NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

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.
TEXTS:	1) Intermediate Algebra, Custom Edition Julie Miller, Molly O'Neill and Nancy Hyde, 5th edition, McGraw-Hill 2) Elementary College Geometry H. Africk (1997) Thomson Learning
CREDITS:	4
PREREQUISITES:	CUNY proficiency in mathematics.
	Prepared by Professors Holly Carley, Laura Ghezzi, and Michael Munn (Fall 2010)
	Revised by Professor Lin Zhou (Spring 2017)

A. Testing Guidelines:
The following exams should be scheduled:
1. A one-session exam at the end of the First Quarter
2. A one-session exam at the end of the Second Quarter
3. A one-session exam at the end of the Third Quarter
4. A one-session Final Examination

B. A scientific calculator with trigonometric functions is required.

Course Intended Learning Outcomes/Assessment Methods

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

General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Understand and employ both quantitative and qualitative analysis to solve problems.	Classroom activities and discussion, homework, exams.
2. Employ scientific reasoning and logical thinking.	Classroom activities and discussion, homework, exams.
3. Communicate effectively using written and oral means.	Classroom activities and discussion, homework, exams.
4. Use creativity to solve problems.	Classroom activities and discussion, homework, exams.

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.

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2) Africk, H. (1997). Elementary College Geometry (this book is free for download at http://www.citytech.cuny.edu/mathematics/docs/MAT1175Textbook.pdf)

Note: The problems in the algebra text followed by a (G) **require some basic geometry (area, perimeter, circumference, Pythagorean Theorem)**

Session	Section	Homework
1	***Algebra*** **4.1** (Ex. 1-3) Properties of Integer Exponents and Scientific Notation (pp. 320-322)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 327**: 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. 323-326)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 327**: 65, 69-83 odd, 85-90 all, 91-103 odd
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. 145-151) **2.3** (Ex. 1-3) Equations of a Line (pp. 157-160)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 140**: 15-29 odd **p. 154**: 13-23 odd, 39-51 odd **p. 167**: 7-17 odd, 25-29 odd, 33-37 odd
4	***Algebra*** **2.3** (Ex. 4-8) Equations of a Line (pp. 160-164)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 168**: 39-73 odd
5	***Algebra*** **3.1** (Ex. 1-4) Solving Systems of Linear Equations by the Graphing Method (pp. 236-239)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 242**: 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. 246-249) **3.3** (Ex. 1, 2, 5) Solving Systems of Linear Equations by the Addition Method (pp. 253-257) **3.4** (Ex. 1, 2, 4, 5) Applications of Systems of Linear Equations in Two Variables (Optional) (pp. 261-265)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 251**: 9-21 odd, 25, 35-37 all **p. 258:** 5-11 odd, 15, 19, 23, 33, 35, 41 **p. 266**: (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. 329-334) **4.3** (Ex. 1-5) Multiplication of Polynomials (pp. 340-343)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **p. 336**: 19, 21, 25-29 odd, 37-43 odd, 47, 49, 51-71 odd, 75 (G), 89 (G), 85 (optional), 95 (optional) **p. 346**: 7, 8, 13, 14, 17-25 odd, 31, 32, 37, 41-53 odd, 95 (G), 99-103 odd (G)

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8	***Algebra*** **4.4** (Ex. 1-3) Division of Polynomials (pp. 350-354) **4.5** (Ex. 1-5) The Greatest Common Factor & Factoring by Grouping (pp. 360-364)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 357**: 9-17 odd, 25, 27-30 all, 31-37 odd **Page 366**: 9-25 odd, 31-37 odd, 45-49 odd, 71 (G)
9	***Algebra*** **4.6** (Ex. 1-9) Factoring Trinomials (pp. 368-377) **4.7** (Ex. 1-3) Factoring Binomials (pp. 382-383)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 379**: 9-35 odd, 55-58 all, 87, 88, 91, 93, 94, 95 **Page 389**: 11-17 all, 59, 60, 95 (G), 96 (G)
10	***Algebra*** **4.8** (Ex. 1-3, 7, 8) Solving Equations by Using the Zero Product Rule (pp. 394-399)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 404**: 21-24 all, 29-39 odd, 46, 47, 49, 67 (G), 69 (G), 71 (G), 76 (G), 79 (G)
11	**First Examination**	
12	***Algebra*** **5.1** (Ex. 3, 4, 6) Rational Expression (pp. 422-428) **5.2** (Ex. 1-3) Multiplication of Rational Expression (pp. 432-434) **5.3** (Ex. 1-9) Addition & Subtraction of Rational Expressions (pp. 437-444)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 430**: 31-39 odd, 43, 48, 65-73 odd **Page 435**: 11-21 odd, 23-31 odd **Page 445**: 7-11 odd, 33-45 odd, 49-57 odd, 81 (G),83 (G)
13	***Algebra*** **5.5** (Ex. 1-5) Solving Rational Equations (pp. 454-459)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 460**: 9-19 odd, 29-37 odd
14	***Algebra*** **6.1** (Ex. 1-3) Definition of an nth Root (pp. 496-498) **6.3** (Ex. 1, 3, 4, 6 7 -- only examples with square roots) Simplifying Radical Expressions (pp. 515-519)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 504**: 7-15 odd **Page 520**: 9, 13, 17, 19, 21, 25, 33, 35, 37, 45, 47, 49, 53, 55, 63, 67, 69, 71, 77 (G), 79 (G)
15	***Algebra*** **6.4** (Ex. 1-4 -- only examples with square roots) Addition and Subtraction of Radicals (pp. 522-525) **6.5** (Ex. 1-7 -- only examples with square roots) Multiplication of Radicals (pp. 528-532)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 526**:15, 19, 23, 35, 37, 39, 41, 45, 51, 55, 57, 81 (G), 83 (G) **Page 534**: 11, 17, 19, 21, 23, 29, 31, 35, 37, 41, 45, 47, 51, 55, 57, 61, 63, 77, 85 (G), 87 (G)
16	***Algebra*** **6.6** (Ex. 1, 3, 5, 7-9 -- only examples with square roots) Division of Radicals and Rationalization (pp. 536-543)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 544**: 11, 13, 17, 31-39 odd, 53, 63, 65, 67, 75-81 odd

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17	***Algebra*** **6.7** (Ex. 1, 4) Solving Radical Equations (pp. 546-549)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 554**: 11-19 odd, 25, 27, 41-46 all, 67, 68
18	***Algebra*** **7.1** (Ex. 1-3) Square Root Property (pp. 582-583) **7.2** (Ex. 1, 3, 8) Quadratic Formula (pp. 592-600)	**TEXT: INTERMEDIATE ALGEBRA BY MILLER, O' NEILL & HYDE** **Page 589**: 2-7 all, 10, 11, 13, 17 **Page 603**: 9, 12, 15-20 all, 23, 25, 41 (G), 43 (G), 77
19	**Midterm Examination**	
20	***Geometry*** **1.1** Lines: pp. 1-6: Ex. A-D **7.5** Circumference of a Circle: pp. 331-335: Ex. A, D **7.6** Area of a Circle: pp. 342: Ex. A **1.2** Angles pp. 8-13: Ex. A-C **1.3** Angle Classifications: pp.17-24: Ex. A-F	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 7**: 1-5 odd **Page 339**: 1-5 odd, 19-23 odd, **Page 348**: 1, 3, 7, 9 **Page 14**: 1-27 odd **Page 26**: 1-25 odd
21	***Geometry*** **1.4** Parallel Lines: pp. 30-38: Ex. A-E **6.1** The Area of a Rectangle and Square: pp. 244-247: Ex. A-B, D **1.5** Triangles: pp. 46-54: Ex. A-F **6.3** The Area of a Triangle: pp. 260-264: Ex. A	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 42**: 1-25 odd **Page 249**: 1-5 odd, 15, 17 **Page 55**: 1-25 odd **Page 265**: 1, 3, 7, 21, 23
22	***Geometry*** **2.1** The Congruence Statement: pp. 67-70: Ex. A-C **2.2** The SAS Theorem: pp. 73-78: Ex. A-C	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 71**: 1-9 odd **Page 81**: 1-23 odd
23	***Geometry*** **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	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 93**: 1-21 odd **Page 111**: 1-13 odd **Page 118**: 1-7 odd
24	***Geometry*** **3.1** Parallelograms: pp. 130-138: Ex. A-G **6.2** The Area of a Parallelogram: pp. 253-257: Ex. A, D, E	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 139**: 1-17 odd **Page 258**: 1, 9, 11, 13

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25	***Geometry*** **4.1** Proportions: pp. 157-160: Ex. A, B **4.2** Similar Triangles: pp. 162-169: Ex. A-H	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 161**: 1-11 odd **Page 173**: 1-21 odd
26	***Geometry*** **4.4** Pythagorean Theorem: pp. 182-186: Ex. A-D **6.1** The Area of a Rectangle and Square: pp. 244-247: Ex. C **6.2** The Area of a Parallelogram: pp. 253-257: Ex. B **6.3** The Area of a Triangle: pp. 260-264: Ex. C **4.5** Special Right Triangles: pp. 197-203: Ex. A-D **6.3** The Area of a Triangle: pp. 260-264: Ex. D	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 192**: 1-15 odd **Page 249**: 7, 9 **Page 258**: 3 **Page 265**: 9-13 odd **Page 207**: 1-19 odd **Page 249**: 11, 13 **Page 258**: 7 **Page 265**: 15, 17
27	**Third Examination**	
28	***Geometry*** **5.1** The Trigonometric Functions: pp. 215-222: Ex. A-G **5.2** Solution of Right Triangles: pp. 225-230: Ex. A-G **6.2** The Area of a Parallelogram: pp. 253-257: Ex. C **6.3** The Area of a Triangle: pp. 260-264: Ex. B	**TEXT: ELEMENTARY COLLEGE GEOMETRY BY HENRY AFRICK** **Page 223**: 1-19 odd **Page 234**: 11-41odd **Page 258**: 5 **Page 265**: 5, 19 **Page 242**: 1-5 odd
29	**Review**	
30	**Final Examination**	