



Mathematics Major (MATH) 1
Program Effective Fall 2004
Bachelor of Science Degree Requirements

I. MAJOR REQUIREMENTS (37 Credits)

A. Required Mathematics Courses (25 Credits)

- MATH 122 Calculus I (4)
MATH 221 Calculus II (4)
MATH 222 Calculus III (4)
MATH 335 Elements of Linear Algebra (4)
MATH 340 Probability (3)
MATH 425 Advanced Calculus I (3)
MATH 431 Foundations of Modern Algebra (3)

B. Elective Mathematics Courses - Choose at least 12 credits from MATH 398-469, 480-499, STAT 440-449, 490- 499.

- MATH 398 Vector Calculus (3)
MATH 420 Differential Equations (4)
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 Mathematics (3)
MATH 463 Numerical Analysis (3)
MATH 464 Operations Research I (3)
MATH 465 Operations Research II (3)
MATH 466 Financial Mathematics I (3)
MATH 467 Financial Mathematics II (3)
MATH 469 Mathematical Modeling (3)
MATH 485 Applied Combinatorics and Graph Theory (3)
MATH 490 Honors Seminar in Mathematics (3)
MATH 495 Topics in Math for Undergraduates (1-3)
MATH 497/8 Undergraduate Research in Mathematics (1-3)
STAT 440 Fundamentals of Modern Statistics I (3)
STAT 441 Statistical Computing (3)
STAT 443 Intro. to Mathematical Statistics (3)
STAT 495 Topics in Statistical Science (1-3)
STAT 497 Undergraduate Research in Statistical Science (1-3)

II. REQUIRED COLLATERAL COURSES. Complete the following 11 credits.

- PHYS 191 University Physics I (4)
PHYS 192 University Physics II (4)
CMPT 183 Foundations of Computer Science I (3)

III. GENERAL EDUCATION REQUIREMENTS

44-47 SEMESTER HOURS

IV. FREE ELECTIVE CREDITS

25-28 SEMESTER HOURS

MINIMUM TOTAL FOR GRADUATION

120 SEMESTER HOURS

1 This curriculum guide does not apply to students in the Applied Mathematics concentration (MAAM) or to students who are seeking certification in Mathematics Education (MTED). Curriculum guides for those programs may be obtained from the department office.

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III. GENERAL EDUCATION REQUIREMENTS (44-47 Credits)

Core:

- A. New Student Seminar (1)(MATH 102)
- B. Interdisciplinary Core
 - B1. Contemporary Issues I: Scientific Issues (3)(GNED 201)
 - B2. Contemporary Issues II: National Issues (3)(GNED 202)
 - B3. Contemporary Issues III: Global Issues (3)(GNED 303)

Distribution:

- C. Communication
 - C1. Writing/Literature (6)
 - C2. Communication (3)
- D. Fine and Performing Arts(3)
- E. World Languages(3-6).....
- F. Humanities
 - F1. World Literature or General Humanities(3).....
 - F2. Philosophy/Religion(3).....
- G. Computer Science (0-credit included in major)(CMPT 183)
- H. Mathematics (0-credit included in major)(MATH 122,221)
- I. Natural/Physical Science (0-credit included in major)(PHYS 191)
- J. Physical Education (1).....
- K. Social Science
 - K1. American or European History(3).....
 - K2. Non-Western Cultures(3)
 - K3. Social Science(3).....
- L. General Education Elective(3).....

IV. FREE ELECTIVES (25-28)

- A.....
- B.....
- C.....
- D.....
- E.....
- F.....
- G.....
- H.....
- I.....
- J.....
- K.....

SUGGESTED SEQUENCE FOR FRESHMEN AND SOPHOMORES
MATHEMATICS MAJOR PROGRAM (MATH)

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.

FALL (Freshman) or First Semester

ENWR 105 College Writing I: Intellectual Prose (3)
MATH 122 Calculus I (4) *
CMPT 183 Fnds. of Computer Science I (3)**
PHYS 191 University Physics I (4)
General Education course (3)
MATH 102 New Student Experience for
Mathematical Sciences (1)

SPRING (Freshman) or Second semester

ENWR 106 College Writing II: Writing and
Literary Studies (3)
MATH 221 Calculus II (4)
Speech requirement (3)
PHYS 192 University Physics II (4)
General Education course (3)

FALL (Sophomore) or Third Semester

Language requirement (3)
MATH 222 Calculus III (4)
MATH 335 Elements of Linear Algebra (4)
General Education course (3)
GNED 201 Contemporary Issues I:
Scientific Issues (3)

SPRING (Sophomore) or Fourth Semester

Language requirement (3)
MATH 340 Probability (3)
MATH Elective (3)
General Education course (3)
GNED 202 Contemporary Issues II:
National Issues (3)
Physical Education Req. (1)

* 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 Department Coordinator of Undergraduate Advising for further details.

--- Students are urged to take as many additional courses as possible in the areas of statistics, computer science, 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 the mathematical sciences under MATH 495 "Topics in Mathematics for Undergraduates" and STAT 495 "Topics in Statistics for Undergraduates."

--- Students interested in the honors program in mathematics should contact the department chairperson for further information.

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 THE DEPARTMENT COORDINATOR OF UNDERGRADUATE ADVISING.

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.

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 Basic Skills 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 worksheet p. 2).

*IN ALL CASES, THE MINIMUM NUMBER OF CREDITS REQUIRED TO GRADUATE IS 120