DEPARTMENT: Mathematics

COURSE: MAT 1175

TITLE: Fundamentals of Mathematics

DESCRIPTION: Topics include linear and quadratic functions, intermediate algebra, plane geometry and trigonometry of the right triangle.


CREDITS: 4

PREREQUISITES: CUNY proficiency in mathematics.

Prepared by:
Prof. H. Carley
Prof. L. Ghezzi
Prof. M. Munn
Fall 2010

A. Testing Guidelines:
The following exams should be scheduled:
   i. A one-session exam at the end of the First Quarter
   ii. A one-session exam at the end of the Second Quarter
   iii. A one-session exam at the end of the Third Quarter
   iv. A one-session Final Examination

B. A scientific calculator with trigonometric functions is required.
### Course Intended Learning Outcomes/Assessment Methods

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<th>Learning Outcomes</th>
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<td>1. Simplify exponents and use scientific notation.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>2. Combine and factor polynomials.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>3. Combine and simplify rational and radical expressions.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>4. solve</td>
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<tr>
<td>• Linear and quadratic equations.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>• Systems of linear equations in two variables.</td>
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<tr>
<td>• Equations involving rational and radical expressions.</td>
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<td>5.</td>
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<tr>
<td>• Identify lines and angles.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>• Apply theorems and solve problems associated with parallel and perpendicular lines.</td>
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<td>• Apply the SAS, SSS, ASA and AAS Theorems to congruent triangles.</td>
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<td>• Apply the AA Theorem to similar triangles.</td>
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<tr>
<td>• Solve problems related to a parallelogram.</td>
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<tr>
<td>• Apply the Pythagorean Theorem.</td>
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<td>• Solve special right triangles.</td>
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### General Education Learning Outcomes/Assessment Methods

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<th>Learning Outcomes</th>
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<tr>
<td>1. Understand and employ both quantitative and qualitative analysis to solve problems.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>2. Employ scientific reasoning and logical thinking.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>3. Communicate effectively using written and oral means.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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<tr>
<td>4. Use creativity to solve problems.</td>
<td>Classroom activities and discussion, homework, exams.</td>
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Mathematics Department Policy on Lateness/Absence

A student may be absent during the semester without penalty for 10% of the class instructional sessions. Therefore,

If the class meets: The allowable absence is:

1 time per week 2 absences per semester
2 times per week 3 absences per semester

Students who have been excessively absent and failed the course at the end of the semester will receive either

- the WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing from the course.
- the WN grade if they have never attended the course.

In credit bearing courses, the WU and WN grades count as an F in the computation of the GPA. While WU and WN grades in non-credit developmental courses do not count in the GPA, the WU grade does count toward the limit of 2 attempts for a developmental course.

The official Mathematics Department policy is that two latenesses (this includes arriving late or leaving early) is equivalent to one absence.

Every withdrawal (official or unofficial) can affect a student’s financial aid status, because withdrawal from a course will change the number of credits or equated credits that are counted toward financial aid.

New York City College of Technology Policy on Academic Integrity

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.
**MAT 1175 Fundamentals of Mathematics**  
Note: The problems in the algebra text followed by a (G) require some basic geometry (area, perimeter, circumference, Pythagorean Theorem)

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<th>Session</th>
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| 1       | *Algebra*  
4.1 (Ex. 1-3) Properties of Integer Exponents and Scientific Notation (pp. 314-316) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
p. 321: 11-17 odd, 25-31 odd, 33-55 odd, 61, 63 |
| 2       | *Algebra*  
4.1 (Ex. 4-7) Properties of Integer Exponents and Scientific Notation (pp. 317-320) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
| 3       | *Algebra*  
2.1 (Ex. 1-6, 8, 9) Linear Equations in Two Variables (pp. 128-137)  
2.2 (Ex. 2-7) Slope of a Line and Rate of Change (pp. 145-150)  
2.3 (Ex. 1-3) Equations of a Line (pp. 156-159) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
p. 140: 15-29 odd  
p. 153: 13-23 odd, 39-51 odd  
p. 165: 7-17 odd, 25-29 odd, 33-37 odd |
| 4       | *Algebra*  
2.3 (Ex. 4-8) Equations of a Line (pp. 159-163) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
p. 167: 39-73 odd |
| 5       | *Algebra*  
3.1 (Ex. 1-4) Solving Systems of Linear Equations by the Graphing Method (pp. 234-238) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
p. 239: 3-7 odd, 15-23 odd, 27, 31 |
| 6       | *Algebra*  
3.2 (Ex. 1-3) Solving Systems of Linear Equations by the Substitution Method (pp. 243-246)  
3.3 (Ex. 1, 2, 5) Solving Systems of Linear Equations by the Addition Method (pp. 249-253)  
3.4 (Ex. 1, 2, 4, 5) Applications of Systems of Linear Equations in Two Variables (Optional) (pp. 256-261) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
p. 248: 9-21 odd, 25, 35-37 all  
p. 254: 5-11 odd, 15, 19, 23, 27, 29, 35  
p. 262: (Optional) 5, 9, 11, 17, 23, 29 |
| 7       | *Algebra*  
4.2 (Ex. 1-5, 7(optional), 8 -- only examples with integer coefficients)  
Adding & Subtracting Polynomials (pp. 323-328)  
4.3 (Ex. 1-5) Multiplication of Polynomials (pp. 334-337) | **TEXT:** *Intermediate Algebra* by Miller, O’Neill & Hyde  
p. 330: 19, 21, 25-29 odd, 37-43 odd, 47, 49, 51-71 odd, 75 (G), 89 (G), 85 (optional), 95 (optional)  
p. 340: 7, 8, 13, 14, 17-25 odd, 31, 32, 37, 41-53 odd, 93 (G), 97-101 odd (G) |
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<td>8</td>
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<td>4.4 (Ex. 1-3) Division of Polynomials (pp. 343-347)</td>
<td>p. 351: 9-17 odd, 25, 27-30 all, 31-37 odd</td>
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<td>4.5 (Ex. 1-5) The Greatest Common Factor &amp; Factoring by Grouping (pp. 354-358)</td>
<td>p. 360: 9-25 odd, 31-37 odd, 45-49 odd, 71 (G)</td>
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<td>4.6 (Ex. 1-9) Factoring Trinomials (pp. 362-371)</td>
<td>p. 373: 9-35 odd, 55-58 all, 87, 88, 91, 93, 94, 95</td>
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<td>4.8 (Ex. 1-3, 7, 8) Solving Equations by Using the Zero Product Rule (pp. 388-393)</td>
<td>p. 397: 17-20 all, 25-35 odd, 42, 43, 45, 63 (G), 65 (G), 67 (G), 72 (G), 75 (G)</td>
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<td>5.1 (Ex. 3, 4, 6) Rational Expression (pp. 416-422)</td>
<td>p. 424: 31-39 odd, 43, 48, 65-73 odd</td>
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<td>5.2 (Ex. 1-3) Multiplication of Rational Expression (pp. 426-428)</td>
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<td>5.3 (Ex. 1-9) Addition &amp; Subtraction of Rational Expressions (pp. 431-438)</td>
<td>p. 438: 7-11 odd, 33-45 odd, 49-57 odd, 79 (G), 81 (G)</td>
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<td>6.3 (Ex. 1, 3-6 -- only examples with square roots) Simplifying Radical Expressions (pp. 510-514)</td>
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<td>6.5 (Ex. 1-7 -- only examples with square roots) Multiplication of Radicals (pp. 522-526)</td>
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<td>p. 538: 11, 13, 17, 31-39 odd, 53, 63, 65, 67, 75-81 odd</td>
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| 17 | **Algebra** | **TEXT:** *INTERMEDIATE ALGEBRA*  
BY MILLER, O’NEILL & HYDE  
p. 547: 11-16 all, 21, 23, 37-42 all, 63, 64 |
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<td>6.7 (Ex. 1, 4) Solving Radical Equations (pp. 540-543)</td>
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| 18 | **Algebra** | **TEXT:** *INTERMEDIATE ALGEBRA*  
BY MILLER, O’NEILL & HYDE  
p. 580: 2-5 all, 8, 9, 11, 15  
p. 595: 9, 12, 15-20 all, 23, 25, 41 (G), 43 (G), 77 |
|     | 7.1 (Ex. 1-3) Square Root Property (pp. 574-575) | |
|     | 7.2 (Ex. 1, 3, 8) Quadratic Formula (pp. 583-592) | |
| 19 | **Midterm Examination** | |
| 20 | **Geometry** | **TEXT:** *ELEMENTARY COLLEGE GEOMETRY*  
BY HENRY AFRICK  
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Page 339: 1-5 odd, 19-23 odd,  
Page 348: 1, 3, 7, 9  
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7.5 Circumference of a Circle: pp. 331-335: Ex. A, D  
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| 21 | **Geometry** | **TEXT:** *ELEMENTARY COLLEGE GEOMETRY*  
BY HENRY AFRICK  
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1.5 Triangles: pp. 46-54: Ex. A-F  
6.3 The Area of a Triangle: pp. 260-264: Ex. A | |
| 22 | **Geometry** | **TEXT:** *ELEMENTARY COLLEGE GEOMETRY*  
BY HENRY AFRICK  
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Page 81: 1-23 odd |
2.2 The SAS Theorem: pp. 73-78: Ex. A-C | |
| 23 | **Geometry** | **TEXT:** *ELEMENTARY COLLEGE GEOMETRY*  
BY HENRY AFRICK  
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Page 118: 1-7 odd |
|     | 2.3 The ASA and AAS Theorem: pp. 84-91: Ex. A-D  
2.5 Isosceles Triangles: pp.103-109: Ex. A-D  
2.6 The SSS Theorem: pp. 113-115: Ex. A, B | |
| 24 | **Geometry** | **TEXT:** *ELEMENTARY COLLEGE GEOMETRY*  
BY HENRY AFRICK  
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Page 258: 1, 9, 11, 13 |
|     | 3.1 Parallelograms: pp. 130-138: Ex. A-G  
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| 29 | Review | | |
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