



Precalculus (PRE CALC) 1A Syllabus

Course Name

PRE CALC 1A

Precalculus – Semester A

Course Information

PRE CALC 1A is the first semester of this two-semester course.

Welcome to Precalculus 1A. This course is intended to build upon and extend existing algebra and geometry skills while preparing the student for a calculus course. It is important that the student have a solid understanding of algebra II and geometry before attempting to take precalculus, as these sets of mathematical skills will be called upon frequently throughout the course.

The concepts of mathematical relations and functions and their use to model, describe, and solve problems are fundamental to mathematics. Through the use of new functions defined in trigonometry (the study of triangles), the algebra and geometry involved in analytic geometry, and with the aid of technology, you will learn how to become a more effective problem-solver.

In this precalculus course, you will be exposed to the inner workings of many things we use in everyday life. You will be able to provide answers to such questions as:

- How can we estimate the age of newly discovered fossils?
- Why is AIDS such a serious threat to a person who has only a few partners?
- How can we predict the size of animal populations by looking at their growth cycles?
- How many T-shirts do I need to produce and sell in order to maximize my profit?

The above examples illustrate a growing trend toward a multidisciplinary approach to real-life problems. Most situations are more complex than first imagined and necessitate some understanding of several disciplines. Thus, mathematicians break large problems into small ones that can be understood, controlling the variables, and then put the pieces back together in an attempt to understand the interactions that govern the entire

system. Many fields, including engineering, business, the biological sciences, physics, and public health, use mathematics to solve world problems and make predictions about the future based on developed models.

It is best if you learn precalculus while learning how mathematics directly affects you and your surroundings. I hope that, by the end of this course, you will feel enthusiastic about taking more courses in higher-level mathematics as you continue your educational career. At the very least, this course should leave you with a new appreciation for the beauty and applicability of mathematics.

Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor through the Blackboard messaging system. Technical support is available 24/7 at www.k12.ttu.edu.

Course Objectives

After completing this course, you should be able to:

1. define and describe characteristics of various types of functions, including polynomial, rational, power (including radical), exponential, logarithmic, and piecewise-defined functions;
2. translate between verbal, numerical, graphical, and symbolic representations of functions;
3. interpret the meaning of the symbolic representations of functions and operations on functions to solve meaningful problems;
4. use functions and their properties, tools, and technology to model and solve real-life problems;
5. use sequences and series to represent, analyze, and solve real-life problems;
6. evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms; and
7. build a strong foundation of mathematical concepts, techniques, and applications to prepare for calculus and other college-level courses.

PRE CALC addresses the required Texas Essential Knowledge and Skills (TEKS). These can be found at the [Texas Education Agency](http://www.tea.state.tx.us) website.

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Textbook and Materials

Textbook(s)

The required textbook for this course is:

- Larson, Ron, et al. *Precalculus with Limits* (3rd edition). Boston, MA: Cengage Learning, 2014. ISBN 978-1-305-07381-4

We recommend that you use your textbook in conjunction with the course material. The textbook does an excellent job of explaining the concepts presented in each section. The authors have provided solutions from algebraic, graphic, and numerical perspectives with study tips and an extensive technology support Appendix. In addition, this course will often provide instructive commentary, real-life examples, a review of properties and definitions, and additional worked examples.

Materials

- three-ring binder
- lined notebook paper
- pencils and erasers
- colored pencils
- straightedge or ruler
- graphing calculator (TI-89, TI-92, or any calculator with a CAS is not allowed on the exam, so please don't use one in the course, either)
- a scanner or digital camera and software to create PDFs (see **Requirements for Creating PDFs** in the Syllabus section of your course for information on PDF-creation options)

This course refers to the Texas Instruments TI-84 graphing calculator. All the graphics and keystrokes in this course guide correspond to the TI-84, but any graphing calculator may be used (such as the TI Series, Casio, or Hewlett Packard). If you choose a different calculator, you may need to refer to your documentation to perform the required operations. Also, the authors have included technology support for graphing utilities in Appendix A of the textbook.

PDF Assignments

You will submit all lessons for this course electronically. Your work for each lesson will need to be saved as a PDF in order to submit the lesson for grading. See **Requirements for Creating PDFs** in the Syllabus section of your course for information on PDF-creation options.

You will find a **Sample Lesson Assignment** in the **Resources** section of the course. Look at this sample before you begin Lesson One. Refer to it each time you begin a lesson until you are familiar with the format.

Technical Requirements

- Internet access – preferably high speed (for accessing Blackboard)
- Email
- Word processing software such as Microsoft Word
- Adobe Reader (download from Adobe.com)
- Audio and video capabilities (for watching/listening to course content)
- PDF app (free options available)

Technical Skill Requirements

Be comfortable with the following:

- using a word processor
- Internet search engines and browsers
- creating PDFs (see **Requirements for Creating PDFs** in the Syllabus section of your course)

Course Organization

This course consists of four Units, divided into Lessons, and a final examination. Each Unit contains the following:

- Introduction and Instructions
- Learning Objectives
- Learning Activities
- Assignments

Each lesson includes several activities that present content knowledge. Each lesson also includes multiple graded assignments to ensure that you learn the content that has been presented in the activities. Be sure you read all instructions carefully and ask your instructor for help if something is not clear.

This course was written by a high school mathematics teacher. She recorded videos to walk you through some of the examples in the course. To see what these videos look like and meet the person who will be helping you, watch the video “Welcome to Precal!” in the Syllabus section of the course.

Overview

Each Unit begins with an introduction with a “How to Proceed” section. This section explains the best way to work through a unit and details how to use the online sources with each lesson, so be sure to read it carefully.

Each Unit Introduction is followed by several lessons. Each lesson will:

- tell you which page numbers to read and take notes on in the textbook;
- direct you to useful online materials for the topics you are covering in that section;
- provide further explanation for what you learn in the textbook, including extra videos for some problems (these are the “Show Me” videos that Ms. Carey talks about in the Introduction video);
- give you practice exercises to complete, along with solutions for those problems;
- review the key terms and ideas to make sure you’re ready for the graded assignment; and
- assign problems from the book which will count toward your grade.

After you have completed all of the Lessons in a Unit, you will take a final Unit Test. This test will help you see if you have mastered the material well enough for the final exam.

Graded Assignments

You will complete and submit all assignments for this course electronically. Quizzes will be completed online. Problems assigned from the book will be saved as a PDF in order to submit the lesson for grading. See **Requirements for Creating PDFs** in the Syllabus section of your course for information on PDF-creation options.

Use the following instructions when preparing the assigned problems from the textbook.

1. Do all your work on paper to be scanned and saved as a PDF.
2. Begin each lesson assignment on a new page.
3. Make sure each lesson assignment contains the title and textbook page numbers of the lesson, and a listing of the assigned problems.
4. When solving a problem, begin by writing out the original problem (you do not have to rewrite the word problems), then proceed to solve the problem, showing your work **vertically**. **Be sure to indicate your final answer** as shown in the **Sample Lesson Assignment** in the Resources section of this course.
5. Always show as much work as possible.

6. Skip at least one line between problems.

7. **Neatness is a necessity.**

Bonus Lessons

There are also three ungraded bonus lessons in Unit Two. The first is a review of what you should already know about complex numbers. The second discusses how to write an equation for a polynomial. The third is for those students who want to take Calculus after this course—it will introduce you to limits. You can take advantage of these bonus lessons as needed.

After you complete the graded assignments for each unit, you'll take the chapter exam for that unit.

Course Outline

Please note that some assignments will be hidden from you when you start the course. As you move through the lessons and complete assignments, more will unlock for you.

Lesson	Topic	Approximate Time for Completion
Unit 1	Functions and Their Graphs	Four weeks
Unit 2	Polynomial and Rational Functions	Four weeks
Unit 3	Exponential and Logarithmic Function	Four weeks
Unit 4	Sequences and Series	Four weeks
Final Exam		

Assignment Schedule

Each of the following must be completed to complete the course. Items with an asterisk (*) indicate that these are summative assessments for the course.

Lesson	Weeks	Assignments
1	1-4	Checkpoint 1 (Non-graded) Lesson 1.1 Graded Assignment Upload Lesson 1.2 Graded Assignment Upload Lesson 1.3 Graded Assignment Upload Lesson 1.4 Graded Assignment Upload Lesson 1.5 Graded Assignment Upload Lesson 1.6 Graded Assignment Upload *Chapter 1 Exam

Lesson	Weeks	Assignments
2	5-8	Lesson 2.1 Graded Assignment Upload Lesson 2.2 Graded Assignment Upload Lesson 2.3 Graded Assignment Upload, Part 1 (page 144) Lesson 2.3 Graded Assignment Upload, Part 2 (page 164) Lesson 2.4 Graded Assignment Upload Lesson 2.5 Graded Assignment Upload *Chapter 2 Exam
3	9-12	Lesson 3.1 Graded Assignment Upload Lesson 3.2 Graded Assignment Upload Lesson 3.3 Graded Assignment Upload Lesson 3.4 Graded Assignment Upload Lesson 3.5 Graded Assignment Upload *Chapter 3 Exam Checkpoint 2 (Non-graded)
4	13-16	Lesson 4.1 Graded Assignment Upload, Part 1 (page 613) Lesson 4.1 Graded Assignment Upload, Part 2 (page 643) Lesson 4.2 Graded Assignment Upload Lesson 4.3 Graded Assignment Upload Lesson 4.4 Graded Assignment Upload *Chapter 9 Exam Checkpoint 3 (Non-graded)
		Final Exam

Course Credit

The course grade will be calculated as follows:

- 50% coursework average;
- 50% summative assessment average, including the final exam;
- A passing course grade is 70 or higher.

Students must attempt all assignments in the course. The final exam will not be available until all assignments have been accepted and graded by the teacher.

Students who score below 70% on the final exam will be eligible for one re-exam opportunity.

Coursework

The graded assignments within each lesson are formative in nature. This means that they are designed to assist you in applying and demonstrating the lesson concepts, as

well as identifying areas in which you need additional review. You may use all the lesson's learning activities to assist you as you complete the graded assignments.

Summative Assessments

Summative assessments are those that allow you to demonstrate mastery of the course objectives. For summative assessments, you will NOT be allowed to use the learning materials. These are opportunities for you to show what you have learned by that point in the course. Summative assessments may be proctored using the online proctoring system Proctorio. Information about Proctorio is provided in **Remote Proctoring** in the Syllabus section of your course. The summative assessments for this course are as follows:

- **Summative Assessments (20% of Course Grade)**
 - Chapter 1 Exam (46 points)
 - Chapter 2 Exam (34 points)
 - Chapter 3 Exam (40 points)
 - Chapter 9 Exam (42 points)
- **Summative Final Exam (30% of Course Grade)**

Course Completion

- Students may not complete the course in less than 30 days.
- All courses expire six months after the enrollment date.

Academic Integrity

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

“Scholastic dishonesty” includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Student Expectations

You will be expected to log into the Blackboard course regularly to be aware of possible announcements/reminders and to pace your progress in the course.

Students are expected to maintain an online environment conducive to learning, which includes “netiquette” (Internet etiquette). Please review the basic rules for [Online Discussion Netiquette](#). Ensure that your email messages, discussion board postings, and other electronic communications are thoughtful and respectful. Diverse opinions are

welcome in this course, and you are expected to demonstrate an open mind and courtesy when responding to the thoughts and ideas of others.

The following are prohibited:

- making offensive remarks in email or the discussion board;
- using inappropriate language or discussing inappropriate topics online;
- spamming;
- hacking;
- using TTU or Blackboard email or discussion boards for commercial purposes;
- using all caps (considered shouting in online communications); and
- cyber-bullying or online harassment of any type.

Inappropriate behavior shall result in consequences ranging from a request to correct the problem, to removal from the course or even the university, depending on the severity of the behavior. Disciplinary actions will be taken according to the TTU K-12 Student Handbook.

Communication

- You can expect a reply from your instructor within 2 business days.
- Use the Blackboard Course Messages tool for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through the Blackboard Assignment Tool, rather than by mail or email.

Technical Difficulties

Getting Help

For student assistance with Blackboard, visit [TTU K-12 Support](#).

Computer Problems

A working computer is necessary for online coursework. Computer problems will not be accepted as a valid reason for failure to complete course activities within the allotted time frame. Identify a second computer, before the course begins, that you can use if you experience computer problems.

Server Problems

When the Blackboard server needs to be taken down for maintenance, the Blackboard administrator will post an announcement in your course informing you of the time and date. If the server experiences unforeseen problems, your course instructor will notify you.

Lost or Corrupted Files

You must keep/save a copy of every project/assignment on an external disk or personal computer. In the event of any kind of technology failure (e.g., Blackboard server crash or virus infection, students' own computer problems, loss of files in cyberspace, etc.) or any disputes, the instructor may request or require you to resubmit the files. In some instances, the instructor may need to open another attempt within Blackboard, so communication with your instructor is critical in these circumstances.