

**Montclair State University
Department of Mathematical Sciences
BS Mathematics with Concentration: Discrete Applied Mathematics - Requirements**

I. Major Requirements	43 sh	II. Collateral Requirements	14-15 sh
A. Mathematics Core	(19 sh)	A. Computer Science	(6 sh)
MATH 122 Calculus I	4	CMPT 183-184 Found of Comp Sci I and II	6
MATH 221 Calculus II	4		
MATH 222 Calculus III	4	B. One of the following six sequences: (8-9 sh)	
MATH 335 Linear Algebra	4	PHYS 191-192 University Physics I and II	8
MATH 340 Probability	3	CHEM 120-121 General Chemistry I and II	8
		BIOL 112-113 Principles of Biology I and II	8
B. Mathematics Concentration	(15 sh)	GEOS 112 and 114 Phys. and Hist. Geology	8
MATH 280 Transition to Adv Math	3	ECON 101-102 Prin. of Econ: Macro & Micro, and MGMT 231 Management Processes	9
MATH 464 Operations Research I	3	ACCT 201 Fund. of Financial Accounting, ACCT 20 Fund. of Managerial Accounting, and MGMT 231 Management Processes	9
MATH 465 Operations Research II	3		
MATH 469 Mathematical Modeling	3	III. GenEd Requirement	38-45 sh
MATH 485 App Combinatorics/Graph Theory	3	A. New Student Experience <i>MATH 102</i>	1
		B. Interdisciplinary courses	6
C. Mathematics Electives (9 sh)		Scientific Issues	
Select 9 or more sh, not already counted in above from MATH 398-469, 480-499, and STAT 330-499.		National or Global Issues	
MATH 398 Vector Calculus	3	C. Communications	9
MATH 420 Differential Equations	4	College Writing I & II	
MATH 421 Partial Differential Equations	3	Fundamentals of Speech	
MATH 423 Complex Variables	3	D. Fine and Performing Arts	3
MATH 425 Advanced Calculus I	3	E. World Languages	3-6
MATH 426 Advanced Calculus II	3	F. Humanities	6
MATH 431 Foundations of Modern Algebra	3	World Literature/General Humanities	
MATH 433 Theory of Numbers	3	Philosophy/Religion	
MATH 436 Elements of Logic	3	G. Computer Science	<i>CMPT 183 (0)</i>
MATH 450 Foundations of Geometry	3	H. Math	<i>MATH 122, 221 (0)</i>
MATH 451 Topology	3	I. Natural/Physical Science	0-4
MATH 460 Intro to Applied Math	3	<i>PHYS 191</i>	
MATH 463 Numerical Analysis	3	J. Physical Education	1
MATH 466 Mathematics of Finance I	3	K. Social Science	
MATH 467 Mathematics of Finance II	3	American/European History	3
MATH 468 Fluid Mechanics	3	Non-Western Culture	3
MATH 485 Appl. Comb. and Graph Theory	3	Social Science	0-3
MATH 487 Intro to Math Cryptography	3	<i>ECON 101 (included in Collateral Req.)</i>	
MATH 490 Honors Seminar	3	L. GenEd Elective <i>Second Collateral course (0)</i>	
MATH 495 Topics for Undergraduates	1-3		
MATH 497/8 Undergraduate Research I/II	1-3	IV. Free Electives	17-25 sh
STAT 330 Fund. of Modern Statistics I	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			
STAT 495 Topics in Statistical Science	1-3	Minimum total required for graduation	120 s.h.
STAT 497 Undergrad Res. in Stat Science	1-3		

Suggested Sequence for Four-Year Plan
BS Mathematics with Concentration: Discrete Applied Mathematics

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 or 16 credits)

ENWR 105 College Writing I: Intellectual Prose (3)
MATH 122 Calculus I (4) *
CMPT 183 Foundations of Computer Science I (3)**
Collateral Course (3 or 4)
MATH 102 New Student Experience for
Mathematical Sciences (1)
Physical Education Requirement (1)

Second semester (16 or 17 credits)

ENWR 106 College Writing II: Writing and
Literary Studies (3)
MATH 221 Calculus II (4)
CMPT 184 Foundations of Computer Science II (3)
Collateral Course (3 or 4)
General Education Course (3)

Second Year

Third Semester (16 credits)

Language requirement (3)
MATH 222 Calculus III (4)
MATH 280 Transition to Adv Math (3)
Collateral Course or Free Elective Course (3)
GNED 201 Scientific Issues (3)

Fourth Semester (16 credits)

Language requirement (3)
MATH 335 Linear Algebra (4)
MATH 340 Probability (3)
Math Elective (3)
GNED 202 or 303 National or Global Issues (3)

Third Year

Fifth Semester (15 credits)

MATH 464 Operations Research I (3)
MATH 469 Mathematical Modeling (3)
Free Elective (3)
General Education courses (6)

Sixth Semester (15 credits)

MATH 465 Operations Research II (3)
MATH 485 Applied Combinatorics and Graph Theory (3)
General Education courses (9)

Fourth Year

Seventh Semester (15 credits)

Math Elective Courses (6)
General Education Course (3)
Free Elective Courses (6)

Eight Semester (10-12 credits)

General Education courses (3)
Free Elective Courses (7-9)

* 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.

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 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).

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