

**Montclair State University**  
**Department of Mathematical Sciences**  
**Combined BS Mathematics – MS Statistics Curriculum Guide (GenEd 2002)**

**A. Undergraduate Requirements**

|   |                |  |                          |
|---|----------------|--|--------------------------|
| <b>I. Major Requirements</b>  | <b>43 s.h.</b> | <b>II. Collateral Requirements</b>   | <b>11 s.h.</b>           |
| <b>A. Mathematics Core (19 s.h.)</b>  |                | PHYS 191-192 University Physics I and II                                     | 8                        |
| MATH 122 Calculus I   | 4              | CMPT 183 Found of Comp Sci I   | 3                        |
| MATH 221 Calculus II  | 4              |  |                          |
| MATH 222 Calculus III   | 4              |  |                          |
| MATH 335 Linear Algebra   | 4              |  |                          |
| MATH 340 Probability  | 3              |  |                          |
| <b>B. Mathematics Specialization (9 s.h.)</b>   |                |  |                          |
| MATH 280 Transition to Adv Math   | 3              |  |                          |
| MATH 425 Advanced Calculus I  | 3              |  |                          |
| MATH 431 Foundations of Modern Algebra  | 3              |  |                          |
| <b>C. Mathematics Electives (15 s.h.)</b>   |                |  |                          |
| <b>Select 15 or more s.h., not already counted above from MATH 280, 398-469, 480-499, and STAT 330-499.</b> |                |  |                          |
| STAT 330 Fund. of Modern Statistics I*  | 3              |  |                          |
| MATH 398 Vector Calculus  | 3              |  |                          |
| MATH 420 Differential Equations   | 4              |  |                          |
| MATH 421 Partial Differential Equations   | 3              |  |                          |
| MATH 423 Complex Variables  | 3              |  |                          |
| MATH 426 Advanced Calculus II   | 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 466 Mathematics of Finance I   | 3              |  |                          |
| MATH 467 Mathematics of Finance II  | 3              |  |                          |
| MATH 468 Fluid Mechanics  | 3              |  |                          |
| MATH 469 Mathematical Modeling  | 3              |  |                          |
| MATH 485 App. 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 443 Intro. to Mathematical Statistics  | 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            |  |                          |
|   |                | <b>III. GenEd Requirement</b>  | <b>41-44 s.h.</b>        |
|   |                | A. New Student Experience  | 1                        |
|   |                | B. Interdisciplinary courses   | 6                        |
|   |                | Scientific Issues  |                          |
|   |                | National Issues or Global Issues   |                          |
|   |                | C. Communications  | 9                        |
|   |                | C1. College Writing I & II   |                          |
|   |                | C2. Fundamentals of Speech   |                          |
|   |                | D. Fine and Performing Arts  | 3                        |
|   |                | E. World Languages   | 3-6                      |
|   |                | F. Humanities  | 6                        |
|   |                | F1. World Literature/General Humanities                                      |                          |
|   |                | F2. Philosophy/Religion  |                          |
|   |                | G. Computer Science  | <i>CMPT 183 (0)</i>      |
|   |                | H. Math  | <i>MATH 122, 221 (0)</i> |
|   |                | I. Natural/Physical Science  | <i>PHYS 191 (0)</i>      |
|   |                | J. Physical Education  | 1                        |
|   |                | K. Social Science  | 9                        |
|   |                | American/European History  |                          |
|   |                | Non-Western Culture  |                          |
|   |                | Social Science   |                          |
|   |                | L. Gen Ed Elective   | 3                        |
|   |                | <b>IV. Free electives</b>  | <b>13-16 s.h.</b>        |
|   |                | <b>(Total required undergraduate credits for the combined BS-MS program)</b> | <b>111 s.h.)</b>         |

\* Required for combined BS-MS program

## 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 113, MATH 114, MATH 116, MATH 270, INFO 270, MGMT 273.

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

**MULTICULTURAL AWARENESS REQUIREMENT** - All students are required to take one course that satisfies the university multicultural awareness 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 science 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. The exact number of free electives required by an individual student is dependent upon the collateral sequence chosen in the major (see. p.1 and 2).

## **B. Graduate Requirements**

### **I. Statistics Core**

**15 s.h.**

- STAT 542 Statistical Theory I
- STAT 543 Statistical Theory II
- STAT 544 Statistical Computing
- STAT 547 Design of Experiments
- STAT 548 Applied Regression Analysis

### **II. Statistics Electives**

**12 s.h.**

- A. Select one of the following courses:  
STAT 640, 641, 646, or 648
- B. Select 3 courses from:  
STAT 545, 546, 549-599, or 640-699  
(STAT 698 required if a thesis is chosen as the capstone requirement.)

### **III. Comp. Sci., Math. and/or Stat. Electives**

**6 s.h.**

- STAT 552 Intermediate Statistical Methods \*
- STAT 597 Research Methods in Stat. Science \*
- \* Required for combined BS-MS program.

### **IV. Capstone Requirement (Select option A or B)**

**0 s.h.**

- A. Thesis (Required for students pursuing the Ph.D. in Biostatistics at UMDNJ; highly recommended for others)
- B. Comprehensive Examination (Three-hour written examination in statistics)

**Total required graduate credits**

**33 s.h.**

**Total required credits for the combined BS Mathematics – MS Statistics program**

**144 s.h.**

A student who withdraws from the program can graduate with a bachelor's degree by completing requirements for the BS Mathematics.