

# COLLEGE ALGEBRA AND TRIGONOMETRY

The University of Toledo  
Mathematics & Statistics Department, College of Natural Sciences and Mathematics  
MATH1340-0XX, CRN XXXXX

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Instructor:	(Insert Name]	Class Location:	(Insert Building/Room)
Email:	(Insert E-mail Address)	Class Day/Time:	(Insert Days/Time)
Office Hours:	(Insert Days/Time)	Lab Location:	(Insert Building/Office #, if applicable)
Office Location:	(Insert Building/Office Number)	Lab Day/Time:	(Insert Days/Time, if applicable)
Office Phone:	(Insert Phone Number)	Credit Hours:	5
Term:	(Insert Semester and Year)		

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## COURSE DESCRIPTION

Functions and graphs, exponential and logarithmic functions, trigonometric functions and applications, systems of equations and topics in analytic geometry.

## STUDENT LEARNING OUTCOMES

Math 1340 focuses on the concept of a function and the solution of equations. Students will demonstrate skills verbally, numerically, graphically and algebraically. A more detailed list of learning objectives is given below. At least 70% of the course time will be devoted to these essential outcomes. These objectives are listed again in the chronological list of topics at the end of this syllabus.

- **Representation:** Graphical, algebraic, numerical, and verbal representation of linear, quadratic, polynomial, rational, root/radical/power, exponential, logarithmic, trigonometric, and piecewise-defined functions.
- **Graphs:** Determine whether an algebraic or trigonometric relation or given graph represents a function; perform transformations on graphs and operations with functions; determine intercepts, domain, range, intervals of monotonicity, vertex of a quadratic, asymptotes, symmetry; and match graphs to algebraic or trigonometric definitions.
- **Remainder and Factor Theorems:** Use the Remainder and Factor Theorems for polynomial functions.
- **Inverse functions:** Describe the relationship of the graph of a function to that of its inverse; determine the algebraic form of inverse functions.
- **Trigonometric Definitions:** Define the six trigonometric functions in terms of right triangles and the unit circle.
  
- **Solutions of equations and inequalities:** Solve a variety of equations, including polynomial, rational, exponential, and logarithmic, including equations arising in applications; solve a system of linear equations graphically and algebraically by substitution and elimination; and solve polynomial and rational inequalities graphically and algebraically.
- **Conic Sections:** Identify and express the conics (quadratic equations in two variables) in standard rectangular form, graph the conics, and solve applied problems involving conics.
- **Trigonometric Identities:** Verify trigonometric identities by algebraically manipulating trigonometric expressions using fundamental trigonometric identities, including the Pythagorean, sum and difference of angles, double-angle and half-angle identities.
- **Sequences and Series:** Represent sequences verbally, numerically, graphically and algebraically. Write series in summation notation, and represent sequences of partial sums

verbally, numerically and graphically. Identify and express the general term of arithmetic and geometric sequences, and find the sum of arithmetic and geometric series.

- **Vectors:** Represent vectors graphically in both rectangular and polar coordinates and understand the conceptual and notational difference between a vector and a point in the plane. Perform basic vector operations both graphically and algebraically – addition, subtraction and

person, provide official documentation for the absence, and make up the missed item as soon as possible. You can find the University's Missed Class Policy at <http://www.utoledo.edu/policies/academic/undergraduate/index.html>

### **ACADEMIC DISHONESTY**

Any act of academic dishonesty as defined by the University of Toledo policy on academic dishonesty (found at <http://www.utoledo.edu/dl/students/dishonesty.html>) will result in an F in the course or an F on the item in question, subject to the determination of the instructor.

### **GRADING:**

### **EVALUATION**

The evaluation for this course will be based upon a percentage of the total of homework, test and final exam scores:

1. Quizzes and homework (Insert min percent) to (Insert max percent)%
2. Midterms (Insert min percent) to (Insert max percent)%
3. Final Exam (comprehensive) (Insert min percent) to (Insert max percent)%
4. Total 100%

Grades are based on the following percentages of total points:

100% - 90% A

89% - 80% B

79% - 70% C

69% - 60% D

Below 60% F

Pluses and minuses will be used using the policy of the University.

### **ASSESSMENT OF STUDENT LEARNING**

Assessment will be based on a combination of homework, quizzes, midterms and a final exam. You will need to demonstrate the ability to apply mathematical reasoning and skills to solve problems in all the outcome areas listed above using correct mathematical notation.

### **RESPONSIBILITIES OF THE STUDENT**

You are expected to attend each class session. If you attend class, it is assumed that you will participate actively by asking questions and participating in discussions. You are expected to prepare for class, to have read the indicated sections prior to the class session and have your homework completed by the indicated date. This is a three credit hour course and you should expect to spend 5 to 8 hours outside of class reading, studying and doing homework problems. The syllabus schedule indicates the order in which the sections will be discussed. If you must miss a class, it is your responsibility to find out what you missed including any announcements which were made.

### **IMPORTANT DATES**

\*The instructor reserves the right to change the content of the course material if he perceives a need due to postponement of class caused by inclement weather, instructor illness, etc., or due to the pace of the course.

### **MIDTERM EXAM:**

### **FINAL EXAM:**

### **OTHER DATES**

The last day to drop this course is: \_\_\_\_\_

Inverse Functions	1.9	Inverse Functions	1
Exponential Functions	3.1, 3.4	Graphs, Functions	2
Logarithmic Functions	3.2, 3.3, 3.4	Graphs, Functions	2
Modeling with Exponential and Logarithmic Functions	3.5	Modeling	1
Sequences	9.1, 9.2, 9.3	Sequences	1
Series	9.1	Series	1
Arithmetic Series	9.2	Series	1
Geometric Series	9.3	Series	1
Total Hours for College Algebra:			37
Radian and Degree Measure	4.1	Angles	1
The Six Trigonometric Functions in Terms of a Right Triangle	4.3	Triangles, Modeling	1.5
Applications Involving Right Triangles	4.8	Modeling	1.5
Definition of the Six Trigonometric Functions Using the Unit Circle	4.2	Definitions	1.5
Reference Angles	4.4	Definitions	1.5
Coterminal Angles	4.1, 4.2	Definitions	1.5
The Graphs of the Trigonometric Functions	4.5, 4.6	Graphs	3
The Inverse Trigonometric Functions	4.7	Definitions, Modeling	3
The Graphs of the Inverse Trigonometric Functions	4.7	Graphs	2
Fundamental Trigonometric Identities	5.1, 5.2	Identities	2
Pythagorean Identities	5.1, 5.2	Identities	2
Solving Trigonometric Equations	5.3	Equations, Modeling	2
Sum and Difference Formulas	5.4	Identities	1.5
Double-Angle Formulas	5.5	Identities	1.5
Half-Angle Formulas	5.5	Identities	1.5
The Law of Sines	5.5		