College Algebra
MATH 115

Fall 2020

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

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

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

Section 021
(Monday, Wednesday 15:30–16:45)

INSTRUCTOR

Stanley M. Max
Lecturer in Mathematics

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TELEPHONE AND FAX NUMBERS

(410) 704-3084

OFFICE HOURS

Via Zoom: Monday 15:30–16:30, Tuesday 16:00–18:00, Wednesday 15:30–16:30

COURSE DESCRIPTION

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

*** MATH 115 — College Algebra ***

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).

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, then click on the tab "Course material."

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 Sunday (August 30) at 23:59 (that is, one minute before midnight). 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. On my website, I have posted separate instructions as to the make and model of graphing calculator that I recommend and that I permit.

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:
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> • 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. You can receive tutoring online. For detailed information, look at the TLC's website, located at this URL:

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

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/documents/polices/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.

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.

DETERMINATION OF YOUR GRADE

GRADED COMPONENTS	
Test 1	20%
Test 2	20%
Test 3	20%
Final Exam	20%
Online homework	20%

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+	$76\% \leq x < 80\%$
C	$70\% \leq x < 76\%$
D+	$66\% \leq x < 70\%$
D	$60\% \leq x < 66\%$
F	$0\% \leq x < 60\%$

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 (August 24 – 28)	
Lecture	**Homework due and/or Tests**
Syllabus and course outline.	
Section R.3: "Polynomials"	
Section R.4: "Factoring Polynomials"	
Section R.5: "Rational Expressions"	

August 30
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 2 (August 31 – September 04)	
Lecture	**Homework due and/or Tests**
Section R.6: "Rational Exponents"	
Section R.7: "Radical Expressions"	
Section 1.1: "Linear Equations"	

September 07
Labor Day Holliday: No class

| Week 3 (September 08 – 11) ||
Lecture	**Homework due and/or Tests**
Section 1.2: "Applications and Modeling with Linear Equations" *Section 1.3:* "Complex Numbers" *Section 1.4:* "Quadratic Equations"	Homework #1, which covers R.3 — due on September 07 at 08:00. Homework #2, which covers R.4 — due on September 07 at 08:00. Homework #3, which covers R.5 — due on September 07 at 08:00. Homework #4, which covers R.6 — due on September 07 at 08:00. Homework #5, which covers R.7 — due on September 07 at 08:00. Homework #6, which covers Section 1.1 — due on September 07 at 08:00.

| Week 4 (September 14 – 18) ||
Lecture	**Homework due and/or Tests**
Section 1.5: "Applications and Modeling with Quadratic Equations" *Section 1.6:* "Other Types of Equations and Applications"	Homework #7, which covers Section 1.2 — due on September 14 at 08:00. Homework #8, which covers Section 1.3 — due on September 14 at 08:00. Homework #9, which covers Section 1.4 — due on September 14 at 08:00.

Week 5 (September 21 – 25)	
Lecture	**Homework due and/or Tests**
Section 1.7: "Inequalities" Review for Test 1	Homework #10, which covers Section 1.5 — due on September 21 at 08:00. Homework #11, which covers Section 1.6 — due on September 21 at 08:00. **Test 1** (covers Sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6)

Week 6 (September 28 – October 02)	
Lecture	**Homework due and/or Tests**
Section 1.8: "Absolute Value Functions and Inequalities" *Section 2.1:* "Rectangular Coordinates and Graphs" *Section 2.3:* "Functions"	Homework #12, which covers Section 1.7 — due on September 28 at 08:00.

Week 7 (October 05 – 09)	
Lecture	**Homework due and/or Tests**
Section 2.4: "Linear Functions" *Section 2.5:* "Equations of Lines and Linear Models" *Section 2.6:* "Graphs of Basic Functions"	Homework #13, which covers Section 1.8 — due on October 05 at 08:00. Homework #14, which covers Section 2.1 — due on October 05 at 08:00. Homework #15, which covers Section 2.3 — due on October 05 at 08:00.

Week 8 (October 12 – 16)	
Lecture	**Homework due and/or Tests**
Section 2.7: "Graphing Techniques" *Section 2.8:* "Function Operations and Composition" Review for Test 2	Homework #16, which covers Section 2.4 — due on October 12 at 08:00. Homework #17, which covers Section 2.5 — due on October 12 at 08:00. Homework #18, which covers Section 2.6 — due on October 12 at 08:00.

Week 9 (October 19 – 23)	
Lecture	**Homework due and/or Tests**
Section 3.1: "Quadratic Functions and Models" *Section 3.2:* "Synthetic Division"	Homework #19, which covers Section 2.7 — due on October 19 at 08:00. Homework #20, which covers Section 2.8 — due on October 19 at 08:00. **Test 2** (covers Sections 1.7, 1.8, 2.1, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8)

November 02
Last day to withdraw with a grade of 'W' **Last day to change to pass/fail option or audit options**

Week 10 (October 26 – 30)	
Lecture	**Homework due and/or Tests**
Section 3.3: "Zeros of Polynomial Functions" *Section 3.4:* "Polynomial Functions: Graphs, Applications, and Models"	Homework #21, which covers Section 3.1 — due on October 26 at 08:00. Homework #22, which covers Section 3.2 — due on October 26 at 08:00.

Week 11 (November 02 – 06)	
Lecture	**Homework due and/or Tests**
Section 3.5: "Rational Functions: Graphs, Applications, and Models" *Section 3.6:* "Variation"	Homework #23, which covers Section 3.3 — due on November 02 at 08:00. Homework #24, which covers Section 3.4 — due on November 02 at 08:00.

Week 12 (November 09 – 13)	
Lecture	**Homework due and/or Tests**
Section 4.1: "Inverse Functions" *Section 4.2:* "Exponential Functions"	Homework #25 which covers Section 3.5 — due on November 09 at 08:00. Homework #26, which covers Section 3.6 — due on November 09 at 08:00.

Week 13 (November 16 – 20)	
Lecture	**Homework due and/or Tests**
Section 4.3: "Logarithmic Functions" *Section 4.4:* "Evaluating Logarithms and the Change-of-Base Theorem" Review for Test 3	Homework #27, which covers Section 4.1 — due on November 16 at 08:00. Homework #28, which covers Section 4.2 — due on November 16 at 08:00. **Test 3** (covers Sections 3.1, 3.2, 3.3, 3.4, 3.5, 3.6

Week 14 (November 23 and 24)	
Lecture	**Homework due and/or Tests**
Section 4.5: "Exponential and Logarithmic Equations" and *Section 4.6:* "Applications and Models of Exponential Growth and Decay" [begin these sections]	Homework #29, which covers Section 4.3 — due on November 23 at 08:00. Homework #30, which covers Section 4.4 — due on November 23 at 08:00.

November 24
Classes held online through the end of the term

November 25 – 29
Thanksgiving Holiday: No classes

Week 15 (November 30 – December 04)	
Lecture	**Homework due and/or Tests**
Section 4.5: "Exponential and Logarithmic Equations" and *Section 4.6:* "Applications and Models of Exponential Growth and Decay" [finish these sections] Review for Final Exam	Homework #31, which covers Section 4.5 — due on November 30 at 08:00. Homework #32, which covers Section 4.6 — due on November 30 at 08:00.

Final Exam period (December 08 – 14)