

**Pre-Calculus  
MATH 119.001  
Fall 2013**

**Monday and Wednesday (11:00 – 11:50); Tuesday (12:00 – 1:50)**

***INSTRUCTOR***

Stanley Max  
Adjunct Faculty

***OFFICE***

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***WEB SITE***

<http://www.stanleymax.net> — click on tab labeled “Course material”

***OFFICE HOURS***

Tuesday (2:00 – 4:00)

***COURSE DESCRIPTION***

The course concentrates on the concept of function, with special emphasis given to exponential, logarithmic, circular, and trigonometric functions. Prerequisites: One year of plane geometry, one-half year of trigonometry, and one of the following: two years of algebra or DVMT 110 or MATH 102 or MATH 103 or MATH 109 or University placement above the developmental level. GenEd I.C. or Core: Mathematics.

***LEARNING GOALS***

This University core course is designed to meet these four learning goals:

- Construct and evaluate logical arguments
- Apply and adapt a variety of appropriate strategies to solve mathematical problems
- Recognize and apply mathematics in contexts outside of mathematics
- Organize and consolidate mathematical thinking through written and oral communication

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### ***COURSE OBJECTIVES***

As a result of taking this course, students should learn about various types of mathematical functions, especially those of a linear, quadratic, exponential, logarithmic, or trigonometric nature. Students should also learn how to apply such functions to solving real-world problems in the life and physical sciences as well as in personal finance.

### ***ONLINE HOMEWORK***

Online homework assignments, conducted through a program called MyMathLab, will be assigned, and this is an important feature of the course. You can access this program in one of two ways:

- By purchasing a new book at the Towson University bookstore, where the book comes packaged with an access code. The course is taught using this textbook: Michael Sullivan and Michael Sullivan III, *Precalculus: Enhanced with Graphing Utilities*, 6th edition (Upper Saddle River NJ: Prentice Hall, 2013), ISBN-13: 9781269372107
- By purchasing the program online from the website [www.mymathlab.com](http://www.mymathlab.com). An electronic version of the textbook is embedded in the online purchase.

Whichever way you register for MyMathLab, you also need a class code, which is this:

Max15313

The due dates for these online assignments are indicated in the schedule of topics further on in this syllabus, and they are also listed in your MyMathLab account when you log onto it. All the online homework assignments averaged together will count towards 15% of your final grade.

### ***REQUIRED CALCULATOR***

A graphing calculator is required for this course. You will be provided with separate instructions as to the make and model of graphing calculator that I recommend.

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### ***ATTENDANCE***

Attendance will be taken at the beginning of every lecture and lab, and will count for 5% of the course grade. **Students remain responsible for all instructional activity conducted in each class.**

Regarding absences, the university catalog makes this statement:

“It is policy of the university to excuse the absences of students for the following reasons:

- illness or injury when the student is unable to attend class
- religious observance where the nature of the observance prevents the student from attending class
- participation in university activities at the request of university authorities (e.g., Intercollegiate Athletics, Forensics Team, Dance Company, etc.)
- compelling verifiable circumstances beyond the control of the student

Students requesting an excused absence must provide documentation to the instructor two weeks prior to the scheduled absence when known in advance or as soon as possible when not known in advance.

### ***TUTORING***

The Academic Achievement Center (AAC) makes tutoring services for this course available on a drop-in basis and by appointment. You can receive tutoring at the Mathematics Lab at 7800 York Road, Room 105. For detailed information, look at the AAC’s website, located at this URL:

<http://www.towson.edu/aac/LocationsAndSchedules.asp>

### ***DISABILITY SUPPORT SERVICES***

Towson University is committed to providing equal access to its programs and services for students with disabilities, in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. To learn how to arrange for any appropriate accommodations, students with disabilities should visit the Disabilities Support Services (DSS) webpage at this URL:

<http://www.towson.edu/dss>

If you are a student with disabilities, then you have the responsibility to let me know that you have needs in this area. You will need a memo from DSS authorizing accommodations.

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***DETERMINATION OF YOUR GRADE***

<b>GRADED COMPONENTS</b>	
Test 1	10%
Test 2	10%
Test 3	10%
Test 4	10%
Quiz 1	5%
Quiz 2	5%
Quiz 3	5%
Quiz 4	5%
Final Exam	20%
Online homework	15%
Attendance	5%

<b>FINAL GRADE CUT-OFFS (where <math>x</math> is your overall score)</b>	
A	$93\% \leq x \leq 100\%$
A-	$90\% \leq x < 93\%$
B+	$87\% \leq x < 90\%$
B	$83\% \leq x < 87\%$
B-	$80\% \leq x < 83\%$
C+	$76\% \leq x < 80\%$
C	$70\% \leq x < 76\%$
D+	$66\% \leq x < 70\%$
D	$60\% \leq x < 66\%$
F	$0\% \leq x < 60\%$

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***SCHEDULE OF TOPICS***

The rest of the syllabus contains a detailed list of the textbook sections that we will go over in class, as well as exam dates and the sections with which the exams will deal.

<b>Week 1 (August 28 –August 30)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p>Syllabus and course outline. Pretest. <i>Section 1.1:</i> “The Distance and Midpoint Formulas; Graphing Utilities; Introduction to Graphing Equations”</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p>Optional homework: “Answering Exercises Orientation” — not due and not graded.</p>

<b>Week 2 (September 2 – September 6)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 1.3:</i> “Solving Equations Using a Graphing Utility” <i>Section A.10:</i> “<i>n</i>th Roots; Rational Exponents” <i>Section 1.4:</i> “Lines”</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p>Homework #1, which covers Section 1.1 — due on September 2 at 8:00 a.m.</p>

<b>Week 3 (September 9 – September 13)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 1.5:</i> “Circles” <i>Section 2.1:</i> “Functions” <i>Section 2.2:</i> “The Graph of a Function”</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p>Homework #2, which covers Sections 1.3, A.10, and 1.4 — due on September 9 at 8:00 a.m.</p>

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<b>Week 4 (September 16 – September 20)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section A.9:</i> “Interval Notation; Solving Inequalities”</p> <p><i>Section 2.3:</i> “Properties of Functions”</p> <p><i>Section 2.4:</i> “Library of Functions; Piecewise-defined Functions” [We will not cover the greatest integer function]</p> <p><i>Section A.6:</i> “Solving Equations” [a portion of this section]</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p><b>Quiz 1</b> (covers Sections 1.1, 1.3, A.10, 1.4, 1.5, 2.1, and 2.2)</p> <p>Homework #3, which covers Sections 1.5, 2.1 and 2.2 — due on September 16 at 8:00 a.m.</p>

<b>Week 5 (September 23 – September 27)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 2.5:</i> “Graphing Techniques: Transformations”</p> <p><i>Section 2.6:</i> “Mathematical Models: Building Functions” [selected problems]</p> <p><i>Section 3.1:</i> “Linear Functions and Their Properties”</p> <p><i>Section 3.3:</i> “Quadratic Functions and Their Properties”</p> <p><i>Section A.6:</i> “Solving Equations” [a portion of this section]</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p><b>Test 1</b> (covers Sections 1.1, 1.3, A.10, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, A.6, and A.9)</p> <p>Homework #4, which covers Sections 2.3, 2.4, A.6, and A.9 — due on September 23 at 8:00 a.m.</p>

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<b>Week 6 (September 30 – October 4)</b>	
<b><u>Lecture</u></b>	<b><u>Lab</u></b>
<p><i>Section A.7:</i> “Complex Numbers; Quadratic Equations in the Complex Number System”</p> <p><i>Section 3.4:</i> “Build Quadratic Models from Verbal Descriptions and from Data” [selected problems]</p> <p><i>Section 3.5:</i> “Inequalities Involving Quadratic Functions”</p> <p><i>Section 4.1:</i> “Polynomial Functions and Models”</p>	<p>Homework #5, which covers Sections 2.5, 2.6, 3.1, 3.3, and A.6 — due on September 30 at 8:00 a.m.</p>

<b>Week 7 (October 7 – October 11)</b>	
<b><u>Lecture</u></b>	<b><u>Lab</u></b>
<p><i>Section A.3:</i> “Polynomials”</p> <p><i>Section A.4:</i> “Synthetic Division”</p> <p><i>Section 4.2:</i> “The Real Zeros of a Polynomial Function”</p>	<p><b>Quiz 2</b> (covers Sections 2.5, 2.6, 3.1, 3.3, A.6, A.7, 3.4, 3.5, and 4.1)</p> <p>Homework #6, which covers Sections 3.3, 3.5, and 4.1 — due on October 7 at 8:00 a.m.</p>

<b>Week 8 (October 14 – October 18)</b>	
<b><u>Lecture</u></b>	<b><u>Lab</u></b>
<p><i>Section 4.4:</i> “Properties of Rational Functions”</p> <p><i>Section 4.5:</i> “The Graph of a Rational Function”</p> <p><i>Section 5.1:</i> “Composite Functions”</p>	<p><b>Test 2</b> (covers Sections 2.5, 2.6, 3.1, 3.3, A.6, A.7, 3.4, 3.5, 4.1, 4.2, A.3, and A.4)</p> <p>Homework #7, which covers Section 4.2, A.3, A.4 — due on October 14 at 8:00 a.m.</p>

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<b>Week 9 (October 21 – October 25)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 5.2:</i> “One-to-One Functions; Inverse Functions”</p> <p><i>Section 5.3:</i> “Exponential Functions”</p> <p><i>Section 5.4:</i> “Logarithmic Functions”</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p>Homework #8, which covers Sections 4.4, 4.5, and 5.1 — due on October 21 at 8:00 a.m.</p>

<b>Week 10 (October 28 – November 1)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 5.5:</i> “Properties of Logarithms”</p> <p><i>Section 5.6:</i> “Logarithmic and Exponential Equations”</p> <p><i>Section 5.7:</i> “Financial Models” [selected problems]</p> <p><i>Section 5.8:</i> “Exponential Growth and Decay Models; Newton’s Law; Logistic Growth and Decay Models” [selected problems]</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p><b>Quiz 3</b> (covers Sections 4.4, 4.5, 5.1, 5.2, 5.3, and 5.4)</p> <p>Homework #9, which covers Sections 5.2, 5.3, and 5.4 — due on October 28 at 8:00 a.m.</p>

<b>November 7</b>
<p style="text-align: center;"><b>Last day to drop courses with an automatic grade of ‘W’.</b></p> <p style="text-align: center;"><b>Last day to change to pass/fail option or to audit option.</b></p>



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<b>Week 11 (November 4 – November 8)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 6.1:</i> “Angles and Their Measure” <i>Section 8.1:</i> “Right Triangle Trigonometry; Applications”</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p><b>Test 3</b> (covers Sections 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8) Homework #10, which covers Section 5.5, 5.6, 5.7, and 5.8 — due on November 4 at 8:00 a.m.</p>

<b>Week 12 (November 11 – November 15)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 8.2:</i> “The Law of Sines” <i>Section 8.3:</i> “The Law of Cosines” <i>Section 6.2:</i> “Trigonometric Functions: Unit Circle Approach”</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p>Homework #11, which covers Sections 6.1 and 8.1 — due on November 11 at 8:00 a.m.</p>

<b>Week 13 (November 18 – November 22)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 6.3:</i> “Properties of the Trigonometric Functions” <i>Section 6.4:</i> “Graphs of the Sine and Cosine Functions” <i>Section 6.5:</i> “Graphs of the Tangent, Cotangent, Cosecant, and Secant Functions” [demonstrate the graph of the functions without transformations]</p>	<p style="text-align: center;"><b><u>Lab</u></b></p> <p><b>Quiz 4</b> (covers Sections 6.1, 8.1, 8.2, 8.3, and 6.2) Homework #12, which covers Sections 8.2, 8.3, and 6.2 — due on November 18 at 8:00 a.m.</p>

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Week 14 (November 25 and November 26)	
<b><u>Lecture</u></b> <i>Section 7.1: “The Inverse Sine, Cosine, and Tangent Functions”</i>	<b><u>Lab</u></b> Homework #13, which covers Sections 6.3, 6.4, and 6.5 — due on November 25 at 8:00 a.m.

November 27 - November 29
Thanksgiving Recess: no class.

Week 15 (December 2 – December 6)	
<b><u>Lecture</u></b> <i>Section 7.2: “The Inverse Sine, Cosine, and Tangent Functions (Continued)”</i> <i>Section 7.3: “Trigonometric Equations”</i>	<b><u>Lab</u></b> <b>Test 4</b> (covers covers Sections 6.1, 8.1, 8.2, 8.3, 6.2, 6.3, 6.4, 6.5, and 7.1) Homework #14, which covers Section 7.1 — due on December 2 at 8:00 a.m.

Week 16 (December 9 – December 11)	
<b><u>Lecture</u></b> <i>Section 7.4: “Trigonometric Identities”</i>	<b><u>Lab</u></b> Homework #15, which covers Sections 7.2 and 7.3 — due on December 9 at 8:00 a.m.

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<b>December 12 – December 18</b>
<b>Final exams</b>