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

DEPARTMENT:	Mathematics
COURSE:	MAT 1275
TITLE:	College Algebra and Trigonometry
DESCRIPTION:	An intermediate and advanced algebra course. Topics include quadratic equations, systems of linear equations, exponential and logarithmic functions; topics from trigonometry, including identities, equations and solutions of triangles.
TEXT:	Custom text by McGraw-Hill containing material from:
	1) Intermediate Algebra, Julie Miller, Molly O'Neill, and Nancy Hyde, 5th edition
	2) Trigonometry, John Coburn, 2nd edition
CREDITS:	4
PREREQUISITES:	MAT 1175 OR for New Students, scores of at least 45 on the Pre-Algebra part and 45 on the Algebra part of the CUNY Assessment Test in Mathematics.
	Prepared by Professors Holly Carley, Peter Deraney, Andrew Douglas, Madeline Harrow, and Lin Zhou (Spring 2013)
	Revised by Professor Ariane Masuda (Spring 2017)

A. Testing/Assessment Guidelines:
The following exams should be scheduled:
  1. A one-hour exam at the end of the First Quarter.
  2. A one session exam at the end of the Second Quarter.
  3. A one-hour exam at the end of the Third Quarter.
  4. A one session Final Examination.
B. A scientific calculator is required.

COURSE INTENDED LEARNING OUTCOMES/ASSESSMENT METHODS

LEARNING OUTCOMES	ASSESSMENT METHODS
1. Solve • Linear and fractional equations • One-variable quadratic equations by factoring, completing the square, and the quadratic formula • Radical and exponential equations • Systems of equations	Classroom activities and discussion, homework, exams.
2. Perform operations with and simplify polynomial, rational, radical, complex, exponential, and logarithmic expressions.	Classroom activities and discussion, homework, exams.
3. Apply their knowledge of algebra and trigonometry to solve verbal problems.	Classroom activities and discussion, homework, exams.
4. • Solve problems involving right and oblique triangles. • Prove trigonometric identities. • Solve trigonometric equations • Graph the sine and cosine function.	Classroom activities and discussion, homework, exams.
5. Apply the distance and midpoint formulas and determine the graphs of circles and parabolas.	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.

MAT 1275 College Algebra and Trigonometry
Text: McGraw-Hill Custom Textbook containing material from <u>Intermediate Algebra</u>**,** 5th ed., by Miller, O'Neill, and Hyde
 (sessions 1-16 and 26-29) and <u>Trigonometry</u>, 2nd ed., by Coburn (sessions 18-25).

Session	Topic	Chapter, Section, and Pages	Homework
1	Properties of Integer Exponents Addition and Subtraction of Rational Expressions	Chapter 4, Section 4.1, pages 320-324 Chapter 5, Section 5.3, pages 437-444	p.327: 11-29 odd,33,35,41,47,63,67,75 p.445: 7-23, 27-49 odd
2	Complex Fractions	Chapter 5, Section 5.4, pages 447-452	p.452: 9-15,17-23 odd, 31,33
3	Solving Rational Equations	Chapter 5, Section 5.5 pages 454-460	p.460: 9-33 odd
4	Roots Rational Exponents	Chapter 6, Section 6.1, pages 496-502 Chapter 6, Section 6.2, pages 508-512	p.505: 9-37 odd,59,65,67,79 p.513: 9,13,17,19,25,29,33,41,45,53,65,73,81,93
5	Simplifying Radical Expressions Addition and Subtraction of Radicals	Chapter 6, Section 6.3, pages 515-519 Chapter 6, Section 6.4, pages 522-525	p.520: 9,13,17,21,25,33,39,55,59,63,79 p.526: 15,19,23,35,37,41,51,55,57,61,81
6	Multiplication of Radicals	Chapter 6, Section 6.5, pages 528-532	p.534: 11,17,19,21,23,25,29,31,35,37,55,57,61,63,67,77,79,87
7	Division of Radicals and Rationalization	Chapter 6, Section 6.6, pages 536-543 (skip examples 4 and 6)	p.544: 11,13,17,21,31,35,39,53,57,63,67,71,77,81
8	Solving Radical Equations	Chapter 6, Section 6.7, pages 546-549	p.554: 13-18,25-28,41-46
9	**Administer First Examination** Complex Numbers	Chapter 6, Section 6.8, pages 556-563	p.564: 15-27,31-35,53-57,61-69,81-89 odd
10	Solving Equations by Using the Zero Product Rule Square Root Property and Completing the Square	Chapter 4, Section 4.8 pages 394-396 (omit example 2) Chapter 7, Section 7.1, pages 582-587	p.404: 21-40 p.589: 3-19,27-33,37-53 odd
11	Quadratic Formula	Chapter 7, Section 7.2, pages 592-594, 596-602 (Derive the quadratic formula)	p.603: 9-25,49-55 odd, 69,73,77,81,85
12	Applications of Quadratic Equations	Chapter 4, Section 4.8, pages 398-400 Chapter 7, Section 7.2, pages 594-595	p.405: 65,69,71,73,75 p.603: 39-47 odd
13	Graphs of Quadratic Functions Vertex of a Parabola	Chapter 7, Section 7.4, pages 612-620 Chapter 7, Section 7.5, pages 626-630	p.621: 11-15,19-23,29-35,45,47,51-61 odd p.633: 17-23 odd,29,31,37,41,43
14	Distance Formula, Midpoint Formula, and Circles Perpendicular Bisector	Chapter 9, Section 9.1, pages 754-759	p.760: 5,9,11,13,23-31 odd,39,41,45,61,63,65,69,75 Supplemental Problems on Perpendicular Bisector

Session	Topic	Chapter, Section, and Pages	Homework
15	Systems of Linear Equations in Three Variables	Chapter 3, Section 3.6, pages 283-289	p.290: 11-17 odd,21,23,27,35-39 odd
16	Determinants and Cramer's Rule (optional) Nonlinear Systems of Equations in Two Variables	Appendix A.1, pages A-1 to A-9 Chapter 9, Section 9.4, pages 784-788	p.A-10: 35-45 odd,49,55,57 p.790: 23-37 odd,49
17	**Midterm Examination**		1 session
18	Angle Measure and Special Triangles The Trigonometry of Right Triangles	Chapter 1, Section 1.1, pages 2-6 Chapter 2, Section 2.1, pages 46-50	p.7: 45-57 odd p.51: 7-21 odd
19	Solving Right Triangles Applications of Static Trigonometry	Chapter 2, Section 2.2, pages 54-56 Chapter 2, Section 2.3, pages 63-66	p.57: 7-47 odd p.69: 35-38
20	Angle Measure in Radian Trigonometry and the Coordinate Plane	Chapter 3, Section 3.1, pages 90-93 Chapter 1, Section 1.3, pages 22-27	p.95: 25-39 odd, 43,45,49-61odd,67-71odd p.28: 25-31 odd, 45,47,55-63 odd,64,73-79 odd
21	Unit Circles	Chapter 3, Section 3.3, pages 108-113	p.115: 29-35 odd,37-40
22	Graphs of the Sine and Cosine Functions Graphs of Tangent and Cotangent Functions (optional)	Chapter 4, Section 4.1, pages 134-144 Chapter 4, Section 4.2, pages 153-159	p.145: 1-3,17-29 odd,33-39 odd p.160: 15,19,21,39,43,47
23	Fundamental Identities and Families of Identities	Chapter 1, Section 1.4, pages 31-35 Chapter 5, Section 5.1, pages 212-214	p.35: 11-37 odd p.216: 13-29 odd,37,43,51
24	Trigonometric Equations	Chapter 6, Section 6.3, pages 284-290	p.292: 13,17,21,25,31,35,43-49 odd,79,80
25	Oblique Triangles and the Law of Sines The Law of Cosines	Chapter 7, Section 7.1, pages 316-322 Chapter 7, Section 7.2, pages 329-332	p.324: 7-23 odd p.338: 7-11 odd, 21-29 odd
26	**Third Examination** Exponential Functions	Chapter 8, Subsections 8.3.1, 8.3.2, 8.3.4., pages 680-686	p.687: 9-25 odd,43,49
27	Logarithmic Functions	Chapter 8, Section 8.4, pages 690-693 and examples 8, 9	p.699: 11-61 odd
28	Properties of Logarithms Compound Interest	Chapter 8, Section 8.5, pages 704-709 Chapter 8, Section 8.6, pages 712-715 (omit example 3).	p.710: 17-29 odd, 45-55 odd, 63-64,67-71,79,81,91 p.721: 11,13
29	Logarithmic and Exponential Equations	Chapter 8, Section 8.7, pages 726-734	p.735: 39-49 odd,55-61 odd,73,75,77,79,87
30	**Final Examination**		1 session