



**Fall 2015 BS in Mathematics-Elementary Teaching: (Gen Ed 2002)**  
**Montclair State University -Department of Mathematical Sciences**  
**BS Mathematics – concentration in Elementary Education Program**  
**Requirements (GenEd 2002) (MAEL)**

<p><b>I. Major Requirements</b> <span style="float: right;"><b>43 sh</b></span></p> <p><b>A. Mathematics Core</b> <span style="float: right;"><b>(19 sh)</b></span></p> <p>MATH 122 Calculus I <span style="float: right;">4</span></p> <p>MATH 221 Calculus II <span style="float: right;">4</span></p> <p>MATH 222 Calculus III <span style="float: right;">4</span></p> <p>MATH 335 Linear Algebra <span style="float: right;">4</span></p> <p>MATH 340 Probability <span style="float: right;">3</span></p> <p><b>B. Mathematics Specialization</b> <span style="float: right;"><b>(15 sh)</b></span></p> <p>MATH 320 Transitions to Advanced Math <span style="float: right;">3</span></p> <p>MATH 350 College Geometry <span style="float: right;">3</span></p> <p>MATH 433 Theory of Numbers <span style="float: right;">3</span></p> <p>MTHM 201 Math in Elementary School I <span style="float: right;">3</span></p> <p>MTHM 302 Math in Elementary School II <span style="float: right;">3</span></p> <p><b>C. Mathematics Electives</b> <span style="float: right;"><b>(9 sh)</b></span></p> <p><b>Select 9 or more sh, not already counted above, from MATH 320-469, 471-499 &amp; STAT 330-499</b></p> <p>MATH 323 Complex Variables <span style="float: right;">3</span></p> <p>MATH 360 Math Modeling Biology <span style="float: right;">3</span></p> <p>MATH 368 Fluid Mechanics <span style="float: right;">3</span></p> <p>MATH 398 Vector Calculus <span style="float: right;">3</span></p> <p>MATH 420 Differential Equations <span style="float: right;">4</span></p> <p>MATH 421 Partial Differential Equations <span style="float: right;">3</span></p> <p>MATH 425 Advanced Calculus I <span style="float: right;">3</span></p> <p>MATH 426 Advanced Calculus II <span style="float: right;">3</span></p> <p>MATH 431 Foundations of Modern Algebra <span style="float: right;">3</span></p> <p>NATH 436 Elements of Logic <span style="float: right;">3</span></p> <p>MATH 450 Foundations of Geometry <span style="float: right;">3</span></p> <p>MATH 451 Topology <span style="float: right;">3</span></p> <p>MATH 460 Intro to Applied Math <span style="float: right;">3</span></p> <p>MATH 463 Numerical Analysis <span style="float: right;">3</span></p> <p>MATH 464 Operations Research I <span style="float: right;">3</span></p> <p>MATH 465 Operations Research II <span style="float: right;">3</span></p> <p>MATH 466 Mathematics of Finance I <span style="float: right;">3</span></p> <p>MATH 467 Mathematics of Finance II <span style="float: right;">3</span></p> <p>MATH 469 Mathematical Modeling <span style="float: right;">3</span></p> <p>MATH 471 Selected Topics in Modern Math <span style="float: right;">3</span></p> <p>MATH 475 History of Mathematics <span style="float: right;">3</span></p> <p>MATH 485 Appl. Comb. and Graph Theory <span style="float: right;">3</span></p> <p>MATH 487 Intro to Math Cryptography <span style="float: right;">3</span></p> <p>MATH 490 Honors Seminar <span style="float: right;">3</span></p> <p>MATH 491 Research in Math Education <span style="float: right;">3</span></p> <p>MATH 495 Topics for Undergraduates <span style="float: right;">1-3</span></p> <p>MATH 497/8 Mathematics Research I/II <span style="float: right;">1-3</span></p> <p>STAT 330 Fund. of Modern Statistics I <span style="float: right;">3</span></p> <p>STAT 441 Statistical Computing <span style="float: right;">3</span></p> <p>STAT 442 Fund. of Modern Statistics II <span style="float: right;">3</span></p> <p>STAT 443 Intro. to Mathematical Statistics <span style="float: right;">3</span></p> <p>STAT 481 Intro. to Statistical Data Mining <span style="float: right;">3</span></p> <p>STAT 487 Statistical Genomics <span style="float: right;">3</span></p> <p>STAT 495 Topics in Statistical Science <span style="float: right;">1-3</span></p> <p>STAT 497 Undergrad Res. in Stat Science <span style="float: right;">1-3</span></p>	<p><b>II. Collateral Requirements</b> <span style="float: right;"><b>10-11 sh</b></span></p> <p>PHYS 191 University Physics I <span style="float: right;">4</span></p> <p>CSIT 111 Foundations of Programming I <span style="float: right;">3</span></p> <p>Natural/Physical Science (Complete 1 course <span style="float: right;">3-4</span> from the following: ANTH 101 from 052; BIOL 100, 109, 110; CHEM 100; EAES 101, 105, 240, 107, 201 from 024, EAES 250; PHMS 250. Honors program students must complete HONP 210.)</p> <p><b>III. GenEd Requirement</b> <span style="float: right;"><b>32 sh</b></span></p> <p>A. New Student Experience <i>MATH 102</i> <span style="float: right;">1</span></p> <p>C. Communications <span style="float: right;">9</span></p> <p>C1. College Writing I &amp; II <i>ENWR 105,106</i></p> <p>C2. Fundamentals of Speech <i>CMST 101</i></p> <p>D. Fine and Performing Arts <span style="float: right;">3</span></p> <p>F. Humanities <span style="float: right;">6</span></p> <p>F1. World Literature/General Humanities</p> <p>F2. Philosophy/Religion <i>EDFD 220</i></p> <p>G. Computer Science <i>CSIT 111 (0)</i></p> <p>H. Math <i>MATH 122, 221 (0)</i></p> <p>I. Natural/Physical Science <i>PHYS 191 (0)</i></p> <p>J. Physical Education <span style="float: right;">1</span></p> <p>K. Social Science <span style="float: right;">9</span></p> <p>American/European History</p> <p>Non-Western Culture</p> <p>Social Science <i>PSYC 101</i></p> <p>L. Gen Ed Elective <i>ECEL 200</i> <span style="float: right;">3</span></p> <p><b>IV. World Languages and Cultures Requirements 3-9 sh</b></p> <p>A. World Languages <span style="float: right;">3-6</span></p> <p>B. World Cultures <span style="float: right;">0-3</span> (May be fulfilled by a Gen Ed Requirement)</p> <p><b>V. Teacher Education Requirements</b> <span style="float: right;"><b>36 sh</b></span> (see next page)</p> <p><b>Minimum total required for graduation</b> <span style="float: right;"><b>124-131 sh</b></span></p>
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<b>Teacher Education Program Requirements</b>	<b>36</b>
<b>A. PRE-PROFESSIONAL SEQUENCE</b>	<b>3</b>
<b>(Freshman Year/First Semester Sophomore Year)</b>	
CMST 101 Fundamentals of Speech ⇄	(3)
PSYC 101 Introduction to Psychology ⇄	(3)
FCST 214 Child Development I	3
ECEL 200 Persp. in Early Childhood & Elem. Ed	(3)
<b>(Second Semester Sophomore Year)</b>	
Apply to the Teacher Education Program.	
EDFD 220 Philosophical Orientation to Education ⇄	(3)
MTHM 201 Math for Elementary I P-5	(3)
<b>B. PROFESSIONAL SEQUENCE</b>	<b>33</b>
<b>(First Semester Junior Year)</b>	
FCST 314 Child Development II	3
MTHM 302 Math for Elementary II P-5 ⇄	(3)
READ 399 Early Literacy Development and Instruction	3
<b>(Second Semester Junior Year)</b>	
ECEL 418 Social & Cult. Context of Families/Commun.	3
ECEL 427 Explorations: Science, Math, Technology	3
ECEL 408 Social Studies & Art in Elementary Classrooms	3
<b>(First Semester Senior Year)</b>	
ECEL 410 Clinical Experience I	2
ECEL 412 Seminar I	1
ECEL 422 Integrating EL Curriculum and Assessment	3
READ 408 Reading: The Content Areas	3
<b>(Second Semester Senior Year)</b>	
ECEL 414 Clinical Experience II	8
ECEL 421 Seminar II	1

\* A Field Experiences Application must be submitted the semester prior to the Clinical I/Seminar I semester. The application currently is due March 1 for fall Clinical I/Seminar I and October 1 for spring Clinical I/Seminar I but this deadline is subject to change. Late applications cannot be accepted. All courses listed in the undergraduate program must be completed satisfactorily before being permitted to enroll in Clinical I/Seminar I.

\*\* A student teaching audit is conducted by the Center of Pedagogy to verify that all student teaching requirements have been met prior to the student teaching semester. All requirements must be met by January 8<sup>th</sup> for spring student teaching or by August 15<sup>th</sup> for fall student teaching. Requirements include successful completion of all program coursework, submission of passing Elementary Praxis score, completion of speech requirement, completion of the Physiology and Hygiene requirement, and acceptable overall/major GPA as outlined in the Teacher Education Program handbook.

#### NOTES

Students are responsible for completing several requirements in addition to coursework in order to be recommended to the state of New Jersey for instructional certification. These other requirements must be completed prior to student teaching (i.e., by the January 8<sup>th</sup> or August 15<sup>th</sup> student teaching audit deadline) and include:

1. Physiology and Hygiene requirement--must take University-approved course or pass University-approved test.
2. Praxis Exam—must pass all state-required Praxis II exams for the certification area.
3. OPI – must receive Advanced Low on Spanish OPI.

#### Students also are responsible for:

- Seeking advisement from their academic advisors for registration and completion of degree requirements.
- Consulting the Teacher Education Program Handbook regarding policies and procedures for the Teacher Education Program.

- Filing the proper Audit forms in the Office of the Registrar: October 1 for May program completion; March 1 for August program completion; June 1 for January program comple

### 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 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 for further information.

### NOTES

This worksheet, the Montclair State University undergraduate catalog, and the semester schedule 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.

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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 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 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



### B.S. Mathematics: Elementary Teaching (MAEL)

#### Recommended Four-Year Plan (Fall 2015)

This recommended four year plan is provided as an **outline** for students to follow in order to complete their degree requirements within four years. This plan is a **recommendation** and students should only use it in consultation with their academic advisor.

Students should be aware that this plan assumes that no developmental courses are required. If developmental courses are needed, students may have additional requirements to fulfill which do not appear on the four year plan.

#### First Year

Fall Semester	HRS	✓	Spring Semester	HRS	✓
ENWR105 College Writing I	3		ENWR106 College Writing II	3	
MATH 122 Calculus I	4		MATH 221 Calculus II	4	
CSIT 111 Foundations of Computer Sci	3		American/European History	3	
CMST 101 Fundamentals of Speech	3		Non-Western/World Culture	3	
PSYC 101 Introduction to Psychology I	3		EDFD220 Philosophical Orientation to Ed	3	
MATH 102 New Student Exp. For MathSc	1				
<b>Total:</b>	<b>17</b>		<b>Total:</b>	<b>16</b>	

#### Second Year

Fall Semester	HRS	✓	Spring Semester	HRS	✓
FCST 214 Child Development I	3		Natural/Physical Science (see dept. req.)	3-4	
MATH 222 Calculus III	4		MATH 335 Linear Algebra	4	
ECEL 200 Persp. On EC/EL Ed. Democr	3		MTHM 201 Math in Elem School I	3	
PHYS 191 University Physics I	4		FCST 314 Child Development II	3	
MATH 320 Transitions to Advanced Math	3		World Lit/Gen Humanities	3	
<b>Total:</b>	<b>17</b>		<b>Total:</b>	<b>16-17</b>	

#### Third Year

Fall Semester	HRS	✓	Spring Semester	HRS	✓
MTHM 302 Math in Elem School II	3		ECEL 427 Explorations: Sci, Math, Tech	3	
MATH 340 Probability	3		World Language II	3	
World Language I	3		MATH 350 College Geometry	3	
READ 399 Early Literacy Dev. & Instr.	3		READ 408 Reading: The Content Areas	3	
ECEL 418 Cultural/Social Contexts F&C	3		MATH 433 Theory of Numbers	3	
Physical Education Requirement	1		Math Elective (see dept list)	3	
<b>Total:</b>	<b>16</b>		<b>Total:</b>	<b>18</b>	

#### Fourth Year

Fall Semester	HRS	✓	Spring Semester	HRS	✓
Math Elective (see dept list)	3		ECEL 414 Clinical Exp. II	8	
Math Elective (see dept list)	3		ECEL 421 Seminar II	1	
ECEL 410 Clinical Exp. I	2				
ECEL 408 Social Studies and the Arts	3				
ECEL 422 Integrating EL Curr/Assess Eq	3				
ECEL 412 Seminar I	1				
Fine & Performing Arts	3				
<b>Total:</b>	<b>18</b>		<b>Total:</b>	<b>9</b>	

**Minimum Required: 128 credits**

