UNIVERSITY FACULTY SENATE FORMS

Academic Program Approval

This form is a routing document for the approval of new and revised academic programs. Proposing department should complete this form. For more information, call the Faculty Senate Office at 831-2921.

Submitted by: _Louis Rossi_____phone number__831-1880_____

Department: _Mathematical Sciences_____email address_rossi@math.udel.edu
_____
Date: 24 October 2012_____

Action: Revise major_____
(Example: add major/minor/concentration, delete major/minor/concentration, revise major/minor/concentration, academic unit name change, request for permanent status, policy change, etc.)

Effective term__13F_____
(use format 04F, 05W)

Current degree__BS_____
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed change leads to the degree of: __BS_____
(Example: BA, BACH, BACJ, HBA, EDD, MA, MBA, etc.)

Proposed name:__   _____
Proposed new name for revised or new major / minor / concentration / academic unit
(if applicable)

Revising or Deleting:

     Undergraduate major / Concentration:_BS Mathematics and Economics_
          (Example: Applied Music – Instrumental degree BMAS)

     Undergraduate minor:_____
          (Example: African Studies, Business Administration, English, Leadership, etc.)

     Graduate Program Policy statement change:_____
          (**Must attach** your Graduate Program Policy Statement)

     Graduate Program of Study:_____
          (Example: Animal Science: MS Animal Science: PHD Economics: MA Economics: PHD)

     Graduate minor / concentration:_____

Note: all graduate studies proposals must include an electronic copy of the Graduate Program Policy Document, highlighting the changes made to the original policy document.

List new courses required for the new or revised curriculum. How do they support the overall program objectives of the major/minor/concentrations)?
(Be aware that approval of the curriculum is dependent upon these courses successfully passing through the Course Challenge list. If there are no new courses enter "None")

The new courses in the palette of options are ECON410 and ECON460. These courses have more significant mathematical content for supporting the objectives of the major.

Explain, when appropriate, how this new/revised curriculum supports the 10 goals of undergraduate education: <ins>http://www.ugs.udel.edu/gened/</ins>

Goal 1: Students in the major will attain effective skills in quantitative reasoning and information technology skills through their normal coursework in MATH and ECON..

Goal 3: Students will work and learn both independently and collaboratively as they complete the curriculum.

Identify other units affected by the proposed changes:
(Attach permission from the affected units. If no other unit is affected, enter "None")

Departments of Economics.

Describe the rationale for the proposed program change(s):
(Explain your reasons for creating, revising, or deleting the curriculum or program.)

These changes increase the mathematical content of the economics component of the MAEC major, consistent with the pedagogical goals of the major. As before, students must take either Econ 406 or Econ 426. The courses eliminated as electives did not have significant mathematical content. The added electives have a significant mathematical component and thus are more consistent with the intent of the major. The change in the computer science requirement reflects changes in the computer science curriculum. CISC 108 is designed for computer science majors. CISC 106 is better suited to math majors who wish to implement mathematical algorithms in a structured programming language.

Program Requirements:
(Show the new or revised curriculum as it should appear in the Course Catalog. If this is a revision, be sure to indicate the changes being made to the current curriculum and **include a side-by-side comparison** of the credit distribution before and after the proposed change.)

Proposed revisions:

1. Change the following 2 option requirements
:

"One of the following: ECON406 or ECON426"

"One of the following: ECON302, ECON430, ECON443, ECON471 or FINC311"

with a single requirement

"Two of the following: ECON406, ECON410, ECON426, ECON430, ECON443, ECON460. One of these two courses must be ECON406 or ECON426."

2. Change the following requirement:

"One of the following Computer Science courses: CISC 108 or CISC 181"

with

"The following Computer Science course: CISC 106".

ROUTING AND AUTHORIZATION: (Please do not remove supporting documentation.)

Department Chairperson _____Date_____

Dean of College_____Date_____

Chairperson, College Curriculum Committee_____Date_____

Chairperson, Senate Com. on UG or GR Studies_____Date_____

Chairperson, Senate Coordinating Com._____Date_____

Secretary, Faculty Senate_____Date_____

Date of Senate Resolution_____Date to be Effective_____

Registrar _____Program Code_____Date_____

Vice Provost for Academic Affairs & International Programs_____Date_____

Provost   _____Date_____

Board of Trustee Notification_____Date_____

Revised 02/09/2009   /khs

DEGREE: BACHELOR OF SCIENCE
MAJOR: MATHEMATICS AND ECONOMICS

CURRICULUM		CREDITS
UNIVERSITY REQUIREMENTS		
ENGL 110 Critical Reading and Writing (minimum grade C-)		3
First Year Experience (FYE)		0-4
University Breadth Requirement (minimum grade C-)		12
Discovery Learning Experience (DLE)		3
Multi-cultural Course		3

COLLEGE REQUIREMENTS
Writing: (minimum grade C-)   3
A second writing course involving significant writing experience including two papers with a combined minimum of 3,000 words to be submitted for extended faculty critique of both composition and content. This course must be taken after completion of 60 credit hours.

ENGL 312 Written Communications in Business   3
(or other approved second writing course including **MATH 308** or **MATH 512**)

College of Arts and Sciences Breadth Requirements: (minimum grade C-)
The College Breadth Requirements are in addition to the University Breadth Requirement. Up to 3 credits from each of the University Breadth Requirement categories may be used to simultaneously satisfy these College of Arts and Sciences Breadth Requirements.

A total of eighteen credits from Groups A, B and C is required with six credits from each group. The 18 six credits from each group could be from the same area.

Group A: Creative Arts and Humanities	6
Group B: History and Cultural Change	6
Group C: Social and Behavioral Sciences	6

MAJOR REQUIREMENTS
A grade of C- or better is required for major courses and related work. Students lacking adequate preparation for **MATH 242** should begin with **MATH 241**. Students must take a minimum of 39 credits in Mathematics and Economics at the 300-level or above. **MATH 308**, **MATH 379**, **MATH 380** and **MATH 382** are not applicable.

Mathematics Section

MATH 242	Analytic Geometry and Calculus B	4
MATH 243	Analytic Geometry and Calculus C	4
MATH 268 or **UNIV 101**	Perspectives on Mathematics or First Year Experience I	1
MATH 302	Ordinary Differential Equations	3
MATH 349	Elementary Linear Algebra	3
MATH 529	Fundamentals of Optimization	
MATH 530	Applications of Mathematics in Economics	3

One of the following   3
MATH 210 Discrete Mathematics I
or
MATH 230 Finite Mathematics with Applications

DEGREE: BACHELOR OF SCIENCE
MAJOR: MATHEMATICS AND ECONOMICS   Proposed revision

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MATH 530	Applications of Mathematics in Economics	3

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MATH 210 Discrete Mathematics I
or
MATH 230 Finite Mathematics with Applications

One of the following options (A or B, 6 credits total):

Option A

MATH 350	Probability Theory and Simulation Methods	3
and		
MATH 450	Mathematical Statistics	3

Option B

MATH 201	Introduction to Statistical Methods I	3
and		
MATH 202	Introduction to Statistical Methods II	3

One of the following options (C or D):

Option C

MATH 245	An Introduction to Proof	3
and		
MATH 401	Introduction to Real Analysis	3

Option D
One of the following three courses

MATH 426	Numerical Analysis and Algorithmic Computations	3
MATH 503	Advanced Calculus for Applications 3	3
MATH 512	Contemporary Application of Mathematics	3

Students intending to pursue a graduate education in financial mathematics should select at least MATH 210, Options A and C. Students intending to go into actuarial sciences should select Option A.

Economics Section

ECON 301	Quantitative Microeconomic Theory	3
(prerequisites: ECON 151 and MATH 241)		
ECON 303	Intermediate Macroeconomic Theory	3
(prerequisites: ECON 152 and one of ECON 251, ECON 300 or ECON 301; or permission of instructor.		
ECON 422	Econometric Methods and Models I	3
ECON 423	Econometric Methods and Models II	3

One of the following 3

ECON 406	Markets: Information and Uncertainty	
ECON 426	Mathematical Economic Analysis	

One of the following 3

ECON 302	Banking and Monetary Policy	
ECON 430	Advanced Macroeconomic Theory	
ECON 443	International Monetary Economics	
ECON 471	Futures and Options Markets	
FINC 311	Principles of Finance	

One of the following Computer Science courses 3

CISC 108	Introduction to Computer Science I	
or		
CISC 181	Introduction to Computer Science II	

Any substitutions must be approved by the department Undergraduate Studies Committee.

ELECTIVES
After required courses are completed, sufficient elective credits must be taken to meet the minimum credit requirement for the degree.

CREDITS TO TOTAL A MINIMUM OF 124

Checklist for Curriculum Proposals

_X_. 1. Are all **signatures on the hard copy of the proposal?**

_X_. 2. Is the **effective date** correct?

_X_. 3. Is the **rationale** for the proposal consistent with the changes proposed?

_X_. 4. Does the proposed **number of credits** match the stated
        number?

_X_. 5. Have affected units been identified and contacted? Are required **support letters** attached?

n/a. 6. Is a **[resolution](#)** necessary? If so, is it attached?

(Necessary for: establishing a major; disestablishing a major; a name change to any program with permanent status; a name change to a department or college; a transfer or creation of any department; request for permanent status).

_X_. 7. Are all **courses (required or referenced)** in the UDSIS Inventory or in the approval process?

_X_. 8. Are all **university requirements** correctly specified?

    _X_. A. Breadth requirements.

    _X_. B. Multicultural requirement.

    _X_. C. Writing requirement.

    _X_. D. DLE requirement.

_X_. 9. Are all **college requirements** correctly specified?

_X_. 9. Is a **[side-by-side comparison](#)** provided?