

College Algebra MATH 115

Spring 2023

Section 105 (TuTh 5:30–6:45 p.m.)

INSTRUCTOR

Ben Cohen

OFFICE

Department of Mathematics
7800 York Road 374 (aka the “Corner Office”)

EMAIL

bscohen@towson.edu
(Email is the best way to reach me.)

TELEPHONE NUMBER

410-704-3759

OFFICE HOURS

Tuesday and Thursday 6:45–7:15 p.m., YR 122, and by appointment

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.

COURSE LEARNING OUTCOMES

- 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

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.

ONLINE 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 Thursday, Feb. 9, at 11:59 p.m. If you wish to opt out, you must do so by then. If you do opt out, you still need to acquire MyMathLab by some other method. Using Direct Access will be less expensive for you.

You need to have a working computer and an internet connection.

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.

ATTENDANCE

Students are required to attend each class, and attendance will be taken at the beginning of every lecture. **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.

MATH TUTORING

The Tutoring and Learning Center (TLC) makes tutoring services for this course available on a drop-in basis and by appointment. For detailed information, look at the TLC's website, located at this URL:

<https://www.towson.edu/tutoring-learning/>

GRADING OF HOMEWORK

As noted below in the schedule of topics as well as in MyMathLab, homework is due nearly every week, and it is due on Mondays at 8 a.m. The homework is set up so that you have unlimited attempts on questions, and therefore if you persevere, you can earn full credit on the assignments. Help features are also available on homework assignments.

If you do not complete a particular homework assignment on time, then you can continue to work on it. However, you will incur a 50% penalty on the unfinished portion. All homework assignments close for even partial credit at 11 p.m. on Tuesday, May 16.

ACADEMIC INTEGRITY POLICY

This academic integrity policy for this course is consistent with the TU Academic Integrity Policy, which can be reviewed here:

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

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 includes unauthorized collaboration during an assessment and using unauthorized materials, technology, or web sites during an assessment. 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.

MATHEMATICS DEPARTMENT DIVERSITY STATEMENT

Department of Mathematics Commitment to Diversity: Towson University values diversity and fosters a climate that is grounded in respect and inclusion. Everyone participating in this course is expected to treat all others in accordance with this vision and policy. TU's diversity tenets include sex, sexual orientation, race and ethnicity, color, nationality, gender identity or expression, mental or physical ability, religious affiliation, age, and veteran status. If you feel that these expectations have not been met, please contact the Math Department's Diversity representative, Dr. Elizabeth Goode, at egoode@towson.edu.

DISABILITY SUPPORT SERVICES

This course complies with Towson University policies for students with disabilities. Students with disabilities are encouraged to register with Accessibility & Disability Services (ADS) at (410) 704-2638 (Voice) or (410) 704-4423 (TDD). Students who suspect that they have a disability but do not have documentation are encouraged to contact ADS for advice on how to obtain appropriate evaluation. A memo from ADS authorizing your accommodation is needed before any accommodation can be made.

To learn how to arrange for any appropriate accommodations, students with disabilities should visit the Accessibility and Disability Services (ADS) webpage at this URL:

<https://www.towson.edu/accessibility-disability-services/>

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.

*** MATH 115 — College Algebra ***

DETERMINATION OF YOUR GRADE

GRADED COMPONENTS	
Test 1	20%
Test 2	20%
Test 3	20%
Final exam	20%
Online homework	15%
In-class quizzes	5%

FINAL GRADE CUT-OFFS (where x is your overall score)	
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+	$77\% \leq x < 80\%$
C	$70\% \leq x < 77\%$
D+	$67\% \leq x < 70\%$
D	$60\% \leq x < 67\%$
F	$0\% \leq x < 60\%$

*** MATH 115 — College Algebra ***

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.

Week 1 (Jan. 30–Feb. 3)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Syllabus and course outline. Section R.3: “Polynomials” Section R.4: “Factoring Polynomials” Section R.5: “Rational Expressions”	

Week 2 (Feb. 6–10)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section R.6: “Rational Exponents” Section R.7: “Radical Expressions” Section 1.1: “Linear Equations” Section 1.2: “Applications and Modeling with Linear Equations”	

February 7
Change-of-schedule period ends Last day to drop a course with no grade posted to academic record Last day to add a course

Week 3 (Feb. 13–17)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 1.3: “Complex Numbers”	Homework #1, which covers Section R.3 — due on Feb. 13 at 8 a.m.
Section 1.4: “Quadratic Equations”	Homework #2, which covers Section R.4 — due on Feb. 13 at 8 a.m.
Section 1.5: “Applications and Modeling with Quadratic Equations”	Homework #3, which covers Section R.5 — due on Feb. 13 at 8 a.m.
	Homework #4, which covers Section R.6 — due on Feb. 13 at 8 a.m.
	Homework #5, which covers Section R.7 — due on Feb. 13 at 8 a.m.
	Homework #6, which covers Section 1.1 — due on Feb. 13 at 8 a.m.
	Homework #7, which covers Section 1.2 — due on Feb. 13 at 8 a.m.

Week 4 (Feb. 20–24)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 1.6: “Other Types of Equations and Applications”	Homework #8, which covers Section 1.3 — due on Feb. 20 at 8 a.m.
Review for Test 1	Homework #9, which covers Section 1.4 — due on Feb. 20 at 8 a.m.
	Homework #10, which covers Section 1.5 — due on Feb. 20 at 8 a.m.
	Factoring Quiz 1 — Tuesday, Feb. 21

*** MATH 115 — College Algebra ***

Week 5 (Feb. 27–March 3)	
<p style="text-align: center;"><u>Lecture</u></p> <p>Section 1.7: “Inequalities”</p> <p>Section 1.8: “Absolute Value Functions and Inequalities”</p>	<p style="text-align: center;"><u>Homework due and/or Tests</u></p> <p>Homework #11, which covers Section 1.6 — due on Feb. 27 at 8 a.m.</p> <p>Test 1 — Tuesday, Feb. 28 (covers Sections 1.1 through 1.6)</p>

Week 6 (March 6–10)	
<p style="text-align: center;"><u>Lecture</u></p> <p>Section 2.1: “Rectangular Coordinates and Graphs”</p> <p>Section 2.3: “Functions”</p> <p>Section 2.4: “Linear Functions”</p>	<p style="text-align: center;"><u>Homework due and/or Tests</u></p> <p>Homework #12, which covers Section 1.7 — due on March 6 at 8 a.m.</p> <p>Homework #13, which covers Section 1.8 — due on March 6 at 8 a.m.</p>

Week 7 (March 13–17)	
<p style="text-align: center;"><u>Lecture</u></p> <p>Section 2.5: “Equations of Lines and Linear Models”</p> <p>Section 2.6: “Graphs of Basic Functions”</p> <p>Section 2.7: “Graphing Techniques”</p>	<p style="text-align: center;"><u>Homework due and/or Tests</u></p> <p>Homework #14, which covers Section 2.1 — due on March 13 at 8 a.m.</p> <p>Homework #15, which covers Section 2.3 — due on March 13 at 8 a.m.</p> <p>Homework #16, which covers Section 2.4 — due on March 13 at 8 a.m.</p> <p>Factoring Quiz 2 — Tuesday, March 14</p>

March 19–26
Spring Break: No classes

Week 8 (March 27–31)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 2.8: “Function Operations and Composition”	Homework #17, which covers Section 2.5 — due on March 27 at 8 a.m.
Review for Test 2	Homework #18, which covers Section 2.6 — due on March 27 at 8 a.m.
	Homework #19, which covers Section 2.7 — due on March 27 at 8 a.m.

Week 9 (April 3–7)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 3.1: “Quadratic Functions and Models”	Homework #20, which covers Section 2.8 — due on April 3 at 8 a.m.
Section 3.2: “Synthetic Division”	Test 2 — Tuesday, April 4 (covers Sections 1.7 through 2.8, except 2.2)

April 10	
Last day to withdraw with a grade of “W”	
Last day to change to pass/fail or audit option	

Week 10 (April 10–14)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 3.3: “Zeros of Polynomial Functions”	Homework #21, which covers Section 3.1 — due on April 10 at 8 a.m.
Section 3.4: “Polynomial Functions: Graphs, Applications, and Models”	Homework #22, which covers Section 3.2 — due on April 10 at 8 a.m.
Section 3.5: “Rational Functions: Graphs, Applications, and Models”	

Week 11 (April 17–21)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 3.6: “Variation” Review for Test 3	Homework #23, which covers Section 3.3 — due on April 17 at 8 a.m. Homework #24, which covers Section 3.4 — due on April 17 at 8 a.m. Homework #25, which covers Section 3.5 — due on April 17 at 8 a.m. Factoring Quiz 3 — Tuesday, April 18

Week 12 (April 24–28)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 4.1: “Inverse Functions” Section 4.2: “Exponential Functions”	Homework #26, which covers Section 3.6 — due on April 24 at 8 a.m. Test 3 — Tuesday, April 25 (covers Sections 3.1 through 3.6)

Week 13 (May 1–5)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 4.3: “Logarithmic Functions” Section 4.4: “Evaluating Logarithms and the Change-of-Base Theorem”	Homework #27, which covers Section 4.1 — due on May 1 at 8 a.m. Homework #28, which covers Section 4.2 — due on May 1 at 8 a.m.

Weeks 14 and 15 (May 8–16)	
<u>Lecture</u>	<u>Homework due and/or Tests</u>
Section 4.5: “Exponential and Logarithmic Equations”	Homework #29, which covers Section 4.3 — due on May 8 at 8 a.m.
Section 4.6: “Applications and Models of Exponential Growth and Decay”	Homework #30, which covers Section 4.4 — due on May 8 at 8 a.m.
Section 5.1: “Systems of Linear Equations” [we are only studying how — using a graphing calculator — to find the intersection of two lines]	Homework #31, which covers Section 4.5 — due on May 16 at 11 p.m.
Review for Final Exam	Homework #32, which covers Section 4.6 — due on May 16 at 11 p.m.
	Homework #33, which covers Section 5.1 — due on May 16 at 11 p.m.
	Factoring Quiz 4 — Tuesday, May 9

Final Exam
The final exam will be administered between May 17 and May 23 according to Towson University’s final exam schedule.