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

DEPARTMENT:	Mathematics
COURSE:	MAT 1275CO
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:	McGraw-Hill Custom Textbook containing material from: 1) Intermediate Algebra by Miller, O'Neill, and Hyde, 5th edition and 2) Trigonometry by Coburn, 2nd edition
CREDITS:	4 (6 hours instructional time)
PREREQUISITES:	CUNY Proficiency in Mathematics.
	Prepared: Spring 2019

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 equations. Rational equations. One-variable quadratic equations by factoring, completing the square, and the quadratic formula. Radical equations. Exponential and logarithmic equations. Systems of equations in 2 variables, both linear and non-linear. Systems of equations in 3 variables.	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 Coreq - College Algebra and Trigonometry
Course Outline

Textbooks: McGraw-Hill Custom Textbook containing material from:
1) Intermediate Algebra by Miller, O'Neill, and Hyde, 5th edition (Classes 1-21 and 34-37)
2) Trigonometry by Coburn, 2nd edition (Classes 22-33).

WeBWorK: WeBWorK for MAT1275 Coreq uses the OpenLab Q&A site: https://openlab.citytech.cuny.edu/ol-webwork/ Students will need an OpenLab account in order to post new questions.

Video Resources: All video resources listed below can be found at https://openlab.citytech.cuny.edu/mat1275covideolibrary-/syllabus-with-links-to-videos/

Class	Lesson	Section	WeBWorK Set	Video Resources
1	Lines review: - Equations: slope-intercept and point-slope - Slope formula and intercepts - Parallel and perpendicular through points - Graphing	2.1, p.128-137, Ex. 1-6, 8, 9 2.2, p.145-151, Ex. 2-7 2.3, p.157-160, Ex. 1-3 2.3, p.160-164, Ex. 4-8	LinesReview GraphingLines	Lines
2	2-D systems of equations Substitution and elimination	3.2, p.246-249, Ex. 1-3 3.3, p.253-257, Ex. 1, 2, 5 3.4, p.261-265, Ex. 1, 2, 4, 5, Applications of systems of linear equations in two variables (optional)	LinearSystems	2-D linear systems
3	3-D systems of equations	3.6, p.283-289	3×3-Systems	3-D linear systems
4	GCF factoring and factoring by grouping	4.4, p.350-354, Ex. 1-3 4.5, p.360-364, Ex. 1-5	GCF-Grouping	Factoring out the GCF Factoring by grouping
5	Difference of squares and *ac*-method	4.6, p.368-377, Ex. 1-9 4.7, p.382-383, Ex. 1-3	DifferenceOfSquares AC-Method	 Difference of squares
6	Solving equations by using the zero product rule	4.8, p.394-399, skip Ex.2	ZeroProductProperty	Zero product property and solving quadratic equations by factoring
7	Square root property and completing the square	7.1, p.582-587, Ex. 1-3	SquareRootProperty	The square root property
8	Quadratic formula	7.2, p.592-602, Ex. 1, 3, 8 (derive the quadratic formula)	QuadraticFormula	The quadratic formula

Class	Lesson	Section	WeBWorK Set	Video Resources
9	Complex numbers	6.8, p.556-563	ComplexNumbers	Complex numbers
10	Graphs of quadratic functions Vertex formula and standard form	7.4, p.612-620 7.5, p.626-630	ShiftingParabolas ParabolaVertices-CtS ParabolaVertices-VertexFormula	Graphs of quadratic functions Shifting parabolas
11	Distance formula (Pythagorean Theorem) Midpoint formula Circles (complete the square and standard form)	9.1, p.754-759	DistanceFormula Circles	Pythagorean Theorem Distance formula Midpoint formula Circles
12	Nonlinear systems of equations in two variables	9.4, p.784-788	NonLinearSystems	Nonlinear systems of equations
13	Addition and subtraction of rational expressions Multiplication and division of rational expressions	5.1, p.422-428, Ex. 3, 4, 6 5.2, p.432-434, Ex. 1-3 5.3, p.437-444, Ex. 1-9	ReducingRationalExpressions AddRationalExpressions AddRationalExpressions2	Adding and subtracting rational expressions Multiplying and dividing rational expressions
14	Complex fractions	5.4, p.447-452	ComplexFractions-Method1 ComplexFractions-Method2	Complex fractions
15	Solving rational equations	5.5, p.454-460	FractionalEquations	Solving rational equations
16	Properties of integer exponents	4.1, p.320-324, Ex. 1-7	IntegerExponents	Integer exponents
17	Roots Rational exponents	6.1, p.496-502 6.2, p.508-512	HigherRoots HigherRoots-Algebraic RationalExponents	Rational exponents and radicals
18	Simplifying radical expressions Addition and subtraction of radicals	6.3, p.515-519, Ex. 1, 3, 4, 6, 7 (only examples with square roots) 6.4, p.522-525, Ex. 1-4 (only examples with square roots)	SimplifyingRadicals AddSubtractRadicals	Roots and radicals
19	Multiplication and division of radicals	6.5, p.528-532, Ex. 1-7 (only examples with square roots)	MultiplyRadicals	Multiplication of radicals
20	Operations on complex numbers and rationalization	6.6, p.536-543, Ex. 1, 3, 5, 7-9 (only examples with square roots)	RationalizeDenominators ComplexNumbers	Division of radicals and rationalization
21	Solving radical equations	6.7, p.546-549, Ex. 1, 4	RadicalEquations	Solving radical equations

Class	Lesson	Section	WeBWorK Set	Video Resources
22	Angle measure Similar triangles and proportions	1.1, p.2-6 2.1, p.46-50		 Angle measures
23	Special triangles	1.1, p.2-6	SpecialTriangles	Special triangles
24	Trigonometric ratios of right triangles	2.2, p.54-56	TrigonometryRatios	Trigonometry of right triangles
25	Inverse trigonometric functions	2.2, p.54-56	SolvingRightTriangles-InverseTrig	Inverse trigonometric functions
26	Solving right triangles Applications	2.3, p.63-66	SolvingRightTriangles	Solving right triangles
27	Angle measure in radian Trigonometry and the coordinate plane	3.1, p.90-93 1.3, p.22-27	AngleMeasure-Radians CoordinatePlaneTrig	Angle measure in radians
28	Unit circles	3.3, p.108-113	UnitCircle	Unit circle
29	Graphs of the sine and cosine functions	4.1, p.134-144 4.2, p.153-159	GraphingSineCosine	Graphs of sine and cosine
30	Fundamental identities Proving trig tautologies	1.4, p.31-35 5.1, p.212-214		Pythagorean identity (The fundamental identity of trigonometry)
31	Trigonometric equations	6.3, p.284-290	TrigEquations	Trigonometric equations
32	Law of sines	7.1, p.316-322	LawOfSines	Law of sines
33	Law of cosines	7.2, p.329-332	LawOfCosines	Law of cosines
34	Exponential functions	8.3.1, 8.3.2, 8.3.4, p.680-686	ExponentialFunctions	Exponential functions
35	Logarithmic functions	8.4, p.690-693, and Ex.8, 9	LogarithmicFunctions	Logarithmic functions
36	Properties of logarithms Compound interest	8.5, p.704-709 8.6, p.712-715 (skip Ex.3)	LogarithmicProperties	Properties of logarithms Compound interest
37	Exponential equations Applications to compound interest, population growth	8.7, p.726-734	ExponentialEquations ExponentialEquations-Calc CompoundInterest	Exponential equations
	Final exam review			Selected final exam review questions