

# University City High School

PRE AP CALCULUS (StLCC: MTH 160 & MTH 170)  
SYLLABUS 2019-2020

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## Course Description:

Pre AP Calculus with Trigonometry introduces students to the major concepts and tools needed to study Calculus. Students will encounter several types of assessment within this course: unit quizzes and exams, comprehensive exams, and experimental investigations that require collecting and analyzing data using technology. The honors course will be a rigorous course, preparing all of its students to take Advanced Placement Calculus the following year or to move on to courses on a college campus. This course is taught at a faster pace and will further challenge a student who has mastered all of the advanced algebra concepts. Alternative assessments, such as projects or experiments, will be more frequent and require more detail and work outside of the classroom. Pre AP Calculus students will have the option to take the class for college credit through StLCC (see below).

## Textbook:

*A Graphical Approach to Precalculus with Limits*, Seventh Edition. John Hornsby, Margaret L. Lial, Gary Rockswold, with Jessica Rockswold. Pearson, 2018.

## Course Expectations:

Students will be expected to have their note packet (provided) and their Chromebook to attend class every day. Completing assignments, attending class daily, and seeking help when needed are essential components of successfully mastering the rigorous contents of Pre AP Calculus.

## Calculators:

A graphing calculator is required for the course. We strongly recommend one in the Texas Instruments TI-Nspire family. A calculator will be assigned for home use for the 2020-2021 school year, but it would be more beneficial for each student to have their own if at all possible. Some tests and assignments will allow a calculator, others will not, and some will be a combination of the two.

## Formative & Summative Assessments:

All homework will be assigned on MyMathLab. Assignments will be able to be edited/reviewed/completed for an entire unit until MIDNIGHT the night before the scheduled assessment. Each assignment will be worth 10 points in the formative category and will be entered by unit. A student will earn full credit for all assignments with a score of 80%+ and all assignments less than 80% will be rounded to the nearest ten for scoring purposes. For example a score of 73% will count for 7 points while a score of 76% will count for 8 points. Study guides are available on MyMathLab as well, but are not required this will be scored similarly for extra credit. Each semester will have a CUMULATIVE (non-multiple choice) final exam.

## Grading Scale:

90 – 100 A  
80 – 89 B  
70 – 79 C  
60 – 69 CR  
Below 60 NC

## Grade Components:

Formative Assessments 30%  
Homework (10 pts each)  
POP Quizzes (10 pts each)

Summative Assessments 70%  
PLANNED Quizzes (50 pts each)  
Unit Assessment (100 pts each)  
Final Exam (200 pts each semester)

### **College Credit Option**

Students may enroll in MTH 160: College Algebra (Fall semester) and MTH 170: Trigonometry (Spring semester) through the St Louis Community College Dual Credit Program. They will earn three hours of college credit per semester. Students will be expected to comply with all StLCC policies and will need to meet a GPA requirement of 2.6+ to be able to register.

**Because Pre AP Calculus is offered for college credit test retakes are highly discouraged. On campus, test retakes are not administered as a general practice and left to the discretion of the teacher.**

### **Expectations and Procedures:**

1. Be respectful of each other and follow all district and school distance learning guidelines.
2. Be on time (logged in and ready to begin). District tardy policy will be followed.
3. Be prepared with all materials.
4. Because electronic devices such as cell phones and iPods have the capacity to store formulas and share test questions and answers with friends: **assessments will be designed to accommodate technology availability. While collaboration is encouraged, there will be consequences for academic dishonesty when “collaboration” crosses into academic dishonesty.** Thank you for helping me to make sure students understand the importance of this rule.
5. **DO YOUR BEST!**

*\*\*\*Academic Dishonesty:* defined as plagiarism, cheating on tests, copying all or part of another student’s assignments or papers, and/or forging parent or teacher’s signature on document. Any assignment meeting this criterion will result in an automatic zero.

### **Chromebooks:**

All homework assignments and quizzes will be given using MyMathLab. It is imperative that students have their Chromebooks in working order. Please contact the technology help desk ASAP if your Chromebook needs repaired or serviced: [wo@ucityschools.org](mailto:wo@ucityschools.org) or (314) 290 - 4014

### **Math Help:**

MyMathLab comes with online help tutoring and example videos. All lesson videos will be posted in Google Classroom at the **end of each class day**. I am also available outside of “school hours” for tutoring and further assistance: please make arrangements via email or Google Classroom.

It’s going to be a wonderful year! Please do not hesitate to contact me at

[bhieke@ucityschools.org](mailto:bhieke@ucityschools.org)

[atitler@ucityschools.org](mailto:atitler@ucityschools.org)

Please note this is a yearlong plan and dates will change to correspond to student need.

**Chapter 1: Linear Functions, Equations, and Inequalities** **0 periods**

\* All of this chapter is covered by completing the summer assignment.

- 1.1 Real Numbers and the Rectangular Coordinate System
- 1.2 Introduction to Relations and Functions
- 1.3 Linear Functions
- 1.4 Equations of Lines and Linear Models
- 1.5 Linear Equations and Inequalities
- 1.6 Applications of Linear Functions

**Chapter 2: Analysis of Graphs of Functions** **4-5 periods**

- 2.1 Graphs of Basic Functions and Relations; Symmetry
- 2.2 Vertical and Horizontal Shifts of Graphs
- 2.3 Stretching, Shrinking, and Reflecting Graphs
- 2.5 Piecewise-Defined Functions

Assessment #1: September 15

**Chapter 3: Quadratic Functions** **5-6 periods**

- 3.1 Complex Numbers
- 3.2 Quadratic Functions and Graphs
- R.3 Review of Factoring/Complete the square
- 3.3 Quadratic Equations and Inequalities
- 3.4 Applications of Quadratic Functions and Models

Assessment #2: October 1

**Chapter 4: Higher Degree Functions** **5-6 periods**

- 4.1 Higher-Degree Polynomial Functions and Graphs
- 4.2 Topics in the Theory of Polynomial Functions (I)
- 4.3 Topics in the Theory of Polynomial Functions (II)
- 4.4 Polynomial Equations and Inequalities; Further Applications and Models

Assessment #3: October 22

**Chapter 5: Rational, Power, and Root Functions** **5-6 periods**

- R.4 Review of Rational Expressions
- 5.1 Rational Functions and Graphs (I)
- 5.2 Rational Functions and Graphs (II)
- 5.3 Rational Equations, Inequalities, Models, and Applications
- 5.4 Functions Defined by Powers and Roots
- 5.5 Equations, Inequalities, and Applications Involving Root Functions

Assessment #4: November 9

**Chapter 6: Inverse, Exponential, and Logarithmic Functions** **6-7 periods**

- 2.6 Operations and Composition
- 6.1 Inverse Functions
- 6.2 Exponential Functions
- 6.3 Logarithms and Their Properties
- 6.4 Logarithmic Functions
- 6.5 Exponential and Logarithmic Equations and Inequalities
- 6.6 Further Applications and Modeling with Exponential and Logarithmic Functions

Assessment #5: December 10

**Chapter 7: Systems and Matrices** **6 periods**

- 7.1 Systems of Equations
- 7.2 Three Variable Systems
- 7.3 Solution of Linear Systems by Row Transformations
- 7.4 Matrix Properties and Operations
- 7.5 Determinants and Cramer's Rule
- 7.6 Solution of Linear Systems by Matrix Inverses

Assessment #6: January 12

**Chapter 8: Analytic Geometry** **6 periods**

- 8.1 Circles and Parabolas
- 8.2 Ellipses and Hyperbolas
- 8.3 The Conic Sections and Nonlinear Systems

Assessment #7: February 2

**Chapter 9: Functions of Trigonometry (Part 1)** **5 periods**

- 9.1 Functions of Trigonometry
- 9.5 Functions of Angles and Fundamental Identities
- 9.6 Evaluating Trigonometric Functions
- 9.7 Applications of Right Triangles

Quiz: February 18

**Chapter 11: Applications of Trigonometry (Part 1)** **4 periods**

- 11.1 The Law of Sines
- 11.2 The Law of Cosines and Area Formulas

Quiz: March 8

**Chapter 9: The Unit Circle and Functions of Trigonometry (Part 2)** **8 periods**

- 9.2 The Unit Circle and Its Functions
- 9.3 Graphs of Sine and Cosine Functions
- 9.4 Graphs of the Other Circular Functions

Quiz: April 5

**Chapter 10: Trigonometric Identities** **4 periods**

- 9.1 Trigonometric Identities
- 9.4 The Inverse Circular Functions
- 9.5 Trigonometric Equations and Inequalities (I)

Quiz: April 15

**Chapter 11: Applications of Trigonometry and Vectors (Part 2)** **6 periods**

- 11.3 Vectors and Their Applications
- 11.4 Trigonometric (Polar) Form of Complex Numbers
- 11.5 Powers and Roots of Complex Numbers
- 11.6 Polar Equations and Graphs
- 11.7 More Parametric Equations

Quiz: May 3

**Chapter 12: Further Topics in Algebra** **6 periods**

- 12.1 Sequences and Series
- 12.2 Arithmetic Sequences and Series
- 12.3 Geometric Sequences and Series
- 12.5 The Binomial Theorem

Assessment #8: May 17