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MEMORANDUM

To: Julio Frenk
University President

From: Tomás A. Salerno
Chair, Faculty Senate

Date: September 27, 2018

Subject: Faculty Senate Legislation #2018-17 (B) – Create a 5-year Dual Bachelor of Science in Mathematics/ Master of Science in Mathematical Finance Degree Program (BS/MSMF), College of Arts and Sciences/ Business School

The Faculty Senate, at its September 26, 2018 meeting, voted unanimously to approve the proposal to create a 5-year dual Bachelor of Science in Mathematics/ Master of Science in Mathematical Finance degree program. The proposed dual degree program involves two existing programs, and since it is more integrated and focused, will reduce the time it takes for students to earn both degrees by a half of a year.

The dual degree will require successful completion of 120 credit hours for a bachelor's degree program and 30 credit hours for the graduate program (the MSMF program credit hours will be reduced to 30 credit hours from 34 for those completing the dual agree). The proposed dual degree is a repackaging of existing courses. No new courses are being added.

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

This legislation is now forwarded to you for your action.


TAS/rh

Enclosure

cc: Jeffrey Duerk, Provost and Executive Vice President for Academic Affairs
Leonidas Bachas, Dean, College of Arts and Sciences
John Quelch, Dean, Business School
Guillermo Prado, Dean, Graduate School
Alexander Dvorsky, Director, MSMF Program, College of Arts and Sciences

CAPSULE: Faculty Senate Legislation #2018-17 (B) – Create a 5-year Dual Bachelor of Science in Mathematics/ Master of Science in Mathematical Finance Degree Program (BS/MSMF), College of Arts and Sciences/ Business School

PRESIDENT'S RESPONSE

APPROVED:  DATE: 11/6/18
(President's Signature) Dean John Quelch and
OFFICE OR INDIVIDUAL TO IMPLEMENT: Dean Leonidas Bachas
EFFECTIVE DATE OF LEGISLATION: IMMEDIATELY
(if other than June 1 next following)
NOT APPROVED AND REFERRED TO: _____
REMARKS (IF NOT APPROVED): _____



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

Alexander

Last Name

Dvorsky

Proponent's Title

Director, MSMF Program

Department, if applicable

Mathematics

School/College

Arts & Sciences

E-mail

dvorsky@math.miami.edu

Phone

305-284-2191

Title of Proposal

Proposal to Create a Dual Degree, Five-Year Bachelor of Science in Mathematics/ Master of Science in Mathematical Finance Degree Program

(-continue to next page-)

MANDATORY MEMORANDA AND FORMAT

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

Only proposals conforming to this format will be accepted.

1. This completed checklist.

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

Yes No

If no, explain why.

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

Yes No

If no, explain why.

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

Yes No

If no, explain why.

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

Yes No

If no, explain why.

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

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

Applicable Not applicable.

If not, explain why.

7. A memo from the Graduate School Dean signifying approval of the Graduate Council (for graduate programs only).

(To be submitted to the Faculty Senate by the Graduate Council.)

Applicable Not applicable.

If not, explain why.

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

Yes No

If no, explain why.

Not applicable

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

List additional documents included.

End form.

Department of Mathematics

Proposal to Create a Dual Degree, Five-Year Bachelor of Science in Mathematics/

Master of Science in Mathematical Finance Degree Program

Prepared by: Alexander Dvorsky (Director – MSMF Program, Department of Mathematics)

Responsible administrative unit for the program:

Department of Mathematics

College of Arts and Sciences

Proposed date for implementation: Summer 2019

The goal of the dual BS/MSMF degree is to provide a tightly integrated program which will allow undergraduate students (mainly in the Probability/Statistics track of the Mathematics major) to continue as MS students in the Mathematical Finance (MSMF degree) and complete their dual degree within a reduced timeframe of 5 years. Students will learn the mathematical and computational foundations of quantitative finance, improve their written and oral presentation skills, and receive the professional training necessary to advance their careers.


MEMO OF SUPPORT FROM THE COLLEGE OF ARTS & SCIENCES

UNIVERSITY OF MIAMI
COLLEGE of
ARTS & SCIENCES



Office of the Dean 1252 Memorial Drive Ph: 305-284-4117
Ashe Building, Suite 227 Fax: 305-284-5637
Coral Gables, Florida 33146 as@miami.edu

To: Tomas Salerno
Chair, Faculty Senate

From: Leonidas Bachas 
Dean, College of Arts and Sciences

Subject: New Degree Program:
5-year BS in Mathematics and MS in Mathematical Finance

Date: April 3, 2018

Dear Tom,

I am writing to express my full support of the proposal for a new 5-year Bachelor of Science in Mathematics and Master of Science in Mathematical Finance (MSMF). On April 3, 2018, the faculty of the College of Arts and Sciences unanimously voted in favor of this program, offered by the Mathematics, which will encourage the growth of our successful MSMF professional master's degree program. I am now forwarding the proposal to the Senate for action.

For your convenience, attached you will find a copy of the proposal. If you have any questions, please feel free to contact me.

LGB/mtt

MEMO OF SUPPORT FROM THE DEPARTMENT OF MATHEMATICS

UNIVERSITY OF MIAMI
COLLEGE of
ARTS & SCIENCES



Department of Mathematics
P.O. Box 249085
Coral Gables, FL 33124-4250

Phone: 305-284-2575
Fax: 305-284-2848
math@math.miami.edu

MEMORANDUM

TO: Leonidas Bachas, Dean
College of Arts and Sciences

TO: Guillermo Prado, Dean
Graduate School

TO: Maria Stampino, Senior Associate Dean
College of Arts and Sciences

TO: Geoff Sutcliffe, Chair
CAS Curriculum Committee

FROM: Robert Stephen Cantrell, Chair
Department of Mathematics *RSC*

DATE: February 28, 2018

REF: 5 Year B.S./M.S.M.F. Degree Option

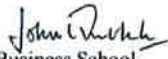
This memorandum is to express my strong support for the creation of a dual degree, 5 year Bachelor of Science/Master of Science in Mathematical Finance option. The M.S.M. F. program is now an integral part of our curriculum. Expanding the program in this way was initiated by the Steering Committee of the MSMF Program and was approved by the Department of Mathematics by a vote of 21-1 October 24, 2017 following extensive discussion. The new option is designed to enhance academic and career opportunities for the large number of our undergraduate majors interested in probability and finance.

MEMO OF SUPPORT FROM THE DEAN OF THE MIAMI BUSINESS SCHOOL



MEMORANDUM

TO: General Welfare Committee
Faculty Senate

FROM: John Quelch 
Dean, Miami Business School

Subject: Support for BS/MS in Mathematical Finance Collaboration

Date: March 2, 2018

On behalf of the University of Miami Business School, I am pleased to write in support of a collaboration with the BS/MS in Mathematical Finance (BS/MSMF) through the Department of Mathematics at the College of Arts and Sciences. Core and elective graduate courses within the Miami Business School's Finance department will be available to the BS/MSMF students.

MEMO OF SUPPORT FROM THE FINANCE DEPARTMENT OF THE MIAMI BUSINESS SCHOOL

**UNIVERSITY
OF MIAMI**



Alok Kumar
Department Chair and
Gabelli Asset Management
Professor of Finance

Department of Finance
514-E Jenkins
5250 University Drive
Coral Gables, Florida 33124-6552

Ph: 305-284-1882
Dept: 305-284-4362
Fax: 305-284-4800
akumar@miami.edu

September 5, 2018

To: Robert Stephen Cantrell, Chair
Department of Mathematics
College of Arts & Sciences

From: Alok Kumar, Chair
Department of Finance
Miami Business School

This letter confirms the Finance Department's support for the College of Arts & Sciences' proposal to create a 5-year BS/MS in Mathematical Finance. The faculty is fully committed to continuing our partnership with the Department of Mathematics and the Master of Science in Mathematical Finance program. The Department of Finance is glad to offer courses to support this program.

Regards,

A handwritten signature in black ink that reads "Alok Kumar".

Dr. Alok Kumar
Chairperson
Department of Finance

MEMO OF APPROVAL FROM THE OFFICE OF ACCREDITATION AND ASSESSMENT

UNIVERSITY
OF MIAMI



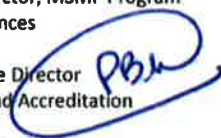
Assessment and Accreditation
Gables One Tower 1320 S. Dixie Hwy.
Coral Gables, Florida 33146

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

MEMORANDUM

DATE: March 2, 2018

TO: Alexander Dvorsky, Director, MSMF Program
College of Arts and Sciences

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

RE: New BS/MSMF 5-Year Dual Degree

On February 26, 2018, the College of Arts and Sciences notified my office of its intent to offer a new five-year, Bachelor of Science (BS) in Mathematics and Master of Science in Mathematical Finance (MSMF) dual degree program effective Summer 2019. The proposed dual degree program involves two existing programs (academic plan codes: MATH6_BS and MATH_MSFM). The proposed program will reduce the time it would take for a student to earn both degrees by half a year because it is more integrated and focused in nature.

The current BS in Mathematics program (Probability and Statistics track) requires successful completion of 120 credit hours. This will remain the same for the proposed dual degree program. The current MSMF program requires successful completion of 34 credit hours (22 credit hours of core courses and 12 credit hours of electives). This will be reduced to 30 credit hours in the proposed dual degree program which includes 19 credit hours of course courses, 5 credit hours of electives, and 6 credit hours for a required master's thesis or research project. The total credit hours for both degrees can be reduced based on the overlap in course content within the Probability and Statistics track and the MSMF curriculum (such as Statistical Analysis and Introduction to Mathematical Finance).

The proposed new program 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 proposed dual degree program meets the SACSCOC requirement of a minimum of 120 credit hours for a bachelor's degree program and 30 credit hours for a graduate program.
- The proposed dual degree program is a repackaging of existing courses. No new courses are being added.
- The proposed dual degree program will be supported by current qualified faculty.
- The proposed dual degree program will be coordinated by a qualified faculty member, Dr. Alexander Dvorsky (PhD, Mathematics).
- The University is currently approved to offer both of the programs included in the proposed dual degree program.
- The majority of the proposed dual degree program will not be offered via distance education and, in any case, the University is approved to offer 100% distance education programs.


MEMO OF SUPPORT FROM THE GRADUATE SCHOOL

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: April 24, 2018
TO: Tomas Salerno
Chair, Faculty Senate
FROM: Guillermo (Willy) Prado
Dean, The Graduate School 
SUBJECT: Proposal – BS/MSMF 5-Year Dual Degree

The College of Arts and Sciences submitted a proposal for a 5-year BS in Mathematics and MS in Mathematical Finance dual degree program. The proposal was discussed at the meeting of the Graduate Council on Tuesday, April 17, 2018, and was approved by those present.

cc: Leonidas Bachas, Dean, College of Arts and Sciences
Alexander Dvorsky, Director, MSMF Program
Office of Assessment and Accreditation

1. RATIONALE

a. Exact Degree Title.

The Department of Mathematics seeks to offer a five-year dual degree that combines a Bachelor of Science (BS) degree in Mathematics with a Master of Science degree in Mathematical Finance (MSMF). It will be titled the Five-year BS/MSMF Degree.

b. Purpose and goals of the dual degree.

The goal of the dual BS/MSMF degree is to provide a tightly integrated program which will allow undergraduate students (mainly in the Probability/Statistics track of the Mathematics major) to continue as MS students in the Mathematical Finance (MSMF degree) and complete their dual degree within a reduced timeframe of 5 years. Students will learn the mathematical and computational foundations of quantitative finance, improve their written and oral presentation skills, and receive the professional training necessary to advance their careers.

This program will be a revenue-generating Master's program. The Master's year will require at least 30 credits of tuition payment. Tuition funds returned to the department will defray costs of the BS/MSMF program and contribute to support of our Ph.D. program.

c. Motivation and Demand

For undergraduate students seeking careers in the fields of economics, finance and data science, the BS/MSMF degree offers the appropriate training sought by companies worldwide. Students can achieve the required academic credentials in 0.5 years less time due to the integrated and focused nature of the BS/MSMF degree.

2. CURRICULUM

a. List the major division or divisions of the discipline in which graduate degree work will be offered.

The degree will be offered by the Department of Mathematics. The final research project must be with a faculty member in Mathematics.

b. Provide a detailed description of the proposed program.

The BS/MSMF program is a five-year program combining the Probability/Statistics track of the Mathematics undergraduate major with the graduate coursework required for the MSMF (MS in Mathematical Finance) degree.

Students will have access to MTH 500 level courses as seniors and to MTH and FIN 600 level courses as Masters students.

3. REQUIREMENTS

a. Prerequisites.

Students must be enrolled as an undergraduate in the University of Miami. All requirements for the BS in Mathematics degree must be completed by the end of their senior year.

b. Courses.

The BS degree requires a total of 120 credits. Eleven MTH courses are required to complete the Probability and Statistics track of the Mathematics major: MTH 161 or 171, MTH 162 or 172, MTH 210, MTH 230, MTH 310, MTH 461, MTH 433, MTH 224, MTH 524, MTH 525, MTH 542. Additional two courses will be required for BS/MSMF students: MTH 311 and MTH 547. Also some coursework in computer science (CSC 210) is strongly recommended.

In the MSMF year, students must take 30 credits over the course of the Fall, Spring and Summer semesters. Required courses (19 credits) are MTH 645, MTH 649, MTH 643, MTH 648, MTH 613, FIN 650, FIN 651. In addition, the students will take at least one elective MTH course and one elective FIN course, and complete summer research project (6 credits).

c. Examinations.

At the end of the MSMF year, students will present their research project. Conferral of the MS degree is subject to the committee's approval of the project.

d. Additional Coursework.

During the MS year, additional course work must be approved by the student's committee.

e. Degree Track. The program will not be divided into tracks.

f. Proposed schedule of course offerings for the Five-year degree program. A proposal plan of study is listed below.

4. STUDENTS

a. Estimate the number of students in the program and the pool from which they will come.

We anticipate that at the onset of the program 2-3 students will be enrolled. However, once the program is fully established, BS/MSMF program will admit up to 6 students each year.

b. Describe requirements for admission to and retention in each degree.

The acceptability of candidates will be judged by the MSMF Admission Committee. A minimum of 3.2 GPA will be required for admission. Students will generally be admitted in the middle of their junior

year. Each student will be assigned a two-member committee of graduate faculty, who will monitor status and progress.

5. ADMINISTRATION

a. Estimate the administrative increments imposed by this program.

i. Need for additional salary support

- Part time support for departmental administrative activities

ii. Need for additional office equipment and supplies.

- None expected

iii. Need for additional travel, publication costs and other funds.

- Some students may be expected to travel to professional meetings to present their work.

b. Budget. The program is designed to be self-supporting through those tuition revenues returned to the department. No additional facility demands or new library collections are anticipated.

Five-Year Bachelor of Science in Mathematics/MS in Mathematical Finance Degree

Sample Plan of Study A:

BS in Mathematics (120 credits)

Year 1

Fall (16 credits): MTH 161 (4), ENG 105 (3), other (9)

Spring (16 credits): MTH 162 (4), ENG 106 (3), other (9)

Year 2

Fall (15 credits): MTH 210 (3), MTH 224 (3), other (9)

Spring (15 credits): MTH 230 (3), MTH 310 (3), other (9)

Year 3

Fall (15 credits): MTH 542 (3), MTH 433 (3), other (9)

Spring (15 credits): MTH 311 (3), MTH 461 (3), other (9)

Year 4

Fall (15 credits): MTH 524 (3), MTH 547 (3), other (9)

Spring (13 credits): MTH 525 (3), MTH 320 (3, recommended), other (7)

Year 5 (MSMF)

Fall (11 credits): MTH 645 (3), MTH 649 (3), MTH 613 (3), FIN 650 (2)

Spring (13 credits): MTH 643 (3), MTH 648 (3), MTH/CSC elective (3), FIN 651 (2), FIN elective (2)

Summer A (6 credits): MSMF Thesis/Project (6)

Sample Plan of Study B (for students entering with Calculus I and II credits):

BS in Mathematics (120 credits)

Year 1

Fall (15 credits): MTH 210 (3), ENG 105 (3), other (9)

Spring (15 credits): MTH 224 (3), ENG 106 (3), other (9)

Year 2

Fall (15 credits): MTH 310 (3), MTH 311 (3), other (9)

Spring (15 credits): MTH 230 (3), MTH 320 (3, recommended), other (9)

Year 3

Fall (15 credits): MTH 524 (3), MTH 433 (3), other (9)

Spring (15 credits): MTH 525 (3), other (12)

Year 4

Fall (15 credits): MTH 542 (3), MTH 547 (3), other (9)

Spring (15 credits): MTH 461 (3), other (12)

Year 5 (MSMF)

Fall (11 credits): MTH 645 (3), MTH 649 (3), MTH 613 (3), FIN 650 (2)

Spring (13 credits): MTH 643 (3), MTH 648 (3), MTH/CSC elective (3), FIN 651 (2), FIN elective (2)

Summer A (6 credits): MSMF Thesis/Project (6)