# Montclair State University
## Department of Mathematical Sciences
## BS Mathematics with Concentration: Mathematics of Finance – Requirements (MAFI)

**I. Major Requirements** **44 sh**

**A. Mathematics Core** **(19 sh)**

| | |
|---|---|
| MATH 122 Calculus I | 4 |
| MATH 221 Calculus II | 4 |
| MATH 222 Calculus III | 4 |
| MATH 335 Linear Algebra | 4 |
| MATH 340 Probability | 3 |

**B. Mathematics Concentration** **(16 sh)**

| | |
|---|---|
| MATH 420 Differential Equations | 4 |
| MATH 466 Mathematics of Finance I | 3 |
| MATH 467 Mathematic of Finance II | 3 |
| STAT 330 Fund of Modern Statistics I | 3 |
| STAT 443 Intro to Mathematical Statistics | 3 |

**C. Mathematics Electives (9 sh)**
**Select 9 or more sh, not already counted in above from MATH 320-349, 351-469, 480-499, and STAT 330-499.**

| | |
|---|---|
| MATH 320 Transition to Adv. Math | 3 |
| MATH 398 Vector Calculus | 3 |
| MATH 421 Partial Differential Equations | 3 |
| MATH 423 Complex Variables | 3 |
| MATH 425 Advanced Calculus I | 3 |
| MATH 426 Advanced Calculus II | 3 |
| MATH 431 Foundations of Modern Algebra | 3 |
| MATH 433 Theory of Numbers | 3 |
| MATH 436 Elements of Logic | 3 |
| MATH 450 Foundations of Geometry | 3 |
| MATH 451 Topology | 3 |
| MATH 460 Intro to Applied Math | 3 |
| MATH 463 Numerical Analysis | 3 |
| MATH 464 Operations Research I | 3 |
| MATH 465 Operations Research II | 3 |
| MATH 468 Fluid Mechanics | 3 |
| MATH 485 Appl. Comb. and Graph Theory | 3 |
| MATH 487 Intro to Math Cryptography | 3 |
| MATH 490 Honors Seminar | 3 |
| MATH 495 Topics for Undergraduates | 1-3 |
| MATH 497/8 Undergraduate Research I/II | 1-3 |
| STAT 441 Statistical Computing | 3 |
| STAT 442 Fund. of Modern Statistics II | 3 |
| STAT 481 Intro. to Statistical Data Mining | 3 |
| STAT 487 Statistical Genomics | 3 |
| STAT 495 Topics in Statistical Science | 1-3 |
| STAT 497 Undergrad Res. in Stat Science | 1-3 |

**II. Collateral Requirements** **18 sh**

| | |
|---|---|
| CMPT 183 Found of Computer Science I | 3 |
| CMPT 184 Found of Computer Science II | 3 |
| ACCT 201 Fund. of Financial Accounting | 3 |
| ECON 101 Principles of Economics: Macro | 3 |
| ECON 102 Principles of Economics: Micro | 3 |
| FINC 321 Fundamentals of Finance | 3 |

**III. GenEd Requirement** **36 sh**

A. New Student Experience *MATH 102* 1
B. Interdisciplinary courses 6
Scientific Issues
National or Global Issues
C. Communications 9
College Writing I & II
Fundamentals of Speech
D. Fine and Performing Arts 3
F. Humanities 6
World Literature/General Humanities
Philosophy/Religion
G. Computer Science *CMPT 183 (0)*
H. Math *MATH 122, 221 (0)*
I. Natural/Physical Science 4
J. Physical Education 1
K. Social Science
American/European History 3
Non-Western Culture 3
Social Science 0
*ECON 101* (included in Collateral Req.)
L. GenEd Elective *Second collateral course(0)*

**IV. World Languages and Cultures Requirement 3-9 sh**

A. World Languages 3-6
B. World Cultures 0-3

**V. Free Electives** **13-19 sh**

**Minimum total required for graduation** **120 sh**

**Fall 2010**

**Suggested Sequence for Four-Year Plan**
**BS Mathematics with Concentration: Mathematics of Finance**

The following sequence assumes exemption from all basic skills requirements as a result of meeting or exceeding the required scores on the MSU Basic Skills Placement Test.

**First Year**

| **First Semester (15 credits)** | **2nd semester (16 credits)** |
|---|---|
| ENWR 105 College Writing I: Intellectual Prose (3) | ENWR 106 College Writing II: Writing and Literary Studies (3) |
| MATH 122 Calculus I (4) * | MATH 221 Calculus II (4) |
| CMPT 183 Foundations of Computer Science I (3)** | CMPT 184 Foundations of Computer Science II (3) |
| ECON 101 Principles of Economics: Macro (3) | ECON 102 Principles of Economics: Micro (3) |
| MATH 102 New Student Experience for Mathematical Sciences (1) | General Education Course (3) |
| Physical Education Requirement (1) | |

**Second Year**

| **Third Semester (16 credits)** | **Fourth Semester (16 credits)** |
|---|---|
| Language requirement (3) | Language requirement (3) |
| MATH 222 Calculus III (4) | MATH 335 Linear Algebra(4) |
| STAT 330 Fundamentals of Modern Statistics I (3) | FINC 321 Fundamentals of Finance (3) |
| ACCT 201 Fundamentals of Accounting I (3) | MATH 340 Probability (3) |
| GNED 201 Contemporary Issues I: Scientific Issues (3) | GNED 202 or 303 National or Global Issues(3) |

**Third Year**

| **Fifth Semester ( 16 credits)** | **Sixth Semester (16 credits)** |
|---|---|
| MATH 466 Mathematics of Finance I (3) | MATH 467 Mathematics of Finance II (3) |
| Speech Requirement (3) | MATH 420 Differential Equations (4) |
| General Ed. Natural/Physical Science Course (4) | GNED 303 Contemporary Issues III: Global Issues (3) |
| General Education courses (6) | General Education courses (6) |

**Fourth Year**

| **Seventh Semester ( 15 credits)** | **Eight Semester (10-13) credits)** |
|---|---|
| STAT 443 Intro. To Mathematical Statistics (3) | Math Elective Course (3) |
| Math Elective Courses (6) | Free Elective Courses (7-10) |
| Free Elective Courses (6) | |

* Students who do not have a strong (4 year) background in high school mathematics, including exponential, logarithmic, and trigonometric functions are advised to take MATH 112 Precalculus Mathematics or MATH 111 Applied Precalculus before Calculus I.

** Prerequisite MATH 112 Precalculus Mathematics, or MATH 111 Applied Precalculus, or equivalent

ADDITIONAL CURRICULAR SUGGESTIONS

--- Students who have taken high school courses in Calculus or Computer Science may receive advanced standing with credit based upon either the Advanced Placement Exams or departmental exams. Consult the Undergraduate Advisor for further details.
--- Students are urged to take as many additional courses as possible in the areas of computer science, statistics, business administration, economics and natural sciences. This will insure maximum flexibility in employment opportunities and professional growth.
--- Students may elect to do independent study in advanced areas of mathematics under MATH 495 "Topics in Mathematics for Undergraduates" and statistics under STAT 495 "Topics in Statistics for Undergraduates."
--- Students interested in the honors program in mathematics should contact the department chairperson.

NOTES

This worksheet, the Montclair State University undergraduate catalog, and the semester schedule of courses booklets contain the important advising and academic information necessary for an accurate understanding of the degree requirements. Students with questions are urged to consult undergraduate advisor.

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**FAILURE TO BE AWARE OF AND FOLLOW UNIVERSITY ACADEMIC AND ADMINISTRATIVE POLICIES AS OUTLINED HERE AND IN THE UNIVERSITY UNDERGRADUATE CATALOG AND SEMESTER SCHEDULE OF COURSES BOOKLETS MAY RESULT IN LOSS OF CREDIT AND/OR DELAYED GRADUATION.**

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RESTRICTIONS - The following courses MAY NOT BE TAKEN FOR GRADUATION CREDIT BY MATHEMATICS MAJORS: MATH 100, MATH 103, MATH 106, MATH 109, MATH 114, MATH 116, MATH 270, INFO 270, INFO 273.

PASS/FAIL LIMITATIONS - Those courses that meet the major, collateral, teacher certification, or general education requirements may not be taken pass/fail.

WORLD CULTURES REQUIREMENT - All students are required to take one course that satisfies the university world cultures requirement. Refer to the current university undergraduate catalog for a complete listing of acceptable courses.

PREREQUISITES - It is the student's responsibility to ensure that courses are taken in the academically correct order. A current list of prerequisites for these and other courses may be found in the current university undergraduate catalog or through the office of the offering department.

BASIC SKILLS - Students placed into basic skills courses as a result of the MSU Placement Test are required to enroll in those courses the first semester and continue in sequence each semester until required work is completed. All basic skills course work is counted in the cumulative grade-point-average, but only ENGL 100 "Basic Composition" may be used toward the 120 credits degree requirement.

FINAL EVALUATION - Students who are eligible for graduation must file an "Application for Final Evaluation" in the Office of the Registrar according to the following deadlines: October 1 for May graduation, March 1 for August graduation, June 1 for January graduation.

RESIDENCE REQUIREMENTS - A minimum of 32 credits must be taken at MSU. This must include at least 18 credits of mathematical sciences courses in the major, of which at least 12 credits must be at the junior (300-399) or senior level (400-499). The last 24 credits must be taken at MSU and cannot be acquired through transfer.

FREE ELECTIVES - Free electives are defined as credits not applicable to general education or major requirements.

*IN ALL CASES, THE MINIMUM NUMBER OF CREDITS REQUIRED TO GRADUATE IS 120 * 2/3/10

BS MATHEMATICS with concentration in MATHEMATICS OF FINANCE

1. A brief description of the proposed alteration(s).
   Change the range for Mathematics Electives from

   C. Mathematics Electives Select 9 or more sh, not already counted in above from MATH 280, 398 – 469, 480 to 499 and STAT 330 - 499

   to

   C. Mathematics Electives Select 9 or more sh, not already counted in above from MATH 320 to 349, 351 to 469, 480 to 499 and STAT 330 - 499

2. A narrative describing the rationale for the alteration(s)

   Elective Mathematics courses should be either 300 or 400 level courses. As we develop new courses some will be at the 300 level and some will be at the 400 level. Students should be able to take elective courses at either level. At present the list of allowable courses only includes courses numbered at least 398, but allowing courses numbered at least 320 will give up more flexibility. We would like the option of not having to change our curriculum guide each time we propose a new course.