

# **College Algebra MATH 115**

**Fall 2019**

**Section 007  
(Tuesday, Thursday 12:30–13:45)**

**Section 008  
(Tuesday, Thursday 14:00–15:15)**

**Section 009  
(Monday, Wednesday 14:00–15:15)**

## ***INSTRUCTOR***

Stanley M. Max  
Lecturer in Mathematics

## ***OFFICE***

Department of Mathematics  
7800 York Road

## ***E-MAIL***

smax@towson.edu

## ***TELEPHONE AND FAX NUMBERS***

(410) 704-3084

## ***OFFICE HOURS***

Monday 17:00–18:00, Tuesday 15:30–16:30, Wednesday 17:00–18:00, Thursday 15:30–16:30.

## ***MY WEBSITE***

I will sometimes post important and useful information pertaining to the course on my website. (For example, this syllabus is posted there.) To see the correct page, use this URL: [www.stanleymax.net](http://www.stanleymax.net), then click on the tab that says “Course material.”

## ***COURSE DESCRIPTION***

Equations and the concept of function; linear, quadratic, higher-degree polynomial, exponential, logarithmic, rational, and power and root functions; complex numbers. Not open to those who successfully completed MATH 119. Prerequisites: qualifying score on Math Placement exam or MATH 102.

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### ***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

### ***TEXTBOOK***

The textbook that this course uses is the following:

Lial, Hornsby, Schneider, Daniels, *Essentials of College Algebra* 12th edition (Pearson, 2019).

### ***REQUIRED TECHNOLOGY***

Course materials such as the e-book, online homework, video lectures, and homework hints are provided on MyMathLab (MML). Access to MML will be available through Direct Digital Access, which the University Store offers through Blackboard. The materials will be direct billed to your student account. You should log into your Blackboard account to access and review your materials for the class. You will have access to the online materials for free until September 04 at 23:59 (that is, one minute before midnight). If you wish to opt-out, you must do so by then.

The due dates for the online assignments are listed in your MyMathLab account when you log into 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, and I recommend that students use some model of TI-83 or TI-84. You may use another make or model of graphing calculator (with some limitations), but I will teach using the TI-83/84. On my website, I have posted separate instructions as to the make and model of graphing calculator that I recommend and that I permit.

### ***COURSE OBJECTIVES***

As a result of taking this course, students should learn about various types of mathematical functions. 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.

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***DETERMINATION OF YOUR GRADE***

<b>GRADED COMPONENTS</b>	
Test 1	20%
Test 2	20%
Test 3	20%
Final Exam	20%
Online homework	15%
Class participation	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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### ***ATTENDANCE***

Attendance will be taken at the beginning of every lecture and lab, and class participation 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.

### ***PREPARING FOR EXAMS AND LEARNING THE MATERIAL***

To learn the material and prepare for the exams in this course, above all you should attend class regularly. Furthermore, the online homework assignments provide an excellent learning source, besides being an important component of the course grade.

### ***TUTORING***

The Academic Achievement Center (ACC) 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 ACC’s website, located at this URL:

<https://www.towson.edu/aac/>

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### ***ACADEMIC INTEGRITY***

This class is conducted in accordance with the Towson University Code of Student Conduct as described in the TU Catalog or accessed at the following website:

<https://www.towson.edu/about/administration/policies/documents/policies/03-01-00-student-academic-integrity-policy.pdf>

This code prohibits all forms of dishonesty including cheating and plagiarism. Plagiarism is copying the words of another or using the ideas of another without proper citation. Cheating or plagiarism in any form is unacceptable and a penalty commensurate with the offense will be applied. The range of penalties includes deduction of points or rejection of the assignment, failure of the course, or a more severe disciplinary action by university authorities.

### ***DIVERSITY***

In accordance with the Towson University Strategic Plan, the Fisher College of Science and Mathematics Diversity Action Plan, and the Department of Mathematics Diversity Action Plan, everyone participating in this course is expected to be respectful of each other without regard to race, class, linguistic background, religion, political beliefs, sex, gender identity or expression, sexual orientation, ethnicity, age, veteran status, or physical ability. If you feel these expectations have not been met, please speak with your instructor or the designated diversity liaison.

### ***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.

### ***STUDENT WORLOAD EXPECTATIONS***

Federal and State regulations require that students should expect to spend at least two hours per week per credit hour for working on course-related activity outside of the classroom. Thus, students are expected to spend at least six hours per week outside of the three hours of classroom lecture to succeed in MATH 115.

Here are examples of outside-classroom activities: reading the textbook before lecture, rewriting lecture notes, redoing problems presented in class, watching videos on MyMathLab, completing assigned homework, completing additional problems to ensure mastery of concepts, and preparing for tests.

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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 26 – 30)</b>	
<b><u>Lecture</u></b> Syllabus and course outline. <i>Section R.3:</i> “Polynomials” <i>Section R.4:</i> “Factoring Polynomials” <i>Section R.5:</i> “Rational Expressions”	<b><u>Homework due and/or Tests</u></b>

<b>September 02</b>
<b>Labor Day: No classes</b>

<b>September 04</b>
<b>Change-of-schedule period ends</b>
<b>Last day to drop a course with no grade posted to academic record</b>
<b>Last day to add a course</b>

<b>Week 2 (September 03 – 06)</b>	
<b><u>Lecture</u></b> <i>Section R.6:</i> “Rational Exponents” <i>Section R.7:</i> “Radical Expressions” <i>Section 1.1:</i> “Linear Equations”	<b><u>Homework due and/or Tests</u></b>

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<b>Week 3 (September 09 – 13)</b>	
<b><u>Lecture</u></b>	<b><u>Homework due and/or Tests</u></b>
<i>Section 1.2: “Applications and Modeling with Linear Equations”</i> <i>Section 1.3: “Complex Numbers”</i> <i>Section 1.4: “Quadratic Equations”</i>	

<b>Week 4 (September 16 – 20)</b>	
<b><u>Lecture</u></b>	<b><u>Homework due and/or Tests</u></b>
<i>Section 1.5: “Applications and Modeling with Quadratic Equations”</i> <i>Section 1.6: “Other Types of Equations and Applications”</i>	Homework #1, which covers R. 3 — due on September 16 at 08:00. Homework #2, which covers R. 4 — due on September 16 at 08:00. Homework #3, which covers R. 5 — due on September 16 at 08:00. Homework #4, which covers R. 6 — due on September 16 at 08:00. Homework #5, which covers R. 7 — due on September 16 at 08:00. Homework #6, which covers Section 1. 1 — due on September 16 at 08:00. Homework #7, which covers Section 1.2 — due on September 16 at 08:00. Homework #8, which covers Section 1.3 — due on September 16 at 08:00. Homework #9, which covers Section 1.4 — due on September 16 at 08:00.

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<b>Week 5 (September 23 – 27)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 1.7: “Inequalities”</i> Review for Test 1</p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p><b>Test 1</b> (covers Sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6)</p> <p>Homework #10, which covers Section 1.5 — due on September 23 at 08:00.</p> <p>Homework #11, which covers Section 1.6 — due on September 23 at 08:00.</p>

<b>Week 6 (September 30 – October 04)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 1.8: “Absolute Value Functions and Inequalities”</i> <i>Section 2.1: “Rectangular Coordinates and Graphs”</i> <i>Section 2.3: “Functions”</i></p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p>Homework #12, which covers Section 1.7 — due on September 30 at 08:00.</p>

<b>Week 7 (October 07 – 11)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 2.4: “Linear Functions”</i> <i>Section 2.5: “Equations of Lines and Linear Models”</i> <i>Section 2.6: “Graphs of Basic Functions”</i></p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p>Homework #13, which covers Section 1.8 — due on October 07 at 08:00.</p> <p>Homework #14, which covers Section 2.1 — due on October 07 at 08:00.</p> <p>Homework #15, which covers Section 2.3 — due on October 07 at 08:00.</p>



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<b>Week 8 (October 14 – 18)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 2.7: “Graphing Techniques”</i></p> <p><i>Section 2.8: “Function Operations and Composition”</i></p> <p>Review for Test 2</p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p>Homework #16, which covers Section 2.4 — due on October 14 at 08:00.</p> <p>Homework #17, which covers Section 2.5 — due on October 14 at 08:00.</p> <p>Homework #18, which covers Section 2.6 — due on October 14 at 08:00.</p>

<b>Week 9 (October 21 – 25)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 3.1: “Quadratic Functions and Models”</i></p> <p><i>Section 3.2: “Synthetic Division”</i></p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p><b>Test 2</b> (covers Sections 1.7, 1.8, 2.1, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8)</p> <p>Homework #19, which covers Section 2.7 — due on October 21 at 08:00.</p> <p>Homework #20, which covers Section 2.8 — due on October 21 at 08:00.</p>

<b>Week 10 (October 28 – November 01)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 3.3: “Zeros of Polynomial Functions”</i></p> <p><i>Section 3.4: “Polynomial Functions: Graphs, Applications, and Models”</i></p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p>Homework #21, which covers Section 3.1 — due on October 28 at 08:00.</p> <p>Homework #22, which covers Section 3.2 — due on October 28 at 08:00.</p>

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**November 04**

**Last day to withdraw with a grade of 'W'**

**Last day to change to pass/fail option or audit options**

**Week 11 (November 04 – 08)**

**Lecture**

*Section 3.5: “Rational Functions: Graphs, Applications, and Models”*

*Section 3.6: “Variation”*

**Homework due and/or Tests**

Homework #23, which covers Section 3.3 — due on November 04 at 08:00.

Homework #24, which covers Section 3.4 — due on November 04 at 08:00.

**Week 12 (November 11 – 15)**

**Lecture**

Review for Test 3

*Section 4.1: “Inverse Functions”*

**Homework due and/or Tests**

**Test 3** (covers Sections 3.1, 3.2, 3.3, 3.4, 3.5, 3.6)

Homework #25 which covers Section 3.5 — due on November 11 at 08:00.

Homework #26, which covers Section 3.6 — due on November 11 at 08:00.

**Week 13 (November 18 – 22)**

**Lecture**

*Section 4.2: “Exponential Functions”*

*Section 4.3: “Logarithmic Functions”*

*Section 4.4: “Evaluating Logarithms and the Change-of-Base Theorem”*

**Homework due and/or Tests**

Homework #27, which covers Section 4.1 — due on November 18 at 08:00.

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<b>Week 14 (November 25 – 26)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 4.5:</i> “Exponential and Logarithmic Equations” and <i>Section 4.6:</i> “Applications and Models of Exponential Growth and Decay” (begin)</p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p>Homework #28, which covers Section 4.2 — due on November 25 at 08:00.</p> <p>Homework #29, which covers Section 4.3 — due on November 25 at 08:00.</p> <p>Homework #30, which covers Section 4.4 — due on November 25 at 08:00.</p>

<b>November 27 – 29</b>
<p style="text-align: center;"><b>Thanksgiving Holiday: No classes</b></p>

<b>Weeks 15 and 16 (December 02 – 09)</b>	
<p style="text-align: center;"><b><u>Lecture</u></b></p> <p><i>Section 4.5:</i> “Exponential and Logarithmic Equations” and <i>Section 4.6:</i> “Applications and Models of Exponential Growth and Decay” (end)</p> <p>Review for Final Exam</p>	<p style="text-align: center;"><b><u>Homework due and/or Tests</u></b></p> <p>Homework #31, which covers Section 4.5 — due on December 09 at 08:00.</p> <p>Homework #32, which covers Section 4.6 — due on December 09 at 08:00.</p>

<b>Final Exam</b>
<p style="text-align: center;"><b>Section 007: Thursday (December 12) 12:30–14:30</b></p> <p style="text-align: center;"><b>Section 008: Thursday (December 12) 15:00–17:00</b></p> <p style="text-align: center;"><b>Section 009: Monday (December 16) 15:00–17:00</b></p>