**New Course Proposal**

(Submit completed form electronically)

1. **Course prefix and course number:** MTH 493

1. **Course title:** Financial Mathematics Capstone
2. **Abbreviated title for class schedule** (30 characters or less): Finance-Math Capstone
3. **Credit hours:** 4

*(note: if credits are variable, list range of credits (e.g. 1-8 credits))*

1. **Catalog description:**

A comprehensive two-term capstone course that integrates the concepts and methods taught in the mathematics, business and economics core courses. Students exhibit and extend their knowledge of financial analysis and modeling, writing, and presentation. Graded (A-F) only. Prerequisites: BA 472, BA 470, BA 473, and MTH 461. BA 470 can be taken concurrently with the first term capstone.

1. **Prerequisites (*to add each additional prerequisite, start a new line*):**

**(***See attached Note for samples***)**

**A. (course prefix, (space) and number)** BA 472

**B. (course prefix, (space) and number)** BA 470 (this can be taken concurrently)

**C**. **(course prefix, (space) and number)** BA 473

D. **(course prefix, (space) and number)** MTH 461

1. **Co-requisites (including labs, if any):**
2. **(course prefix, (space) and number)**
3. **Major/Class restrictions: Please indicate any class or major restrictions:**
4. **Is course repeatable?** Yes **If Yes, list maximum credits:** 8
5. **Labs requirements: If course includes a lab: # of hours lecture:; # of hours lab:**
6. **Fees: List any course fees:**
7. **Grade Mode: Graded only: x Pass/No Pass only:** **Option:**
8. **CIP Code: Six-digit CIP code** (check with your Division Director): 27.0305
9. **Special qualifications; Is course proposed for (yes/no):**

A. University Studies? No If yes, list Strand(s)

B. Honors? No

1. **Cross-listing: List any cross-listing:**
2. **Strategic justification for proposed course:**
3. **Rationale**: What is the overall strategic rationale for offering this course?

The Financial Mathematics major began in the academic year 2012-13 with an intention to provide students with quantitative and analytical training in financial sectors. Financial Mathematics majors complete a curriculum of currently offered math, finance, and economics courses. While we believe these are an excellent curriculum portfolio, the current program does not offer a unique capstone opportunity for the major. The two current capstone options, BA 499: Business Planning, and Math 490: Senior Colloquium, do not align with the objectives of the Financial Mathematics major. As prospective financial analysts, in the broad sense, the students in this program need a more object-oriented and guided capstone experience that extends and deepens their ability to model and solve financial problems. The proposed capstone course is the only course unique to the Financial Mathematics major and is necessary to complete the program objective to help graduates develop and apply strong quantitative analytical training.

1. **Alignment**:
   1. How does this course align with the unit’s mission plan?

The proposed course aligns very well with the unit’s mission. One of the most important common mission in the mathematics department and the school of business is to provide students with an opportunity to build strong analytical skills to meet today’s competitive job market. Today’s employers in both commercial and non-commercial sectors seek candidates with strong mathematical and programming abilities to analyze complex financial models and data because finance exists everywhere domestically and internationally. This proposed course will provide students with an opportunity to extend and deepen their ability to meet this objective through identifying financial problems, programming and analyzing data, writing, and presentations.

2. How does the course fit into the rest of the unit’s curriculum?

The proposed capstone course will well fit into the major’s curriculum as an added capstone option item on top of the existing capstone options BA 499 and MTH 490.

1. **Enrollment**: What is the new course’s estimated enrollment each time it is offered over a three-year period? Year 1: 4; Year 2: 4; Year 3: 4
2. **Resource evaluation:** What resources – faculty, equipment, lab space, etc. -- will be needed to offer this course and how will those resources be obtained?

1. *Faculty*:

* 1. Who will teach the course?

This course will be team-taught by a math faculty with an expertise in statistics and a business faculty in finance. For foreseeable future years, Dr. Daniel Kim and Dr. Curtis Bacon will be teaching this course. Dr. Kim has a Ph.D. in the area of Statistics and Dr. Bacon has a Ph.D. in the area of Finance.

* 1. Evaluate unit’s faculty availability and/or needs and the impact on other teaching obligations.

No significant impact on teaching load is expected for each faculty. This proposed course is an optional course (not a required course) for the Financial major’s capstone. With a projection of four students in this course each year, only 1 ELU will be added to each faculty’s regular teaching loading each term when this course is offered, and this should cause only a marginally increased teaching loading.

* 1. If additional faculty members are needed, how will that need be met?

No additional faculty members are expected to be needed. There will always be some faculty members in each department whose expertise are statistics, finance, or close to them.

2. *Facilities*: Cite any additional need for classrooms, equipment or lab space; explain how that need(s) will be met.

This course would not require any extra equipment or facilities besides a regular classroom and/or an existing computer lab.

3. *Other*:

a. Are Hannon Library resources sufficient to meet the needs of this course?

Yes. Most financial data are disclosed on the Internet at the government and commercial websites.

b. Are any other resources needed to support this course? No

If so, please explain how they will be obtained.

1. **External impact**:

1. What is the expected effect of this course on existing programs elsewhere in the university?

No significant effects on existing programs are expected. The only two affected programs are BA 499: Business Planning or Math 490: Senior Colloquium. In each recent year, approximately four financial math students graduated with completed capstones in BA 499 and Math 490 in 3:1 ratio, respectively. BA 499 is normally an oversize-class that is offered in each of the four academic terms (including summer term). MTH 490 enrollment ranges somewhere in ten to fifteen. The subtraction of 3 students from BA 499 and/or 1 student from MTH 490 is not likely to cause any noticeable effect.

**NOTE:**  Please document your contact with other academic programs which may be affected by this new course and the response you received.

This proposal is from the affected programs Mathematics and Business departments. Since both programs are aware of and passed this proposal, no further documentation is necessary.

1. Will any of your prerequisites affect other academic programs? No. The prerequisites of the proposed course are already required courses for the major.

**NOTE:** Please document your contact with other academic programs which may be affected by this new course and the response you received.

This proposal is from the affected programs Mathematics and Business departments. Since both programs are aware of and passed this proposal, no further documentation is necessary.

**17. Syllabus (condensed) – See the attached.**

1. Course description (same as Catalog description, above)
2. Learning objectives of the course

1. Required texts
2. Course format
3. Other – any other relevant materials needed to explain the goals and teaching methods of this course.

Approvals:

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Signature of Division Director Date

**The Syllabus of MTH 493 Financial Mathematics Capstone**

1. Course description

A comprehensive two-term capstone course that integrates the concepts and methods taught in the mathematics, business and economics core courses. Students exhibit and extend knowledge of financial analysis and modeling, writing, and presentation. Graded (A-F) only. Prerequisites: BA 472, BA 470, BA 473, and MTH 461. BA 470 can be taken concurrently with the first term capstone.

1. Learning objectives of the course

* Students will strengthen their ability to synthetize their education, especially from math, finance, and economics.
* Students will strengthen the depth and breadth of their education knowledge and skills.
* Students will strengthen their independent and responsible research abilities.
* Students will strengthen their writing skills through proposal and thesis.
* Students will strengthen their presentation skills through presentations.
* Students will strengthen their collaboration skills by sharing their research/writing/presentations with their peers who are Financial Math majors.

1. Required texts: No.
2. Course format:

This course requires a two-term sequence: the first in winter and the second in spring term. The following are some details of the course format.

* Prof/prof/student meetings for readings, sharing, and establishing expectations, timelines, desired outcomes, meeting times.
* Weekly prof1/student meetings or prof2/student meetings.
* Winter term outcomes are research and detailed project proposal.
* Winter term grade based on winter term efforts and quality of proposal.
* Spring term outcomes are more research, writing, sharing, and presentation.
* Spring term grade based on the term efforts, quality of thesis, and presentation.

1. Other – any other relevant materials needed to explain the goals and teaching methods of this course.