



Montclair State University
Department of Mathematical Sciences

Combined BS Mathematics with Concentration: Mathematics of Finance and MS Statistics
Undergraduate Requirements- (MFBM)

I. Major Requirements	44 sh	II. Collateral Requirements	18 sh
A. Mathematics Core (19 sh)		CSIT 111 Fundamentals of Programming I	3
MATH 122 Calculus I	4	CSIT 112 Fundamentals of Programming II	3
MATH 221 Calculus II	4	ACCT 204 Fundamentals of Accounting	3
MATH 222 Calculus III	4	ECON 101 Principles of Economics: Macro	3
MATH 335 Linear Algebra	4	ECON 102 Principles of Economics: Micro	3
MATH 340 Probability	3	FINC 321 Fundamentals of Finance	3
B. Mathematics Concentration (16 sh)		III. GenEd Requirement	30 sh
MATH 420 Ordinary Differential Equations	4	A. New Student Experience <i>MATH 102</i>	1
MATH 466 Mathematics of Finance I	3	C. Communications	9
MATH 467 Mathematic of Finance II	3	College Writing <i>ENWR 105, 106</i>	
STAT 330 Fund of Modern Statistics I	3	Speech <i>CMST 101</i>	
STAT 443 Intro. to Mathematical Statistics	3	D. Fine and Performing Arts	3
C. Mathematics Electives (9 sh)		F. Humanities	6
Select 9 or more sh, not already counted in above from MATH 320-349, 351-469, 480-499, and STAT 330-499.		World Literature/General Humanities	
MATH 320 Transition to Adv. Math	3	Philosophy/Religion	
MATH 323 Complex Variables	3	G. Computer Science <i>CMPT 183</i>	(0)
MATH 368 Fluid Mechanics	3	H. Math <i>MATH 122, 221</i>	(0)
MATH 398 Vector Calculus	3	I. Natural/Physical Science	4
MATH 421 Partial Differential Equations	3	J. Physical Education	1
MATH 425 Advanced Calculus I	3	K. Social Science	
MATH 426 Advanced Calculus II	3	American/European History	3
MATH 431 Foundations of Modern Algebra	3	Non-Western Culture	3
MATH 433 Theory of Numbers	3	Social Science	0
MATH 436 Elements of Logic	3	<i>ECON 101</i> (included in Collateral Req.)	
MATH 450 Foundations of Geometry	3	L. GenEd Elective <i>2nd collateral course</i>	(0)
MATH 451 Topology	3	IV. World Languages and Cultures Requirement	3-9 sh
MATH 460 Intro to Applied Math	3	A. World Languages	3-6
MATH 463 Numerical Analysis	3	B. World Cultures	0-3
MATH 464 Operations Research I	3	V. Graduate Requirements for BS/MS degree	12 sh
MATH 465 Operations Research II	3	Complete 4 of the following courses:	
MATH 485 Appl. Comb. and Graph Theory	3	If equivalent of STAT 541 has been taken	
MATH 487 Intro to Math Cryptography	3	previously, see the department for substitution	
MATH 490 Honors Seminar	3	STAT 541 Applied Statistics	
MATH 495 Topics for Undergraduates	1-3	STAT 542 Statistical Theory I	
MATH 497/8 Research I/II	1-3	STAT 544 Statistical Computing	
STAT 441 Statistical Computing	3	STAT 548 Applied Regression Analysis	
STAT 442 Fund. of Modern Statistics II	3	STAT 552 Intermediate Statistical Methods	
STAT 481 Intro. to Statistical Data Mining	3	VI. Free Electives	7-13 sh
STAT 487 Statistical Genomics	3	Undergraduate MAFI degree	
STAT 495 Topics in Statistical Science	1-3	Minimum total required for graduation	120 sh
STAT 497 Undergrad Res. in Stat Science	1-3		

**Montclair State University
Department of Mathematical Sciences**

**5-Year Combined BS Mathematics with Concentration: Mathematics of Finance and MS Statistics
Graduate Requirements – (MSBM)**

I. Statistics Core	15 - 18 sh	MATH 540 Probability	3
If equivalent of STAT 541 has been taken previously, see the department for substitution		MATH 560 Numerical Analysis	3
STAT 541 Applied Statistics	3	MATH 568 Applied Mathematics: Continuous	3
STAT 542 Statistical Theory I	3	MATH 569 Applied Mathematics: Discrete	3
STAT 543 Statistical Theory II	3	MATH 580 Combinatorial Mathematics	3
STAT 544 Statistical Computing	3	MATH 584 Operations Research	3
STAT 547 Design of Experiments	3	STAT 542 Statistical Theory I	3
STAT 548 Applied Regression Analysis	3	STAT 543 Statistical Theory II	3
		STAT 544 Statistical Computing	3
		STAT 545 Practicum in Statistics I	3
		STAT 546 Non-Parametric Statistics	3
II. Statistics Electives	12 sh	STAT 547 Design and Analysis of Exp	3
A. Select one (1) of the following courses:	(3 sh)	STAT 548 Applied Regression Analysis	3
STAT 640 Biostatistics I	3	STAT 549 Sampling Techniques	3
STAT 646 Multivariate Analysis	3	STAT 552 Intermediate Statistical Methods	3
STAT 648 Adv Statistical Methods	3	STAT 561 Statistical Data Mining I	3
		STAT 562 Statistical Data Mining II	3
B. Select three (3) courses from	(9 sh)	STAT 570 Statistical Consulting	3
STAT 545, 546, 549-599, or 640-699.		STAT 595 Topics in Statistics	3
STAT 545 Practicum in Statistics I	3	STAT 597 Research Methods in Stat Science	3
STAT 546 Non-Parametric Statistics	3	STAT 640 Biostatistics I	3
STAT 549 Sampling Techniques	3	STAT 641 Biostatistics II	3
STAT 561 Statistical Data Mining I	3	STAT 642 Introduction to Stochastic Processes	3
STAT 562 Statistical Data Mining II	3	STAT 645 Advanced Topics in Statistics	3
STAT 570 Statistical Consulting	3	STAT 646 Multivariate Analysis	3
STAT 595 Topics in Statistics	3	STAT 647 Practicum in Statistics II	3
STAT 640 Biostatistics I	3	STAT 648 Advanced Statistical Methods	3
STAT 641 Biostatistics II	3	STAT 649 Independent Study in Statistics	3
STAT 642 Intro to Stochastic Processes	3	STAT 698 Master's Thesis	3
STAT 645 Advanced Topics in Statistics	3		
STAT 646 Multivariate Analysis	3	IV. Capstone Requirement	0 sh
STAT 647 Practicum in Statistics II	3	Choose option A or B:	
STAT 648 Advanced Statistical Methods	3	A. Master's Thesis (requires STAT 698)	
STAT 649 Independent Study in Statistics	3	B. Comprehensive Examination	
STAT 698 Master's Thesis	3	(Three-hour written examination in statistics)	
III. Comp Science, Math, and/or Stat Electives	3 - 6 sh		
CMPT 578 Introduction to Artificial Intelligence	3	Graduate degree	
CMPT 583 Computer Algorithms	3	Minimum total required for graduation	33 sh
CMPT 586 File Structures and Databases	3		
CMPT 589 Comp Sim of Discrete Systems	3		
CMPT 590 Comp Sim of Continuous Systems	3		
CMPT 592 Data Base Design & Implementation	3		
CMPT 593 Structured System Dsgn & Analysis	3		
CMPT 594 Software Engineering & Reliability	3		
CMPT 683 Advanced Computer Algorithms	3		

**Suggested Sequence for Five-Year Plan
Combined BS Mathematics with Concentration: Mathematics of Finance and MS Statistics**

First Year

Fall	Spring
ENWR 105 College Writing I (3) MATH 122 Calculus I (4) CSIT 111 Fundamentals of Programming I (3) ECON 101 Principles of Economics: Macro (3) MATH 102 New Student Experience - Math Sciences (1) Physical Education Requirement (1) Total: 15	ENWR 106 College Writing II (3) MATH 221 Calculus II (4) CSIT 112 Fundamentals of Programming II (3) ECON 102 Principles of Economics: Micro (3) General Education Course (3) Total: 16

Second Year

Fall	Spring
MATH 222 Calculus III (4) STAT 330 Fundamentals of Modern Statistics I (3) ACCT 204 Fundamentals of Accounting (3) Language requirement (3) General Education course (3) Total: 16	MATH 335 Linear Algebra(4) MATH 340 Probability (3) FINC 321 Fundamentals of Finance (3) Language requirement (3) General Education course (3) Total: 16

Third Year

Fall	Spring
MATH 466 Mathematics of Finance I (3) STAT 443 Intro. to Mathematical Statistics (3) BS Math Elective (3) Speech Requirement (3) General Education Natural/Physical Science (4) Total: 16	MATH 467 Mathematics of Finance II (3) MATH 420 Differential Equations (4) BS Math Elective (3) BS Math Elective (3) Free Elective (3) Total: 16

Fourth Year

Fall	Spring
STAT 541 Applied Statistics STAT 542 Statistical Theory I (3) Free Elective (3) General Education Course (3) Total: 15	STAT 548 Applied Regression Analysis (3) STAT 543 Statistical Theory II (3) Free Elective (4) General Education Course (3) Total: 16

Fifth Year

Fall	Spring
STAT 552 Intermediate Statistical Methods (3) STAT 547 Design of Experiments (3) MS Statistics Elective (3) Total: 9	MS Statistics Elective MS Statistics Elective (3) MS Statistics Elective / Master's Thesis (3) Total: 9

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 CATALOGS 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 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.