At the same time, the tuition and student debt have been increasing nationally. Currently, student debt stands at $1.4 Trillion in total (which is larger than the national credit card debt) and close to $40 thousand per student. Despite the significant increase in tuition cost over the past decade, universities often have failed to match their education with quickly evolving societal needs. Because the rate of tuition increase exceeds the national inflation, it is fairly clear that university undergraduate programs will be subject to scrutiny regarding their value in the near future. In addition, high-cost private universities are facing increasing competition with public universities, community colleges and online universities. We are in a situation where the past is not an accurate guide for the future. Subsequently, there is a genuine and growing need for the next generation of graduates from educational programs that combine

fundamental understanding of problems facing coastal communities with practical knowledge and skills for societal use. New types of jobs are likely to emerge for communities under coastal environmental stress. Thus, it is crucial to develop forward-looking innovative programs, such as the one proposed here, that are built on existing academic excellence and experience, but are also actively adapting to opportunities and evolving societal needs.

3 Key Characteristics of the Programs

a) **Building on success of the Program:** Given the tremendous success of the current double-major MSC Program (40 years in the development, 400 students enrolled, consisting of applicants with the highest SAT scores at the University of Miami), a key consideration was to develop new opportunities. Our goal is to create new educational opportunities and increase the total number of students in the field of Marine Science. Our intension is, therefore, to attract students who want to concentrate their learning along six single-major tracks tailored to specific challenges facing coastal communities. These opportunities will be built on existing MSC strength in undergraduate education. Thus, the new Program is envisioned as a single-major program effectively sharing the first 3 semesters of the MSC courses, with 10 specialization courses in sophomore, junior and senior years.

b) **Multiple tracks:** The Program is made attractive by offering six different tracks:

i) *Marine Environmental Chemistry:* This track will offer courses on solutions to the challenges of clean water, pollution, ocean acidification, environmental toxins (from harmful algal blooms and human sources), and exploration in natural products (pharmaceuticals).

ii) *Microbial Oceanography:* This track will offer courses on solutions for the ecological impacts of ocean acidification, coastal pollution, understanding the causes and impacts of harmful algal blooms, dead zones, ecosystem management including reef preservation, restoration from oil spills, applications in aquaculture for food supply and energy.

iii) *Coastal Impacts:* Courses on this track will stress the importance of understanding of the hazards threatening coastal regions and their linkages to global oceans, exploring ways to increase the resilience of coastal communities and to bolster efforts at environmental protection. Students in this track will be presented with a comprehensive view on the modern science of interactions between land and oceans, threats to coastal communities and environment from sea-level rise and accelerating coastal development, as well as available solutions to these problems.

iv) *Big Data in Ocean Applications:* This track is based on the recognition that there has been a tremendous increase in information (such as satellite data and re-analyses by national centers) with the wide-spread availability of computers and internet access globally over the past two decades. The large amounts of data contain valuable information, which is only accessible by those who know how to do data processing and analysis. This trend is likely to grow exponentially in the future, creating opportunities for employment.

v) *Climate Science:* This track is intended to capitalize on general public interest in climate change, its scientific quantification, local and global socioeconomic impacts.

vi) *Oceanography:* Instead of following one of the four tracks above, the students will have the opportunity to define a program of 10 courses drawn from these course tracks, guided by a faculty member, to align with a specific oceanography interest (e.g., biological, chemical and physical).

c) **Adaptive Update of Tracks:** We envision frequent reviews and updates of tracks depending on student intake and their demands and opening of new tracks in order to keep the Program dynamic, fresh and adaptive to emerging trends.

d) **Emphasis on Knowledge and Skills:** One of the core objectives, is to provide the students not only with a general education and understanding of the subject matter, but also with skills that would make them better prepared for graduate education and eventually employable in the job market of the future.

e) **Reliance on both existing and new courses:** The Program relies both on existing courses offered from multiple departments at the University of Miami, and RSMAS in particular, and new courses developed by OCE faculty. The new courses will be tailored to the needs of students in the proposed tracks and capitalize on the expertise of OCE faculty.

f) **Research-Based Honors Project or Internships:** Perhaps the most important characteristics of the OCE faculty is their experience in leading-edge research. In order to exploit this quality, undergraduate students are expected to complete a research project, advised by OCE faculty for their senior thesis. Alternatively, students will be required to have internships.

4 Market Research and Existing Marine Science Programs

During the preparation of this Program, the Committee interviewed ten individuals for reasons of market research. These included senior people from energy companies (Chevron, Shell and

Exxon), from the reinsurance industry, from a local construction company, the South Florida Water Management District, local government as well as a relevant center from the University of Miami.

These individuals all recognized the increasing deterioration of the environment due to overpopulation, climate change and the sea-level rise. It was also recognized that effective communication skills will become increasingly important in an interconnected global community. It is also becoming important to have an understanding of multiple fields, so an interdisciplinary education is preferred, as opposed to specializing narrowly on a single area. Critical, logical and independent thinking was identified as the most important skill by all experts we interviewed. Overall, companies are interested in hiring individuals not only with good technical skills, but also those who can see the big picture and work across different groups to attain clear objectives and provide financial benefits for the company. In general, analytical, technical and communication skills are considered more important than general knowledge (knowledge is something that driven individuals can attain through a lifetime of learning). Internships are viewed as a good way to grasp what is important outside of academia.

The Committee also investigated existing marine and/or environmental science programs in other universities. In particular, the programs at Eckerd College, Florida State University, University of California at Davis, Coastal Carolina University, University of South Carolina, Middlebury College, Duke University, Humbolt State University and Quest University. We also find that there is a healthy demand in all these marine undergraduate programs listed above.

5 Curriculum of Oceanography Program

I General Structure of the Curriculum

During the first three semesters:

Courses taken here follow the Marine Science Core curriculum.

Take each of:

- Calculus I (MTH 161 or 171)
- Calculus II (MTH 162 or 172)
- Statistics for Environmental Science (MSC 204)
- Physics I (PHY 205, mechanics, heat, fluids, waves)
- Physics II (PHY 206)

- Phys lab (PHY 208)
- Chemistry I (CHM 111)
  - Chem lab (CHM 113)
- Chemistry II (CHM 112)
  - Chem lab (CHM 114)
- Biology I (BIL 150)
  - Bio lab (BIL 151)
- Intro to Marine Science (MSC 111)
  - Mar Sci lab (MSC 112)
- Introduction to Programming for Marine Science

Pick 1 of:

- Climate & Global Change (MSC 220)
- Climate Science & Policy (MSC 346)

Pick 1 additional class in marine and/or environmental policy, and complete one of these cognates:

- *Marine Policy*
  https://cognates.miami.edu/PS_0027
  includes MSC 111 & MSC 346
- *Environmental Politics & Policy*, https://cognates.miami.edu/PS_0053
  includes MSC 220 & MSC 346
- *Global Sustainability, Living on a Finite Planet*, https://cognates.miami.edu/PS_0052
  includes MSC 220 & MSC 346
- *Social & Scientific Perspectives on Global Environmental Change*, https://cognates.miami.edu/PS_0050
  includes MSC 220

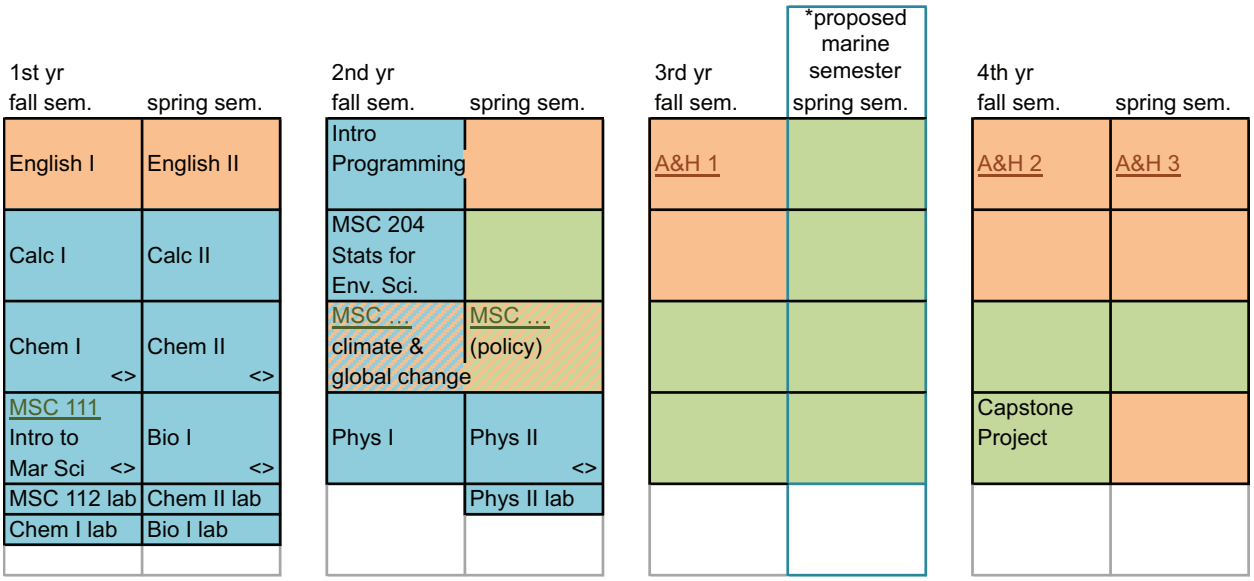
Oceanography Tracks:

During last five semesters:

Specialize in a *track*, taking 10 courses from a suggested curriculum including a Honors Thesis

Project (suggested fall semester of 4th year), and either a Science Writing or a Science Communication course. Tracks are designed to facilitate a *marine semester* (suggested for the 3rd year) focused on field-based and hands-on inquiry courses. These could be based at RSMAS or abroad.

The curriculum structure is summarized in Figure 1.



Color key:

"Core" classes for major in first 3 semesters
"Focus" classes for major (**track**) in last 5 semesters
Other UM classes

MSC … = recommended for P&S cognate*
A&H= Arts & Humanities cognate*

*Cognates: students majoring in STEM will need to do 3 classes in a 'People & Society' cognate (P&S), and 3 classes in an 'Arts & Humanities' cognate (A&H)

Credit info:

120 total credits to graduate = average 15 credits/semester
typical class = 3 credits, lab =1 credit
typical semester = 4 classes, plus some labs; some semesters could have 5 courses
<> denotes class with lab

Figure 1: Course layout common to all tracks.

II Curriculum of Marine Environmental Chemistry Track

Applications: Solutions to the challenges of clean water, pollution, ocean acidification, neurotoxins (harmful algal blooms), and exploration in natural products (pharmaceuticals).

Skills attained: Analytical chemistry, instrumentation technology (a little hardware + a little software), data analytics.

Job opportunities: Clean water (both analytical approaches and policy applications, domestic and international), environmental monitoring including experimental design and implementation, pharmaceuticals, geochemistry in energy industries.

Course list:

Track classes for Marine Environmental Chemistry Track - 10 total:

- Required courses:
  - Organic Chemistry I (CHM 201)
    - Orgo Chem lab (CHM 205)
  - Chemical Oceanography (MSC 215)
    - Chem Oce lab (MSC 216)
  - Marine organic chemistry (new)
- Take at least 5 courses (3 must be from * list):
  - Environmental chemistry (CHM 401)*
  - Marine biota and biogeochemical cycles (MSC 417)*
  - Air pollution and climate change (new)*
  - Marine Biomedecine (MSC 462)*
  - Humans and Oceans (new)
  - Geophysical data analysis and visualization
  - Physical and Chemical Processes in Coastal Ecosystems (MSC 217)
  - Intro to physical oceanography (MSC 301, lab MSC 302)
  - Spatial Applications in Marine Science (MSC 460) (intro to GIS)
  - Introduction to Marine Geology (MSC 240; note it has prereq GSC 110 or 111)
  - Coastal processes field course (new)*

261 – Environmental assessment field techniques (new)*

262 – Marine instrumentation (new)*

263 • Pick 1 of:

264 – Science communication (new)

265 – Scientific writing (ENG 107)

266 • Required: Capstone project

267 – Internship in a relevant program OR

268 – Research project: environmental assessment or instrumentation development

269 **Capstone Research Project:** Focused on solving an environmental challengeX is an issue in
270 the environment, how do you measure X?

271 Two options: students could undertake either a more *field-focused environmental assessment*
272 *project*, or *a lab-focused instrumentation development project.*

273 (i) *Environmental assessment:* design and execute a sampling and analysis plan to measure X,
274 e.g. determine if X is different in one environment vs another, or if X is changing over time,
275 or if X is impacted by Y. ex: is nitrate higher at beaches with more frequent city-mandated
276 beach closures based on fecal indicator bacteria? tools: sampling equipment, wet lab sample
277 prep, analytical instruments including spectrophotometer for nutrients, oxygen probe, pH
278 meter, thermometer

279 (ii) *Instrumentation development:* build a detector for X (target may be deployable instrument
280 for ROV or AUV mounting, or stationary sensor with high time resolution). Involves some
281 hardware, some software, and knowledge of environment and parameter of interest. *Example:*
282 build a detector for nitrate that could be mounted on a mooring for continuous sampling.
283 *Tools:* arduino or raspberry pi processor, add-on components, basic electrical connection
284 tools.

Marine Environmental Chemistry

1st yr fall sem.	1st yr spring sem.	2nd yr fall sem.	2nd yr spring sem.	3rd yr fall sem.	3rd yr spring sem.	4th yr fall sem.	4th yr spring sem.
English I	English II	Intro. programming for mar. sci.	(UM elect.)	A&H 1	Environ. assessment field tech.	A&H 2	A&H 3
MTH 161 Calc I	MTH 162 Calc II	MSC 204 stats for Env. Sci.	MSC 215 Chem Oce	(UM elect.)	Marine instrument.	(UM elect.)	(UM elect.)
CHM 111 Chem I	CHM 112 Chem II	MSC 220 Climate & global change	MSC 346 Climate Sci & policy	MSC 417 Marine biota & biogeoch.	Marine organic geochem.	Geophys. data analy. & visualiz.	(UM elect.)
MSC 111 Intro to Mar Sci	BIL 150 Biology I	PHY 205 Phys I	PHY 206 Phys II	CHM 201 Orgo Chem	Coastal processes	Capstone Project	ENG 107 Science writing
CHM 113 lab	CHM 114 lab		PHY 208 lab	CHM 205 lab			
MSC 112 lab	BIL 151 lab		MSC 216 lab				

Color key:

"Core" classes for major in first 3 semesters
"Focus" classes for major (**track**) in last 5 semesters
Other UM classes

P&S = 3 courses required in People & Society cognate--can be satisifed with policy-focused MSC classes
A&H = 3 courses required in Arts & Humanities cognate

Figure 2: Example course layout for Marine Environmental Chemistry Track.

III Curriculum of Microbial Oceanography Track

Applications: Solutions for the ecological impacts of ocean acidification, coastal pollution, understanding the causes and impacts of harmful algal blooms, dead zones, ecosystem management including reef preservation, restoration from oil spills, applications in aquaculture for food supply and energy.

Skills: Molecular biology techniques, microbial analytical tools, ecosystem assessment, computational data analytics tools.

Job opportunities: Aquaculture (commercial applications for food and energy, as well as regulatory jobs surrounding the industry), clean water (both environmental assessment and policy applications, through consulting, government, NGOs, both domestic and international), coastal sustainable development as it relates to natural ecosystems

Course list:

Track classes for Microbial Oceanography Track - 10 total:

- Required courses:
  - Biological Oceanography (MSC 218)
  - Marine microbial dynamics (**new**)
    - marine microbe lab (new)
  - Marine Biota and Biogeochemical Cycles (MSC 417)
- Take at least 5 courses (3 must be from * list):
  - Chemical Oceanography (MSC 215, lab MSC 216)*
  - Evolution and Biodiversity (BIL 160, lab 161)*
  - Marine Genomics (MSC 326)*
  - Marine Conservation Genetics (MSC 463)* (take with MSC 326)
  - Life in Moving Fluids (MSC 364) *
  - Marine Biochemistry* (new or BMB 401, Biochemistry for the Biomedical Sciences): Basics principles of biochemistry in the context of single-celled organisms living in an ionic solution
  - Global Primary Production (MSC 316)
  - Marine Conservation Science (MSC 410)

- Coastal Oceanography (human impacts, hydrology; new)
- Spatial Applications in Marine Science (MSC 460) (intro to GIS)
- Geophysical data analysis and visualization (similar to OCE 531, UG version, new)
- Humans and Oceans (new)
- Marine Biomedicine (MSC 462)
- Coastal processes field course (new)*
- Environmental assessment field techniques (new)*

- Pick 1 of:
  - Science communication (new)
  - Scientific writing (ENG 107)
- Required: Capstone project
  - Internship in a relevant program OR
  - Research project: environmental assessment or microbial function

Capstone Research Project: Focused on addressing an environmental challengeX is an issue in the environment, in the context of microbes, what leads to X, or what is the impact of X?

Two options: students could undertake either a more *field-focused environmental assessment project*, or *a lab-focused microbial function project.*

(i) *Environmental assessment*: design and execute a sampling and analysis plan to investigate X in the environment, e.g. determine if X is different in one environment vs another, or if X is changing over time, or if X is impacted by Y. example: In areas that are expected to have high human inputs of nutrients (e.g. South beach), is the ratio of phytoplankton to bacteria different from less impacted areas?

(ii) *Microbial function*: design and execute an experiment to determine what microbe X is doing in an ecosystemeither how it responds to something in the environment (e.g. nitrate), or a particular role it is playing in the environment (e.g. breaking down aromatic hydrocarbons) *Example*: In response to antibiotic concentrations similar to those used in fish aquaculture, do diatom phytoplankton abundance increase or decrease? *Tools*: sampling equipment; wet lab sample prep space; light & temp controlled space for cultures; culture equipment including vials and sterile transfer equipment; analytical instruments including flow cytometer and/or imaging microscope for microbial counts, oxygen sensor, pH meter, thermometer, potentially

spectrophotomter for nutrient analysis, equipment for DNA extraction, thermocycler, potentially fluorescent probe or sequence analysis.

Microbial Oceanography

1st yr fall sem.	1st yr spring sem.	2nd yr fall sem.	2nd yr spring sem.	3rd yr fall sem.	3rd yr spring sem.	4th yr fall sem.	4th yr spring sem.
English I	English II	Intro. programming for mar. sci.	(UM elect.)	A&H 1	Marine microbial dynamics	A&H 2	A&H 3
MTH 161 Calc I	MTH 162 Calc II	MSC 204 stats for Env. Sci.	MSC 218 Bio Oce	(UM elect.)	Environ. assessment field tech.	(UM elect.)	(UM elect.)
CHM 111 Chem I	CHM 112 Chem II	MSC 220 Climate & global change	MSC 340 Ocean policy	MSC 417 Marine biota & biogeoch.	Marine Genomics	MSC 364 Life in moving fluids	(UM elect.)
MSC 111 Intro to Mar Sci	BIL 150 Biology I	PHY 205 Phys I	PHY 206 Phys II	BIL 160 Evo & Biodiv	Marine Conserv. Genetics	Capstone Project	Science communic.
CHM 113 lab	CHM 114 lab		PHY 208 lab	BIL 161 lab			
MSC 112 lab	BIL 151 lab						

Color key:

"Core" classes for major in first 3 semesters

"Focus" classes for major (**track**) in last 5 semesters

Other UM classes

Figure 3: Example course layout for Microbial Oceanography Track.

IV Curriculum of Coastal Impacts Track

Applications: According to the UN Atlas of the Oceans, about two-thirds of the world's population live within 60 kilometers of the coast, and this number is rising. Growing population and development in coastal zones increases society's vulnerability to natural hazards and adds additional stress on the coastal environment. Sea-level rise and climate change amplify these hazards and stressors and increase uncertainty in the future of coastal zones. These changes outline the importance of understanding of the hazards threatening coastal regions and their linkages to the global ocean, exploring ways to increase the resilience of coastal communities and to bolster efforts at environmental protection. Students in this track will be presented with a comprehensive view on the modern science of interactions between land and oceans, threats to coastal communities and environment from sea-level rise and accelerating coastal development, as well as available solutions to these problems.

Focus classes for Coastal Impacts Track - 10 total:

- *Required courses:*
  - Ocean Hazards: Sea-level rise and storms (200-level, SPRING, **new**)
  - Coastal Oceanography (**new**)
  - Coastal Hydrology (300-level, SPRING, **new**)
  - Coastal Processes Field Course (**new**)
- *- Pick at least four courses from the following electives:*
  - Environmental Fluid Mechanics (300-level, SPRING **new**)
  - Introduction to Marine Geology (GSC 240, SPRING)
  - Geophysical Data Analysis and Visualization (400-level, SPRING, **new**)
  - Spatial Applications in Marine Science (MSC 460) (GIS methods)
  - Geophysical Fluid Modelling (400-level, FALL, **new**)
  - Introduction to Remote Sensing (400 level, FALL, **new**)
  - Coastal Observing Systems (200-300 level, SPRING, **new**)
  - Climate and Global Change (MSC 220, FALL/SPRING)
- *Pick at least three courses from the following electives:*
  - Humans and Oceans (**new**)
  - Coastal Law (MSC 313, FALL)
  - Ocean Law (MSC 314)
  - Climate Science and Policy (MSC 346, SPRING)
  - Ocean Policy (MSC 340)
- *OR pick one of these Cognates:*
  - Environmental Politics and Policy
  - Social and Scientific Perspectives on Global Environmental Change
  - Making Environmental Policy Decisions

Coastal Impacts

1st yr fall sem.	1st yr spring sem.	2nd yr fall sem.	2nd yr spring sem.	3rd yr fall sem.	3rd yr spring sem.	4th yr fall sem.	4th yr spring sem.
English I	English II	Intro. programming for mar. sci.	(UM elect.)	A&H 1	Marine pollution	A&H 2	A&H 3
MTH 161 Calc I	MTH 162 Calc II	MSC 204 stats for Env. Sci.	Coastal Hazards	(UM elect.)	Ocean Observing Systems	(UM elect.)	(UM elect.)
CHM 111 Chem I	CHM 112 Chem II	MSC 220 Climate & global change	Geophys. data analy. & visualiz.	MSC 313 Coastal Law	Intro to Remote Sensing	Science writing	(UM elect.)
MSC 111 Intro to Mar Sci	BIL 150 Biology I	PHY 205 Phys I	PHY 206 Phys II	MSC 301 Intro to phys oceanog.	Coastal processes field course	Capstone Project	Geophys. fluid modeling
CHM 113 lab	CHM 114 lab		PHY 208 lab	Coastal hydrology			
MSC 112 lab	BIL 151 lab						

Color key:

"Core" classes for major in first 3 semesters
"Focus" classes for major (**track**) in last 5 semesters
Other UM classes

P&S = 3 courses required in People & Society cognate--can be satisifed with policy-focused MSC classes
A&H = 3 courses required in Arts & Humanities cognate

Figure 4: Example course layout for Coastal ImpactsTrack.

V Curriculum of Big Data in Ocean Applications Track

Applications: Oceanographic data sets of observations in space and time are growing at an ever increasing rate owing to advanced is satellite remote sensing, new underwater acoustic sonar applications, commitment to fixed ocean observation systems and advanced in other ocean measurement technology such as expendable drifters new chemical and biological measurements. Likewise computer capability to handle and analyze such large data is keeping pace.

Specializing in the analysis of any one of these data sets offers challenges and career opportunities. For example; underwater acoustics is most important to geo-petroleum exploration, the studies of the effects of anthropological sounds on marine mammals, and, a great variety of military applications. Similarly, satellite remote sensing data analysis offers a wide range of opportunities.

On a larger scale, analysis of combined data sets offers new challenges and career opportunities. The classic oceanographic data analysis methods of time series analysis have evolved and expanded into a more generalized statistical approach of multivariate regression often referred to as "Big Data, that has applications in a wide range of industries. The idea is to discover statistically significant relations between variables and/or combination of variables that were previously unrecognized. For example, the occurrence of Red Tides seems to depend on a complicated and unknown relation of multiple chemical, biological and ocean dynamic factors that has yet to be discovered. This is a prime target for a Big Data approach.

The Ocean Data Analysis track for the first two years provides a general background in oceanography with emphasis on bio-chemical variability and ocean dynamics. The last two years emphasizes development of skill sets to acquire, sort and otherwise analyze ocean data sets. Modern scientific programing languages such as MATLAB are emphasized. Data acquisition systems and instrumentation are developed in detail for three categories on ocean data types; underwater acoustic, satellite remote sensing and conventional oceanographic instruments. Statistical analysis method taught along with dynamic regression for the analysis of Big Data.

Focus classes for Big Data in Ocean Applications Track - 10 total:

- *Pick 4 of:*
  - MTH 320: Introduction to Numerical Analysis, 3 credits: Interpolation, quadrature, numerical solution of algebraic and transcendental equations, and optimization. Prerequisite: MTH 210 and (211 or 310).
  - ECE 118. Introduction to Programming. 3 credits: Introduction to computing, problem solving, program design, C++ language fundamentals, and software engineering principles. Software design projects are included.

- ECE 336. Discrete-Time Signals And Systems. 3 credits: This course provides the basics connecting continuous-time (CT) and discrete-time (DT) signal processing, and an introduction to discrete-time signals and systems and applications. Topics include communication, sampling, discrete-time linear time-invariant (LTI) signals and systems, difference equations, z Transform, transform domain analysis of DT systems, DT Fourier transform (DTFT), digital filters, applications to audio, and image processing.
- ECE 436. Digital Signal Processing. 3 credits: Topics include finite length transforms (e.g., discrete Fourier transform, discrete sine and cosine transforms) and their fast computation, finite impulse response (FIR) and infinite impulse response (IIR) digital filter design, digital filter structures, finite word length effects on filter performance, and multvariate signal processing fundamentals. Prerequisite: ECE 336.
- AMP536. Modeling of Physical-Biological Interactions. 3 Credit Hours. The course is designed to teach students the basics components for building coupled physical? biological models. Students will be able to understand the processes affecting from low- to high-trophic level organisms in the planktonic environment. Emphasis will be given on numerical simulations of mechanisms involved in: Plankton distribution.

- *Pick 6 of:*
  - Time Series Analysis: Spectral and time analysis methods for multiple inputs systems. Large data sets and multiple regression analysis. Coherency analysis. Dynamic Regression.
  - Coastal Observational Systems: Direct and indirect measurements systems. Radar, satellite and acoustic remote sensing. Lagrangian and Eulearian measurement and instruments. Sampling and experimental design.
  - Applied Ocean Acoustics: Processing of acoustic signals. The Sonar equation. Basics of modelling acoustic propagation in the sea. Arrays and introduction to detection theory. Pulse compression signals. Passive and Active Sonar systems. Acoustic Propagation in time varying oceans.
  - Introduction to remote sensing: Measuring the oceans from space. Orbits, electromagnetic theory, infrared and microwave radiometry, ocean color, radar remote sensing.
  - Geophysical data analysis and visualization: Big Data methods for oceanography data analysis, multiple regression analysis for time and spectral data. Coupled physical/biological/chemical analysis to seek out previously unknown relationships and correlations.

449 – Geophysical fluid modelling: Naturally occurring, large-scale flows in the oceans are
450 modelled beginning with equations of geophysical fluid dynamics. Numerical models
451 seek to solve the GFD equations for rotating, stratified fluid systems in which motions
452 are generated by the action of buoyancy and other forces. Existing models' predictions
453 are compared.

454 – Data Analysis for Ocean Energy Exploration: Propagation of sound in solids and layered
455 media. Petroleum prospecting data analysis. Z-transforms. Pulse compression. Effects
456 of anthropological sounds on marine mammals. Text: Clairbout.

Big Data in Ocean Applications

1st yr fall sem.	1st yr spring sem.	2nd yr fall sem.	2nd yr spring sem.	3rd yr fall sem.	3rd yr spring sem.	4th yr fall sem.	4th yr spring sem.
English I	English II	Intro progr. for Mar Sci	(UM elect.)	A&H 1	Applied Ocean Acoustics	A&H 2	A&H 3
MTH 161 Calc I	MTH 162 Calc II	MSC 204 stats for Env. Sci.	Intro Programm. ECE 118	(UM elect.)	Ocean Observing Systems	(UM elect.)	(UM elect.)
CHM 111 Chem I	CHM 112 Chem II	MSC 346 Climate sci & policy	MSC 313 Coastal Law	Numerical analysis MTH 320	Intro to Remote Sensing	Science Writing	(UM elect.)
MSC 111 Intro to Mar Sci	BIL 150 Biology I	PHY 205 Phys I	PHY 206 Phys II	Discrete-time Sig & Sys ECE 336	Geophys. Fluid Modeling	Capstone Project	Data Analy. for Energy Exploration
CHM 113 lab	CHM 114 lab		PHY 208 lab	Geophys. data analy. & visualiz.			
MSC 112 lab	BIL 151 lab						

Color key:

"Core" classes for major in first 3 semesters
"Focus" classes for major (**track**) in last 5 semesters
Other UM classes

P&S = 3 courses required in People & Society cognate--can be satisifed with policy-focused MSC classes
A&H = 3 courses required in Arts & Humanities cognate

Figure 5: Example course layout for Big Data in Ocean Applications Track.

VI Curriculum of the Climate Science Track

- Science core:
  - Chemistry I, II
  - Physics I, II
  - Calculus I, II
  - Ecology
  - Statistics
  - Computer Science (modeling?)
- Climate core:
  - ATM 103
  - MSC 111/112 Intro to Marine Science
  - MSC 220 Climate and Global Change
  - MSC 417 Marine Biota & Biogeochemical Cycles
  - MSC 301/302 Physical Oceanography
  - MSC 218 Biological Oceanography
  - Polar Science / Ice
  - Hydrology
  - Physics of Climate
  - Thermodynamics
- Climate science electives:
  - Land processes
  - Coastal Processes
  - Paleoclimate
  - Climate Sci/Policy
  - Climate Law
  - GIS
  - Remote Sensing
  - Advanced Statistics / risk analysis
  - Data analysis/visualization

Climate Science

1st yr fall sem.	1st yr spring sem.	2nd yr fall sem.	2nd yr spring sem.	3rd yr fall sem.	3rd yr spring sem.	4th yr fall sem.	4th yr spring sem.
English I	English II	Intro. programming for mar. sci.	(UM elect.)	A&H 1	Physics of Climate	A&H 2	A&H 3
MTH 161 Calc I	MTH 162 Calc II	MSC 204 stats for Env. Sci.	ATM 103 Meteorology	MSC 218 Biological Oceanog.	Hydrology	Polar Science	(UM elect.)
CHM 111 Chem I	CHM 112 Chem II	MSC 220 Climate & global change	MSC 346 Climate Sci & policy	MSC 417 Marine biota & biogeoch.	Thermo-dynamics	MSC 460 Spat. App. in Mar. Sci.	(UM elect.)
MSC 111 Intro to Mar Sci	Ecology	PHY 205 Phys I	PHY 206 Phys II	MSC 301 Phys. Oce.	Coastal processes	Adv. Stats. Risk Analysis	ENG 107 Science writing
CHM 113 lab	CHM 114 lab		PHY 208 lab	MSC 302 lab			
MSC 112 lab							

Color key:

"Core" classes for major in first 3 semesters

"Focus" classes for major (**track**) in last 5 semesters

Other UM classes

Figure 6: Example course layout for Climate Science Track.

VII Curriculum of Oceanography Track

Instead of following one of the four tracks above, the students will have the opportunity to a define a program of 10 courses drawn from these course tracks, guided by a faculty member, to align with a specific oceanography interest.

6 List of New Courses

* = could be taught during the Marine Semester (RSMAS, or Bermuda?).
Courses shown in green color are common to multiple tracks.

1. Geophysical data analysis and visualization
2. Coastal Oceanography
3. Coastal Hydrology
4. Environmental Fluid Mechanics
5. Geophysical Fluid Modelling
6. Intro to Remote Sensing

7. Time series analysis
8. Applied ocean acoustics
9. Humans and Oceans, including marine pollution
10. Data Analysis for Ocean Energy Exploration
11. *Ocean Hazards (sea-level rise, storm surge/flooding, beach erosion,)
12. *Coastal processes field course (4 credit?)
13. *Environmental assessment field techniques: 4 credit (?), field experience sampling salinity, temp, nutrients, oxygen, microbial abundance; analytical techniques including chromatography; data analysis tools (ODV, matlab)
14. *Marine instrumentation: lab based, 4 credit (?)hands-on project course building analytical instruments using components including sensors, arduino microprocessor, and/or fluidics breadboard
15. *Marine organic geochemistry: concepts behind chromatography & mass spectrometry, intro to isotopes in organic compounds
16. *Marine microbial dynamics & marine microbe lab: with lab as 4 credit (?), the role of microbes in the environment framed in their chemical context: microbial metabolic functions and their energy constraints; major functional microbial groups in the ocean and tools to identify and quantify cells and their chemical fluxes.
17. Science communication: Verbal and graphical skills for communicating science in a compelling way, exposure to communicating in a policy setting, potentially build-in community engagement by presenting at schools, museums, or for local government meetings.

Item B2

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.)

Include this checklist at the beginning of each proposal.
(Complete the information below, save the form as a pdf, and insert it with the background materials that are specified, in the order listed, and send the package electronically as noted above.)

KEY CONTACT PERSONNEL INFORMATION

First Name	Last Name	Proponent's Title
Kysha	Harriell	Associate Clinical Profes

Department, if applicable	School/College
Kinesiology & Sport Sciences	School of Education and Human Development

E-mail	Phone
kharriell@miami.edu	(305) 484-5072

Title of Proposal

Proposal to Close Sports Medicine/Concentration in Athletic Training M.S. Ed. Program

(-continue to next page-)

MANDATORY MEMORANDA AND FORMAT

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

Not included Awaiting Memo, In process

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.

Presenting on November 14th

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.

No interdisciplinary issues

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.

Letter of support from Dr. Kaplan/ UHealth Sports Medicine

End form.

SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT
Department of Kinesiology and Sport Sciences

Proposal to Close Sports Medicine/Concentration in Athletic Training M.S. Ed. Program and
Start a New Masters of Science in Athletic Training (MSAT) Program

MOTIONS:

1. To close the existing Sports Medicine/Concentration in Athletic Training (M.S.Ed) Program

2. To start a new Athletic Training Program offering a Master of Science Athletic Training (MSAT) Degree

This proposal was originally written to modify the name and degree designation of the current Sports Medicine Program/Athletic Training Master's Degree Program. However, Based on feedback from Assessment and Accreditation, the proposal was modified to meet SACS requirements and now includes two separate motions; one to close the existing program and one to open a new program.

BACKGROUND AND RATIONALE:

The Sports Medicine/with a Concentration in Athletic Training Program at the University of Miami is a graduate program within the Department of Kinesiology and Sports Sciences (KIN). Currently, this program is not accredited. Thus, program graduates are not eligible to sit for the Athletic Training Board of Certification exam (BOC). Without accreditation, students are ineligible for the certification and licensure required to work as an Athletic Trainer, making the current program a non-viable option for most prospective graduate students. This program has been inactive and had not accepted any new students since 2011.

Unlike the current graduate program, the University's Undergraduate Athletic Training major which offers a Bachelor's of Science Athletic Training (BSAT) degree, is accredited by the CAATE. The undergraduate program is nationally recognized for academic achievement based on its 94% three-year aggregate first-time pass rate on the BOC exam. The CAATE recently mandated all accredited Athletic Training programs be offered at a post-baccalaureate degree level. After the Fall of 2022, undergraduate Athletic Training programs cannot accept new students to qualify for the BOC certification exam, and all AT programs must offer a post-baccalaureate degree.

While 2022 is the final transition year, the department's goal is to obtain accreditation and admit students to the MSAT degree program during the 2019-2020 academic year. This change will help our Master's program acquire a competitive edge over other schools for recruiting students and obtaining preceptors and clinical education sites. Additionally, it will help the program establish itself as an innovative academic leader prior to our peers. Given that our current undergraduate AT program has a history of successful accreditation and academic achievement, the CAATE offers an incentive for our program to obtain accreditation at the graduate level before the year 2022. The program would only be required to complete a notification of intent and a substantive change proposal/mini-self-study, versus completing a full accreditation process with an intensive self-study, site visit, and full accreditation fee.

Therefore, the KIN Department seeks to obtain accreditation for a new New Masters of Athletic Training Degree while closing the current unaccredited Sports Medicine Master's Program. The proposed name and degree designation for the new program are required for accreditation, as the CAATE standards.

require both the program name and the degree be titled and designated as Athletic Training with no additional name or degree tags. Unfortunately, the current name "Sports Medicine with a Concentration in Athletic Training" and the current degree designation "Master of Science in Education" are not compliant with accreditation. The Department of Kinesiology and Sport Sciences proposes to offer a new Athletic Training Master of Science in Athletic Training (MSAT) degree eligible for CAATE accreditation.

SUMMARY OF CHANGES:

1. Close the existing Sports Medicine/Concentration in Athletic Training M.S. Ed Degree
2. Open a new Master of Science in Athletic Training (MSAT) Degree

PROPOSED IMPLEMENTATION:

Admit the first group of graduate students to new Master's program during Summer 2019 (Pending UM approval processes and CAATE accreditation cycle deadlines).

ATHLETIC TRAINING PROGRAM (MSAT): 60 TOTAL CREDITS

Required Courses (57 Credits): *Course titles adapted from current accredited undergraduate course counterparts*

KIN 663	Foundations of Athletic Training
KIN 664	Orthopedic Assessments 1: Pathophysiology of Injury
KIN 665	Orthopedic Assessments 2: Examination of the Musculoskeletal System
KIN 682	Clinical Pathology & Immediate Primary Care
KIN 714	Therapeutic Interventions
KIN 718	Administration & Professional Development
KIN 763	Seminar and Special Topics in Athletic Training
KIN 764	Athletic Training Clinical Field Experience
KIN 766	Research in Athletic Training
*KIN 688	Advanced Gross Anatomy in Kinesiology & Sport Sciences
*KIN 715	Evidence-Based Sports Medicine and Research Methods
*KIN 716	Advanced Rehabilitation Techniques in Athletic Training
*KIN 717	Applied Clinical Techniques in Athletic Training
*KIN 720	Practicum in Athletic Training 1
*KIN 722	Practicum in Athletic Training 2
*KIN 724	Practicum in Athletic Training 3
*KIN 735	Methods in Biomechanical Analysis

Required Elective (3 Credits): Choose One of the Courses Below

*KIN 624	Athletic Training Techniques - Manual Therapy
*KIN 657	Diagnostic Imaging Techniques in Sports Medicine
*KIN 721	Independent Study 1: Clinical Internship Experience
*KIN 723	Independent Study 2: Research Experience
KIN 765	Teaching Assistant Practicum or Equivalent Field Experience Course
*KIN 783	Sports Medicine for the Female Athlete

**Existing Courses (Also, see table on p.5)*

OTHER PROFESSIONAL ATHLETIC TRAINING MASTER'S PROGRAMS

The proposed 60-credit degree program is consistent with other accredited professional Athletic Training Master's Degree Programs.

Institution	# of Credits	Degree Designation
Boston University	72	Master of Science in Athletic Training
University of Montana	58	Master's in Athletic Training (MAT)
Florida International University	58	Master of Science in Athletic Training
University of South Florida	60	Master of Science in Athletic Training

SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT GRADUATE ADMISSIONS REQUIREMENTS

Admission to all graduate degree concentrations in the School of Education and Human Development is based on the recommendation of the faculty. Admissions decisions are based on faculty review of the general requirements that apply to all Graduate Programs in the School as well as specific documents listed under additional program requirements and prerequisites.

ADDITIONAL PROGRAM ADMISSIONS REQUIREMENTS

1. A minimum of 100 observation experience hours (volunteer hours or work hours) with an Athletic Trainer is required;
2. At least one of the recommendation letters above must be written by an Athletic Trainer;
3. An interview may be required. Applicants will be notified as appropriate; and
4. Applicants must complete or be enrolled in the prerequisite coursework listed below prior to acceptance and/or enrollment (Please contact the Program Director for course equivalency information)
5. The GRE score is a required for applicants with less than five years of professional full-time work experience. However, a waiver may be granted to an applicant whose academic records and professional work experience demonstrate a high level of quantitative and analytical skill and ability required to succeed in a professional healthcare program (ex. Currently licensed health care providers and applicants with high scores on the MCAT). The GRE waiver is not automatic and must be requested from and approved by the Program Coordinator.

REQUIRED PREREQUISITE COURSEWORK FOR ADMISSIONS:

At the undergraduate or graduate level

1. Anatomy & Physiology (Separate or combined a minimum of 6 credits)
2. Biology: Introduction with Lab
3. Chemistry: Introduction with Lab
4. Introduction to Physics
5. Introduction to Statistics
6. Psychology: Intro to Psychology or Sports Psychology (preferred)

In addition to the above courses, CPR Certification is required (AHA BLS for Healthcare Providers or equivalent as indicated by Board of Certification's ECC list). Students must have proof of current certification before the start of classes and maintain certification throughout the program.

RECOMMENDED FOUNDATIONAL COURSEWORK FOR ADMISSIONS:

The following courses are suggested foundational areas of knowledge that are included in the curriculum of the MSAT program. However, introductory courses in the areas below may provide the student with extra preparation for the rigorous graduate coursework of the MSAT program. Therefore, these courses are suggested but not required for admissions or for completion of the degree program:

1. Nutrition: Introduction to Nutrition or Sports Nutrition
2. Exercise Physiology
3. Kinesiology and/or Biomechanics
4. Care & Prevention of Athletic Injuries, Intro to Athletic Training, or Equivalent

TRANSFER OF COURSES

Transfer of graduate credits previously earned from other accredited healthcare degree-granting programs is determined on a case-by-case basis. The Program Director and the appropriate course instructor(s) will review the transfer course syllabus to ensure the content match those of the program's course and that all competencies can be identified. Credits can be transferred ONLY if they are less than six years old, were taken from a graduate degree program, and taken in an accredited institution. In addition, students must have earned a grade of B or better in the course.

EQUIVALENT COURSES FOR CURRENT UNDERGRADUATE AND GRADUATE AT PROGRAMS VERSUS NEW PROPOSED MSAT PROGRAM

Current BSAT Degree (54/67 Credits Major/Required)	Current MSEd Sports Med/AT (30-36 Credits from below)	New Proposed MSAT Degree (60 Credits)
KIN 210 Foundations of Athletic Training	X	KIN 663 Foundations of Athletic Training
KIN 250/1 Orthopedic Assessment: Lower Extremity and Lab, KIN 235 & KIN 230	X	KIN 664 Orthopedic Assessments 1: Pathophysiology of Injury
KIN 260/1 Orthopedic Assessment: Upper Extremity and Lab	X	KIN 665 Orthopedic Assessments 2: Examination of the Musculoskeletal System
KIN 264 General Medical Conditions Evaluation	X	KIN 682 Clinical Pathology & Immediate Primary Care
KIN 461/2 Therapeutic Modalities and Lab	X	KIN 714 Therapeutic Interventions
KIN 470 Organization and Administration	X	KIN 718 Administration & Professional Development
KIN 476 Seminar in Athletic Training	X	KIN 763 Seminar and Special Topics in Athletic Training
KIN 456 Clinical Athletic Training Lab IV	X	KIN 764 Athletic Training Clinical Field Experience
*EPS 351 Intro to Stats or Equivalent (required math)	KIN 746 Research Methods of KIN	KIN 766 Research in Athletic Training
KIN 488 Gross Anatomy	*KIN 688 Advanced Gross Anatomy in Kinesiology & Sport Sciences	*KIN 688 Advanced Gross Anatomy in Kinesiology & Sport Sciences
KIN 415 Evidence-Based Sports Medicine & Research Methods	*KIN 715 Evidence-Based Sports Medicine	*KIN 715 Evidence-Based Sports Medicine ***and Research Methods***
KIN 463/4 Therapeutic Rehab & Lab	*KIN 716 Advanced Rehabilitation Techniques in Athletic Training	*KIN 716 Advanced Rehabilitation Techniques in Athletic Training
KIN 140/141Intro to AT and lab	*KIN 717 Advanced Evaluation Techniques in Athletic Training	*KIN 717 ***Applied Clinical Techniques in Athletic Training***
KIN 443 Clinical Athletic Training Lab 1	*KIN 720 Practicum in Athletic Training 1	*KIN 720 Practicum in Athletic Training 1
KIN 444 Clinical Athletic Training Lab 2	*KIN 722 Practicum in Athletic Training 2	*KIN 722 Practicum in Athletic Training 2
KIN 455 Clinical Athletic Training Lab 3	*KIN 724 Practicum in Athletic Training 3	*KIN 724 Practicum in Athletic Training 3
KIN 345 Kinesiology	*KIN 735 Methods in Biomechanical Analysis	*KIN 735 Methods in Biomechanical Analysis
X	*KIN 624 Athletic Training Techniques	*KIN 624 Athletic Training Techniques - ***Manual Therapy***
X	*KIN 657 Diagnostic Imaging Techniques in Sports Medicine	*KIN 657 Diagnostic Imaging Techniques in Sports Medicine
X	*KIN 721 Independent Study 1	*KIN 721 Independent Study 1: ***Clinical Internship Experience***
X	*KIN 723 Independent Study 2	*KIN 723 Independent Study 2: ***Research Experience***
X	X	KIN 765 Teaching Assistant Practicum or Equivalent Field Experience Course
X	*KIN 783 Sports Medicine for the Female Athlete	*KIN 783 Sports Medicine for the Female Athlete

Bold Italicized font denotes proposed modifications to current course titles

SAMPLE ATHLETIC TRAINING PROGRAM (MSAT) TWO YEAR COURSE SEQUENCE

Summer I/II	**Cr.**
KIN 663 Foundations of Athletic Training 1	3
KIN 664 Orthopedic Assessment 1: Pathophysiology of Injury	3
Total Credits	***6***

Fall	**Cr.**	**Spring**	**Cr.**
KIN 720 Practicum in Athletic Training 1	3	KIN 722 Practicum in Athletic Training 2	3
KIN 688 Advanced Gross Anatomy in Kinesiology & Sport Sciences	3	KIN 715 Evidence-Based Sports Medicine and Research Methods	3
KIN 665 Orthopedic Assessments 2: Examination of the Musculoskeletal System	3	KIN 735 Methods in Biomechanical Analysis	3
KIN 682 Clinical Pathology & Immediate Primary Care	3	KIN 714 Therapeutic Interventions	3
Total Credits	***12***		***12***

Summer I/II	*Students must complete one required elective course:*	**Cr.**
KIN 721	Independent Study 1: Clinical Internship Experience	3
KIN 723	Independent Study 2: Research Experience	
KIN 657	Diagnostic Imaging Techniques in Sports Medicine.	
KIN 624	Athletic Training Techniques - Manual Therapy	
KIN 765	Teaching Assistant Practicum or Equivalent Field Experience Course	
KIN 783	Sports Medicine for the Female Athlete	
Total Credits		***3***

Fall	**Cr.**	**Spring**	**Cr.**
KIN 716 Advanced Rehab Techniques in Athletic Training	3	KIN 764 Athletic Training Clinical Field Experience	6
KIN 717 Applied Clinical Techniques in AT	3	KIN 718 Administration & Professional Development	3
KIN 763 Seminar and Special Topics in Athletic Training	3	KIN 766 Research in Athletic Training	3
KIN 724 Practicum in Athletic Training 3	3		
Total Credits	***12***		***12***

COURSE DESCRIPTIONS

KIN 624. Athletic Training Techniques - Manual Therapy (3 credits)
This course will introduce theoretical concepts and hands-on techniques to mobilize joints and soft tissue in order to modulate pain, facilitate healing, and restore mobility and function.

KIN 657 Diagnostic Imaging Techniques in Sports Medicine. (3 credits)
This course is designed as an elective for undergraduate KIN students or graduate students. The basic physics of radiological imaging will be covered including radiology, fluoroscopy, CT scan, ultrasound, MRI, and nuclear medicine including image archiving. Normal anatomy will be compared to the corresponding radiographic anatomy. Common sports injuries will be evaluated by multiple radiographic modalities and will be correlated with the clinical condition. Topics will include bony pathology as well as soft tissues such as ligaments, tendons, and menisci.

KIN 663 Foundations of Athletic Training (3 credits)
This course will cover foundational knowledge in Athletic Training with an emphasis on health promotion and injury and disease prevention. Public Health and Epidemiology, Nutrition Health and Wellness, and basic principles of Exercise Physiology will be covered. Students will be required to complete an IPE service learning project with another health professional to promote health, wellness, or physical activity research, practice, and/or policy on campus or at the community, state, or federal level. Prerequisite: AHA BLS for Healthcare Provider or equivalent as indicated by Board of Certification's ECC list (or approved equivalent).

KIN 664 Orthopedic Assessment 1: Pathophysiology of Injuries (3 credits)
This course provides the student with an analysis of the etiology, pathology, and clinical science of muscular and skeletal diseases, disorders, and conditions. An introduction to clinical/laboratory assessment techniques, basic injury management, and knowledge of common imaging and surgical procedures are presented.

KIN 665 Orthopedic Assessments 2: Examination of the Musculoskeletal System (3 credits)
This course will prepare students to examine a patient with a musculoskeletal condition by obtaining a pertinent history from the patient, performing relevant systems review, and by selecting appropriate diagnostic tests and measures. The student will be able to synthesize examination data to complete the orthopedic evaluation and engage in the diagnostic process.

KIN 682 Clinical Pathology & Immediate Primary Care (3 credits)
This course will focus on the pathology of non-orthopedic conditions including medical emergencies. Students will be able to recognize common injuries and illnesses, provide immediate treatment interventions, and make medical referrals and transport decisions when necessary. Prerequisite: KIN 663 and Current AHA BLS CPR/AED certification for the Health Care Providers (or approved equivalent as determined by ECC requirements from the BOC).

KIN 688 Advanced Gross Anatomy in Kinesiology & Sport Sciences (3 credits)
Human dissection of the major muscles, arteries, and nerves of the body. This course is held at the Medical Campus, cadaver laboratory. Special consideration is given to injury sites in sports such as the knee, shoulder, elbow, neck and spinal areas. Students are required to pay a $100 laboratory fee for the class. This course is to be taken by Athletic Training majors only.

KIN 714 Therapeutic Interventions (3 credits)
Students will acquire the theoretical knowledge necessary for the clinical application of therapeutic exercise, modalities, and evidenced-based rehabilitation programs. Principles of therapeutic exercise, open and closed chain exercise, muscle re-education, and special therapeutic techniques such as aquatic therapy. In addition, students will understand the specific physiological effects and therapeutic indications and contraindications to safely apply thermal, mechanical, electromagnetic, and acoustic modalities.

KIN 715 Evidence-Based Sports Medicine and Research Methods (3 credits)
The student will learn the systematic approach to creating and answering clinical questions through review and application of existing research. Students will learn how to develop a relevant clinical question using a predefined question format, use standard criteria or developed scales to critically appraise the structure, rigor, and overall quality of research studies, and determine the effectiveness and efficacy of an athletic training intervention. Students will also learn the theoretical foundation of clinical outcomes assessment and the standard methods of outcomes assessment in athletic training clinical practice

KIN 716 Advanced Rehabilitation Techniques in Athletic Training (3 credits)
An advanced athletic training course designed to enhance the athletic trainer's ability to plan and implement a comprehensive sports injury rehabilitation program based on the sequential events of musculoskeletal tissue healing. Discussion focuses on the development of a conceptual model for sports injury rehabilitation, which incorporates rehabilitation phases, intervention goals, and progression criteria. Application of the problem-oriented approach to the management of injuries is a predominant theme throughout this course.

KIN 717 Applied Clinical Techniques in Athletic Training (3 credits)
This clinical laboratory course focuses on athletic training skills utilized in the diagnosis and treatment of primary care of patients. Students will become proficient in utilizing diagnostic tools and tests. In addition, students will become proficient in wound care, suturing, initiating and maintaining appropriate intravenous (IV) therapies and the collecting, handling, and processing of blood specimens for analysis.

KIN 718 Administration & Professional Development (3 credits)
Concepts of legal liability, insurance, budget/financial management, human resources, inventory control, facilities design and maintenance will be addressed. This course will enable the student to understand reimbursement guidelines; understand medical delivery systems, health care policy, and legislation in the United States. In addition, students will learn the basics related to accounting, billing, coding, accounts payable, and risk management. Students will be required to obtain an NPI number, register for the BOC exam, and research state credentialing requirements.

KIN 720 Practicum in Athletic Training 1 (3 credits)
Clinical education and field experience in a healthcare setting. Students are assigned to a licensed health care professional who will serve as the student's preceptor. Students will learn alongside their preceptors as they are exposed to the role, and function of a health care provider while practicing clinical skills with a variety of patient populations. In addition, students will meet for scheduled in-services and clinical labs with a focus on emergency preparedness and readiness through Simulation and Interprofessional Education. *Prerequisite: KIN 663 Foundations of Athletic Training*

KIN 721 Independent Study 1: Clinical Internship Experience (1-3 credits)
This elective internship course will allow students to seek a professional Athletic Training internship in a particular area of clinical interest under the supervision of a licensed/certified healthcare clinician.

KIN 722 Practicum in Athletic Training 2
Clinical education and field experience in a healthcare setting. Students are assigned to a licensed athletic trainer who will serve as the student's preceptor. Students will learn alongside their preceptors as they are exposed to the role and function of an athletic trainer while practicing clinical skills with a variety of patient populations. In addition, students will meet for scheduled in-services and clinical labs with a focus on utilizing Interprofessional Education (IPE) and simulation to enhance physical evaluation and assessment skills. *Prerequisite: KIN 720 Practicum in Athletic Training 1*

KIN 723. Independent Study 2: Research Experience
This elective research experience course will allow students to pursue research in an area of particular interest under the supervision of a faculty member.

KIN 724 Practicum in Athletic Training 3 (3 credits)
Clinical education and field experience in a healthcare setting. Students are assigned to a licensed health care professional who will serve as the student's preceptor. Students will learn alongside their preceptors as they are exposed to the role, and function of a health care provider while practicing clinical skills with a variety of patient populations. In addition, students will meet for scheduled in-services and clinical labs with a focus on integrating athletic training knowledge and skills through Simulation and Interprofessional Education (IPE). *Prerequisite:* KIN 722 Practicum in Athletic Training 2

KIN 763 Seminar and Special Topics in Athletic Training (3 credits)
Scenarios and subject matter that will help facilitate the student's transition to practice will be emphasized. There will be a focus on current issues and emerging topics and technologies in the healthcare profession. Students will prepare for class discussion by reviewing assigned readings from professional journals and other pertinent sources. Class sessions will consist of lectures, laboratories, and discussion sessions. Also, career development and responsibility topics such as leadership, entrepreneurship, ethics, patient values, diversity, and cultural competency.

KIN 765 Teaching Assistant Training in KIN (3 credits)
This course involves the training and teaching assistant experience under the supervision of a faculty member. Students will have the opportunity to assist faculty and/or doctoral students in the teaching of clinical skills and or undergraduate theory courses offered in the KIN department.

KIN 764 Athletic Training Clinical Field Experience (6 credits)
This course is an immersive clinical education experience, where Athletic Training students under the supervision of a preceptor will demonstrate the ability to integrate knowledge and skills with clinical problem-solving while assuming professional like roles in various clinical patient care settings. Students will be required to post weekly reflections in an electronic journal and to attend scheduled webinars. *Prerequisite: KIN 722 Practicum in Athletic Training 2. However, students are not allowed to enroll concurrently in KIN 724 Practicum in Athletic Training 3.*

KIN 735 Methods in Biomechanical Analysis (3 credits)
Examination of methods of research, instrumentation, and quantitative application of kinematic and kinetic concepts in the biomechanical analysis of human movement.

KIN 766 Research in Athletic Training (3 credits)
This course is an advanced study of a particular theme or topic in the athletic training field including a research topic, current issues of relevance to athletic trainers and other sports medicine/allied healthcare professionals. Students will prepare for class discussion by reviewing assigned readings from professional journals and other pertinent sources. Class assessment will consist of a research project, literature review, or a clinical case report. Students must submit their research for publication in an approved journal or presentation at an Athletic Training/Sports Medicine state, regional, or national conference.

KIN 783 Sports Medicine for the Female Athlete. (3 credits)
This course focuses on the physiological effects of exercise on the female athlete as it relates to her performance and health. Physiological differences between male and female will be examined as it impacts the women's performance capabilities and potential. Gender-specific problems regarding the exercising female will be explored.

UNIVERSITY OF MIAMI
SCHOOL of EDUCATION
& HUMAN DEVELOPMENT

Office of the Dean
Isaac Prilleltensky, Ph.D.
Dean and Professor
Vice Provost for Institutional Culture
Erwin and Barbara Mautner
Chair in Community Well-Being

P.O. Box 248065
Coral Gables, FL 33124-2040
Phone: 305-284-3505
Fax: 305-284-3003
www.education.miami.edu

TO: Dr. Tomas Salerno
Chair, Faculty Senate

FROM: Dr. Isaac Prilleltensky
Dean

SUBJECT: Motion to Transform the Current MSED Program in Sports Medicine/Athletic Training into an Accredited Graduate Program in Athletic Training

DATE: November 7, 2017

The Master's of Athletic Training proposal was reviewed and unanimously approved by the Faculty of the Department of Kinesiology and Sport Sciences, the SEHD Graduate Curriculum Committee as well as the SEHD School Council. Additionally the faculty of the School of Education and Human Development voted unanimously to approve this proposal during an electronic vote on October 6, 2017.

A copy of the proposal is attached. Should you have any questions or require additional information, please feel free to contact me.

UNIVERSITY OF MIAMI
SCHOOL of EDUCATION
& HUMAN DEVELOPMENT

Kinesiology and Sport Sciences
5202 University Drive
Coral Gables, FL 33146

Phone: 305-284-3024
Fax: 305-284-5168

TO: Dr. Tomas Salerno
Chair, Faculty Senate

FROM: Dr. Warren Whisenant
Chair, Department of Kinesiology and Sport Sciences

SUBJECT: Motion to Transform the Current MSED Program in Sports Medicine/Athletic Training into an Accredited Graduate Program in Athletic Training

DATE: November 7, 2017

The Master's of Athletic Training proposal was reviewed and unanimously approved by the Faculty of the Department of Kinesiology and Sport Sciences in spring, 2017.

A copy of the proposal is attached. Should you have any questions or require additional information, please feel free to contact me.

UHealth
UNIVERSITY OF MIAMI HEALTH SYSTEM | SPORTS MEDICINE INSTITUTE

TO: Dr. Tomas Salerno
Chair, Faculty Senate

FROM: Lee Kaplan, M.D.
Chief of UHealth Sports Medicine

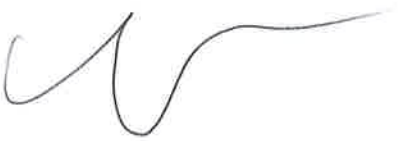
SUBJECT: Motion to Transform the Current MSED Program in Sports Medicine/Athletic Training into an Accredited Graduate Program in Athletic Training

DATE: November 7, 2017

I support the change of the Master of Science in Education Program in Sports Medicine/Athletic Training into an accredited graduate program in Athletic Training. I currently serve as the Medical Director for the accredited undergraduate Athletic Training program. After 2020, all programs must offer the accredited Athletic Training degree at the masters level.

I will continue to serve and provide support to the new Athletic Training Degree Program, as the program and its faculty are a vital part of UHealth Sports Medicine and the Sports Medicine Institute at the University of Miami.

Should you have any questions or require additional information, please feel free to contact me.



Lee Kaplan, MD
Chief, Sports Medicine
Director, UHealth Sports Medicine Institute
Professor, Orthopaedics, Biomedical Engineering, Kinesiology & Sports Sciences
Medical Director & Head Team Physician University of Miami Athletics
Miami Marlins Medical Director & Team Physician

UNIVERSITY
OF MIAMI

MEMORANDUM

DATE: 11/8/2017

TO: Walter Secada, Professor and Senior Associate Dean
School of Education and Human Development

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

RE: **Creation of New Master's Degree Program in Athletic Training: MSAT**

On November 7, 2017, the School of Education and Human Development notified my office of its intent to create a new Master of Science Athletic Training (MSAT) degree program in Athletic Training. This change is being made to conform to professional accreditation requirements in athletic training that will enable the University to seek program accreditation by the Commission on Accreditation of Athletic Training Education (CAATE) which would qualify program graduates to seek certification and/or licensure in athletic training.

The new MSAT degree in Athletic Training will require successful completion of 60 credit hours. The new degree program will begin in Summer 2019. The MSAT program will only be offered on campus. The program will require the creation of 11 new courses. Some of these courses will be adapted from the current undergraduate program in Athletic Training (BSAT).

Even though new courses will be developed for this new program, it does not "represent a significant departure, either in content or method of delivery" from what we are currently approved by SACSCOC to offer due to the following:

- The program length for the program meets the SACSCOC requirement of a minimum of 30 credit hours.
- The program will require a course that covers the literature in the field: KIN 663 Foundations of Athletic Training.
- The program will require 9 credit hours of clinical and field experiences in the field: KIN 720 Practicum in Athletic Training I, KIN 722 Practicum in Athletic Training II, and KIN 724 Practicum in Athletic Training III.
- The University is currently approved to offer the following graduate level programs in related areas:
    - PhD in Exercise Physiology
    - MSEd in Sports Administration
    - MSEd in Exercise Physiology
    - MSEd in Exercise Physiology--Nutrition for Health and Human Performance Track
    - MSEd in Exercise Physiology—Strength and Conditioning/Fitness Entrepreneurship Track

- The University currently has sufficient full-time faculty and faculty with appropriate terminal degrees to implement the new program.
- 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 Campus.

SACSCOC only requires notification of new programs that represent a significant departure from our current programs. Therefore, no notification or approval is required for the MSAT program in Athletic Training.

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
Isaac Prilleltensky, Dean of the School of Education and Human Development
Karen Beckett, University Registrar
Ray Nault, Executive Director of Student Financial Assistance and Employment

UNIVERSITY
OF MIAMI

MEMORANDUM

DATE: 11/8/2017

TO: Walter Secada, Professor and Senior Associate Dean
School of Education and Human Development

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

RE: **Closure of MSEd in Sports Medicine Program**

On November 7, 2017, the School of Education and Human Development notified my office of its intent to discontinue the Master of Science in Education (MSEd) degree program in Sports Medicine, including its Athletic Training concentration, effective immediately because the program is inactive. There are no students affected by this closure because no students are enrolled in the program. No new students have been admitted into the program since 2011.

The University is required by the federal government to seek prior approval from SACSCOC to discontinue admitting students to a program. Therefore, a notification will be sent to SACSCOC regarding the inactive status of this program and its closure.

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
Isaac Prilleltensky, Dean of the School of Education and Human Development
Karen Beckett, University Registrar
Ray Nault, Executive Director of Student Financial Assistance and Employment

Item B3

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: November 17, 2017

TO: Tomas Salerno
Chair, Faculty Senate

FROM: Guillermo Prado
Dean, The Graduate School

SUBJECT: Dissertation Committee Composition

The Graduate School submitted a proposal to modify the current composition of the dissertation committee. The proposal was discussed at the meeting of the Graduate Council on Tuesday, October 17, 2017. Those present were supportive of revising the policy to allow the chair of the dissertation committee to be from outside of the student's home department as long as (a) at least two of the committee members are from the student's home department (not necessarily the chair), (b) the chair of the dissertation committee is a graduate faculty of the University, and (c) the department chairperson or graduate program director approves the student's dissertation committee composition.

Current wording in 2017-2018 Academic Bulletin:
The dissertation committee is nominated by the department or program concerned, and appointed by the Graduate Program Director and approved by the Department Chair. The dissertation committee is comprised of at least four members; this includes the committee chair, who shall be a member of the program or department of concentration (this includes secondary appointments), as well as a permanent member of the Graduate Faculty. Of the remaining members, it is also required that two shall be members of the program or department of concentration (this includes secondary appointments), as well as permanent members of the graduate faculty, and one from outside the program or department of concentration.

Proposed wording:
The dissertation committee is nominated by the department or program concerned, and appointed by the Graduate Program Director and approved by the Department Chair. The dissertation committee is comprised of a least four members; this includes the committee chair, who may or may not be from the student's program, department or school (this includes secondary appointments), and must be a permanent member of the Graduate Faculty. Of the remaining members, it is also required that two shall be members of the program or department of concentration (this includes secondary appointments), as well as permanent members of the graduate faculty, and one from outside the program or department of concentration.

Item B4

UNIVERSITY
OF MIAMI

Parking and Transportation Services
5807 Ponce de Leon Blvd. Suite 100
Coral Gables, Florida 33146

Ph: 305-284-3096
Fax: 305-284-1542
www.miami.edu/parking

Memorandum

To: Dr. Jacqueline Travisano, Executive Vice President for Business & Finance and COO
Dr. Jeffrey Duerk, Executive Vice President and Provost

From: Richard Sobaram, Director, Parking and Transportation
Doris Enamorado, Manager, Parking and Transportation

Date: October 17, 2017

Subject: Parking Policy Change – Night and Weekend Enforcement

Summary:
The purpose of this memorandum is to propose a new parking policy and strategy that enhances existing parking practices, improves campus safety/security, and will generate new revenue to offset the annual parking operations deficit. The strategy encompasses an expanded use of permits and additional enforcement. In addition, Parking & Transportation is cognizant of the fact that the services we provide help to support the academic mission of the University, and we will work with academic units to minimize any potential impact to their operations.

Current Status:
All vehicles parked on the Coral Gables campus, Monday through Friday, between 8:00AM to 4:00PM, are required to pay for parking. Parking is free after 4:00PM on weekdays and 24 hours/day on weekends. This strategy was quite appropriate a decade ago when UM was a predominantly, 9:00AM to 5:00PM campus. However, since then, campus activity has increased. For example, our weekend academic classes have increased by 11% over the last three years. We have approximately 4,000 students enrolled in weeknight and weekend classes. Campus events have also expanded, to both daytime and after-hours. While we are able to meet the parking demand, it does create challenges, such as:

- Safety concern with unauthorized and unknown campus parkers due to lack of vehicle registration requirement.
- Lack of equity by requiring daytime parkers to pay for parking, while evening and weekend parkers utilize the same resources at no charge.
- Inconsistent alignment with best practice at other institutions – 28 AAU institutions have night and/or weekend enforcement, requiring everyone (including visitors) to have a permit (see Appendix A for more information).
- Forgoing potential revenue.

Proposal:
Effective June 1, 2018, implement a new strategy that requires a permit for all vehicles parked on campus and the vehicle's license plate to be registered with the university. Specifically, Parking & Transportation will:

1) Extend the parking enforcement throughout campus to be seven days a week between 8:00AM to 11:00PM.

2) Introduce a new night and weekend permit, which is valid between 4:00PM to 8:00AM weekdays and 24 hours on weekends, at $260 (includes taxes), which is half the price of a regular daytime permit.

3) A 50% calculation is consistent with the average at the AAU institutions surveyed. This permit will impact faculty, staff and students who teach, work or attend only night and weekend classes. However, it will achieve a consistent permit requirement across all tiers. To facilitate the transition for current faculty, staff and students, there will be a grace period of one year and we will begin charging for this permit August 2019. Further, current full price permit holders will not be affected since their permit is valid 24/7.

4) Effective June 1, 2018, night and weekend visitors (approximately 50,000 vehicles annually) will be required to purchase a visitor's pass and register their vehicle's license plate with the university, during enforcement times, which is consistent with current daytime practice. Visitors will be able to self-pay for parking via the PayByPhone mobile app, or on foot pay stations.

5) The following University events would continue with zero parking cost: Homecoming, Family Weekend, Commencement, Student Move-Out, Student Move-in and associated orientation activities, and any other university event as deemed necessary.

Additional benefits for the University include:

- Enhanced safety by:
  - Requiring all parkers to register their vehicle's license plate with the university.
  - Parking patrols consistently targeting all campus lots after 4:00PM increases vigilance and presence – extra enforcement patrols of parking lots after hours equals extra eyes and ears for UM Police.
- Collection of visitor payment does not create traffic congestion since no payment transaction will occur at point of entry or egress to lots/garages.
- PayByPhone and on foot pay stations are convenient and popular in southeast Florida; partners with Metrorail, City of Coral Gables, and City of South Miami.

Recommendation:

Parking and Transportation recommends that Senior Leadership approve implementing this parking strategy effective June 1, 2018 in the following manner:

a) All current faculty, staff (including third party vendors), and students who park on campus after hours will be provided with a complimentary night and weekend permit through summer of 2019, upon registration within this grace period. Thereafter, the proposed fee will be implemented as of August 2019. This is recommended to provide a transition period for these stakeholders.
b) There would be no change to current full price permit holders – their permits are valid 24/7.
c) After-hours visitors, including event attendees, will start paying for parking via the methods outlined above effective June 1, 2018.
d) A final decision is required by December 15, 2017, in order to execute on June 1, 2018 timeline.

Current Endorsement:
This recommendation has the full endorsement of Student Affairs, Human Resources, Business Services, Campus Planning, UM Police, and major event organizers that include Watsco, Athletics and Newman Alumni Center. Academics have not been consulted and we seek your guidance and approval to socialize this proposal with Deans and Faculty Senate.

We can arrange a meeting to provide further information on this proposal, as needed.

Thank you.

Appendix A: Weeknight and Weekend Permit – Researched 28 AAU Institutions

Peer Schools - Benchmark	Day Permit - Cost	Weeknight - % of Day Permit	Weeknight and Weekend - % of Day Permit
Boston University	Employee $1710 / Student $1002	Employee 8% / Student - 27%	
Carnegie	Employee & Student $1596		Employee & Student - 23%
Case Western	Employee & Student $962		Grad Students only - 19%
Emory	Employee & Student $672	Employee & Student - 15%	
Georgia Tech	Employee & Student $795		Employee & Student - 30%
Harvard University	Employee & Student $2136		Employee & Student - 49%
MIT	Employee $1900 / Student $1238	Employee - 11% / Student - 16%	
Northwestern University	Employee & Student $552		Employee & Student - 71%
Penn State	Employee $444 / Student $640		Employee - 16%
Rutgers University	Employee salary based / Student $165 or $ 275	Employee - not determined / Student - 97% or 58%	
Texas A&M University	Employee & Student $300		Employee & Student - 32%
Tulane	Faculty $615 / Staff $420 / Student 520 or $575	Employee 24 or 36% / Student 29 or 26%	
UC Berkley	Employee $1272 / Student 754		Employee - 51% / Student - 29%
UC Davis	Employee & Student 660	Employee & Student - 45%	
UC Irvine	Employee $780 / Student 840 or $1212		Employee - 62% / Student 57 or 40%
UC San Diego	Employee $255 / Student $280 or $290		Employee - 66% / Student - 60%
University of Arizona	Employee & Student $581	Employee & Student - 46%	
University of California - UCLA	Employee & Student $972		Employee & Student - 58%
University of Colorado	Employee $432 / Student $281		Employee - 75% / Student - 115%
University of Illinois	Employee & Student $660		Employee & Student - 18%
University of Iowa	Employee & Student $324	Employee - 63% / Student - 59%	
University of North Carolina	Employee $441 / Student $451	Employee - 9%	
University of Pennsylvania	Employee $2217 / Student $2217 or $1414		Employee - 50 / Student - 78%
University of Pittsburgh	Employee $1020 / Student $95		Employee - 61% / Student - 131%
University of Southern California	Employee $144 or $780 / Student $110 or $800		Employee & Student - 18%
University of Texas at Austin	Employee $160 / Student $138		Employee - 26% / Student - 30%
University of Wisconsin	Employee & Student $790		Employee - 6%
Washington University in St. Louis	Employee & Student $757.25	Employee - 23% / Student - 4%	

Summary: Average Permit Cost:

Permit Type	Cost	% of Day Permit
Day - Employee	$ 820.00	
Day - Student	$ 692.00	
Night - Employee	$ 216.00	26%
Night - Student	$ 217.00	31%
Night & Weekend - Employee	$ 380.00	46%
Night & Weekend - Student	$ 350.00	51%

November 15th, 2017 GWC Feedback and Parking & Transportation's Responses:

Feedback #1: Adjunct faculty who volunteer their time and only receive a small honorarium from the University should be exempt from purchasing this permit.

- **Response:** We agree. In situations such as the one described above, Parking & Transportation will work with the appropriate department to ensure that professionals who are making an active contribution to the University will not be charged. The technology will allow for this type of flexibility and enable this important initiative to be implemented.

Feedback #2: The majority of the schools benchmarked (Appendix A) in this proposal have a well-developed and utilized transit system unlike Florida. This places Florida commuters at a disadvantage with less practical mobility options and having to drive more.

- **Response:** We recognize our transit system does not compare to that of many other states. Miami-Dade County averages 2 cars per household (2015 last reported). With this in mind, and knowing that the night and weekend parking demand is less than daytime, the Night and Weekend permit is priced at 50% less than the daytime permit.

Feedback #3: Consider moving the current weekday enforcement end time from 4:00PM to 6:00PM

- **Response:** By extending enforcement for 2 additional hours, this will require all faculty, staff and students that are on campus between the hours of 4:00PM to 6:00PM to purchase the daytime permit at the full price of $521. In addition, stopping enforcement at 6:00PM does not accomplish the goal improving safety/security since anyone arriving after 6:00PM would not be required to register their vehicle.

Feedback #4: Bill Cosford Cinema will lose audience due to parking fee.

- **Response:** We compared local theaters and found our parking price to be competitive (i.e. Sunset Place, Coral Gables Cinema, South Beach). However, P&T will work with all academic units who rely on this type of support to explore suitable options to minimize any potential adverse impact. P&T will not allow this initiative to significantly affect other programs on the campus in a negative manner.

Item B5

Proposal to change application of *Faculty Manual* Section A5.3 to *all* schools except the Graduate School

Purpose: change the language of the current *Faculty Manual* Section A5.3 to ensure all school, not only departmentalized schools and with the exception of the Graduate School, elects one of its member to be the Speaker of the Council. Due to the multifarious nature of the Graduate School, the Speaker of the Council for the Graduate School shall continue to be the Dean of the Graduate School.

Current *Faculty Manual* language:

A5 School Councils

A5.1 The faculty of each school, including the Graduate School and the Library, shall establish a Council as its executive agency. The voting members of the faculty of each school shall elect from their members a Council which shall act as the committee on academic planning, educational and research policy, and general welfare of the school; it shall elect all committees of the school faculty; it shall act as confidential counsel to the dean of the school in any matter submitted by the dean; it or its designee shall set the date and hour and prepare the agenda for all regular meetings of the school faculty; it shall include in the agenda any matter requested in writing by five percent of the voting members of the school faculty; a majority of the voting faculty of a department, or any items or matters submitted by the dean or his/her principal deputy; it may make recommendations to the school faculty concerning proposed actions; it may act for the school faculty, as authorized annually by the school faculty, and report such actions at the next meeting of the school faculty. The authority of the Council to elect committees of the school faculty in no way limits the authority of the dean to appoint *ad hoc* committees from the school faculty to advise the dean.

A5.2 The School Council shall consist of at least three elected members, each serving for a three-year term, the terms to be staggered in order to provide continuity. One or more alternates may also be elected. A majority of the members shall be REGULAR FACULTY. In departmentalized schools, except as provided to the contrary in a written bylaw, representatives will be elected from each department. The Council of a school containing a small number of faculty members may consist of all voting members of the school faculty. Should a member of the Council resign or should a position for any other reason become vacant a successor shall be chosen by the remaining members of the Council to serve for the unexpired term.

A5.3 In departmentalized schools, the School Council shall yearly elect one of its members to be the Speaker of the Council to preside at meetings of the Council; to represent the wishes of the faculty; to provide advice or recommendation to the dean; and to administer

the activities of the Council. Up to two Vice Speakers may be elected to assist the Speaker in all administrative duties and will assume the duties of the Speaker in his or her absence. The Dean of the school will serve as a non-voting *ex officio* member of the Council except as may be necessary to break a tie vote. The Dean will attend at least one meeting each semester. All meetings of the Council will be open to UNIVERSITY FACULTY members of that school or college, except for executive sessions which will be attended only by elected members or in their absence, their alternates. The Council shall receive ADMINISTRATIVE support from the Office of the Dean, and a Secretary to the Council shall be employed to assist the Speaker and the Council in the conduct of its activities.

Proposed *Faculty Manual* language:

Proposed changes reflected in underline/~~strikeout~~ format

A5 School Councils

A5.1 The faculty of each school, including the Graduate School and the Library, shall establish a Council as its executive agency. The voting members of the faculty of each school shall elect from their members a Council which shall act as the committee on academic planning, educational and research policy, and general welfare of the school; it shall elect all committees of the school faculty; it shall act as confidential counsel to the dean of the school in any matter submitted by the dean; it or its designee shall set the date and hour and prepare the agenda for all regular meetings of the school faculty; it shall include in the agenda any matter requested in writing by five percent of the voting members of the school faculty; a majority of the voting faculty of a department, or any items or matters submitted by the dean or his/her principal deputy; it may make recommendations to the school faculty concerning proposed actions; it may act for the school faculty, as authorized annually by the school faculty, and report such actions at the next meeting of the school faculty. The authority of the Council to elect committees of the school faculty in no way limits the authority of the dean to appoint *ad hoc* committees from the school faculty to advise the dean.

A5.2 The School Council shall consist of at least three elected members, each serving for a three-year term, the terms to be staggered in order to provide continuity. One or more alternates may also be elected. A majority of the members shall be REGULAR FACULTY. In departmentalized schools, except as provided to the contrary in a written bylaw, representatives will be elected from each department. The Council of a school containing a small number of faculty members may consist of all voting members of the school faculty. Should a member of the Council resign or should a position for any other reason become vacant a successor shall be chosen by the remaining members of the Council to serve for the unexpired term.

A5.3 ~~In departmentalized schools~~ In all schools, except in the Graduate School, the School Council shall yearly elect one of its members to be the Speaker of the Council to preside at meetings of the Council; to represent the wishes of the faculty; to provide advice or recommendation to the dean; and to administer the activities of the Council. Up to two Vice Speakers may be elected to assist the Speaker in all administrative duties and will assume the duties of the Speaker in his or her absence. The Dean of the school, except the Dean of the Graduate School, will serve as a non-voting *ex officio* member of the Council except as may be necessary to break a tie vote. The Dean will attend at least one meeting each semester. All meetings of the Council will be open to UNIVERSITY FACULTY members of that school or college, except for executive sessions which will be attended only by elected members or in their absence, their alternates. The Council shall receive ADMINISTRATIVE support from the Office of the Dean, and a Secretary to the Council shall be employed to assist the Speaker and the Council in the conduct of its activities.

The Dean of the Graduate School shall be the Speaker of the Graduate Council. The Speaker of the Graduate Council shall preside at meetings of the Graduate Council; represent the wishes of the graduate faculty; and administer the activities of the Graduate Council.

Item B6

Proposal to expand discretionary authority to the Senate officers in emergency situations under *Faculty Manual* Section C20.6

Purpose: expand the discretionary authority of the Senate Officers to speak on behalf of the faculty in emergency situations.

Current *Faculty Manual* language:

C20.6 Discretionary Authority of Senate Officers during Academic Breaks

> If a matter requires timely attention from the Committee on Rank, Salary and Conditions of Employment, Tenure Review Board, Committee on Professional Conduct or the Hearing Panel during an academic break such as the summer period, and a sufficient number of appropriate elected members is not available, the officers may agree by majority vote to add other appropriate individuals to the Committee having jurisdiction over the matter. A report of any such temporary addition will be made to the Senate at its next meeting following the academic break.

Proposed *Faculty Manual* language:

Proposed changes reflected in underline/~~strikeout~~ format

C20.6 Discretionary Authority of Senate Officers during Academic Breaks

> If a matter requires timely attention from the Committee on Rank, Salary and Conditions of Employment, Tenure Review Board, Committee on Professional Conduct or the Hearing Panel during an academic break such as the summer period, and a sufficient number of appropriate elected members is not available, the officers may agree by majority vote to add other appropriate individuals to the Committee having jurisdiction over the matter. A report of any such temporary addition will be made to the Senate at its next meeting following the academic break.
>
> Similarly, if a matter requires timely action from the Faculty Senate during an emergency situation, such as natural disasters, the officers of the Senate may speak on behalf of the Faculty Senate making all reasonable attempts to consult with the members of the Committee on General Welfare. The Faculty Senate shall be given appropriate notice of the officers' action(s) at the following Senate meeting.

Item D2

Outside UM campus: 5 = 421 + last 4 digits of number
6 = 243 + last 4 digits of number
8 = 284 + last 4 digits of number

Faculty Senate Hearing Panel 2017-2018
[Names approved at the October 25, 2017 Senate meeting.]
Diane Millette was added since that meeting, and needs to be approved by the Faculty Senate.

Yr. Appt.	Name	School/Dept.	Address	Phone
15-16	Ronny Aboudi	Business/Management Science	407 Bernie Kosar/Epstein, 6531	8-1966
17-18	Hermann Beck	Arts and Sciences/History	1252 Memorial Drive, Ashe	8-5947
04-05	Nanette Bishopric	Medicine/Molecular and Cellular Pharmacology	6026, RMSB, R-189	6-6775
13-14	Caroline Bradley	Law	G381 Law Library, 0221	8-2082
10-11	Rocco Ceo	Architecture	305E Architecture, 5010	8-2269
16-17	Joseph De Santis	Nursing and Health Studies	432F Schwartz Center, 3850	8-5039
10-11	Shirley Dennis	Business/Accounting	311 Bernie Kosar/ Epstein, 6531	8-5577
15-16	Mary Anne Franks	Law	Rm. G385, Law Library G, 0221	8-5345
11-12	Anthony Hynes	RSMAS/Marine and Atmospheric Chemistry	298 Science & Adm. Bldg., VK	5-4173
09-10	Laura Kohn Wood	Education/Ed. and Psychological Studies	319 B Merrick, 2040	8-1316
13-14	Lili Levi	Law	G471 Law Library, 0221	8-2289

17-18	#Diane M. Millette(replacing Don Stacks and pending vote by Faculty Senate at Nov. 29 meeting)	Communication/Communications Studies	Frances L. Wolfson Bldg., Rm 3008	8-2340
11-12	Marie Guerda Nicolas	Education/Education and Psychological Studies	310 Merrick Building, 2040	8-9124
10-11	Amie Nielsen	Arts and Sciences/ Sociology	121C Merrick, 2030	8-6158
17-18	Thomas Robinson	Law	Meyer Law Library, 1311 Miller Drive, G286	8-2495
10-11	Charlotte Rogers	Arts and Sciences/ English	417 Ashe, 4632	8-4071
08-09	Roland Schein	Medicine/Pulmonary and Critical Care	Room A805 VA, D26	305-575-3227
05-06	Seth Thaller	Medicine/Surgery	410E Clinical Research Bldg., R88	6-4500
13-14	Warren Whisenant	Education/Kinesiology & Sport Sciences	317.05 Merrick, 2040	8-5622
17-18	Jorge F. Willemsen	RSMAS/Ocean Sciences	4600 Rickenbacker Causeway, Operations 22	305-421-4199

Click here to view Standing Committee Guidelines.

Faculty Manual Section C15.9 Faculty Hearing Committee

If the faculty member responds, a faculty Hearing Committee consisting of five members and one alternate shall be selected as follows. The Committee shall be drawn from a standing panel of twenty tenured faculty members elected each year in a manner determined by the Faculty Senate and approved by the President. Members of this panel should be chosen on the basis of their objectivity and competence and of the regard in which they are held in the academic community. No member of the Committee shall be a member of the Faculty Senate.[1]The President shall instruct the appropriate deans and chairs to schedule the classes and other duties of these twenty faculty members so as to

[1] #95001(B)

allow for daily sessions. The functioning Hearing Committee shall be selected as described below from and by those panel members not disqualifying themselves on the basis of prejudice in respect to the particular case. The President shall send notice to the faculty member and to the twenty members of the standing panel of the time and place of the selection meeting and direct them to be present. At the selection meeting, the members of the standing panel shall elect a chair *pro tempore* from their ranks. The chair *pro tempore* shall conduct the Committee selection as follows:

(a) Those wishing to disqualify themselves on the basis of prejudice shall be given an opportunity to do so.

(b) The remaining members of the panel shall agree among themselves, outside the presence of the parties, the numerical order in which they shall be eligible for selection and the parties shall then be advised of the order of eligibility.

(c) The first five members of the panel shall preliminarily assume the regular seats of the Hearing Committee and the sixth member shall be the preliminary alternate.

(d) The parties shall be entitled to question each member of the preliminary Hearing Committee regarding fitness to serve on the Committee and may then request, one member at a time, that members of the Committee be excused for cause. Such requests shall be decided, one at a time, by a majority of the preliminary Hearing Committee. The member being challenged shall not vote. The decision shall be based upon the ability of the challenged member to fairly determine the issues. If a member or alternate member is excused, such a member shall be replaced by the next eligible member of the panel before the selection process proceeds.

(e) Each party shall be entitled to two[2] peremptory challenges exercisable at any time during the selection process.

(f) If the panel is exhausted before five Committee members and one alternate are selected, those persons who have been provisionally selected shall choose from the tenured faculty additional persons for the panel who shall assign an order of eligibility and the selection process shall continue as before.

(g) The selection process shall continue from day to day, until it is completed. When completed, the five regular members of the Committee shall elect a chair who shall preside and be responsible for keeping a chronological file of all documents filed with the Hearing Committee.

(h) When the Hearing Committee is convened the Chair of the Faculty Senate shall arrange for the members of the Committee to be briefed on the nature of the proceedings[3].

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[2] #95001(B)
[3] #95001(B)