Trigonometry and Pre-Calculus Syllabus

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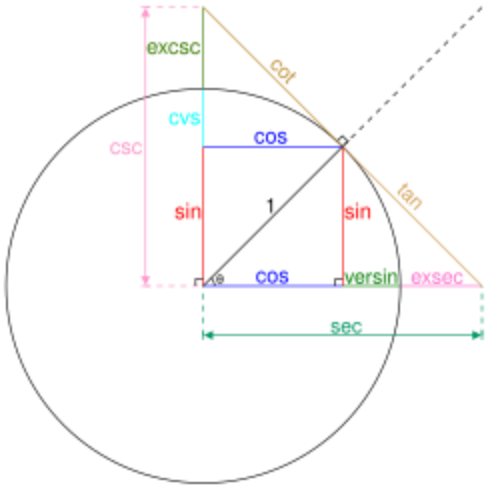
Course Description

Trigonometry is a branch of mathematics concerned with relationships between angles and side lengths of triangles. In particular, the trigonometric functions relate the angles of a right triangle with ratios of its side lengths. Precalculus consists of the algebraic, graphic, numeric, and modeling approach to the study of functions. It includes the use of appropriate mathematical language, with symbolism, to define, evaluate, and analyze the characteristics of functions.



Meeting Times

Day(s)	Times	Location
Mondays	6:30 pm – 7:30 pm	Room K
Thursdays	5:00 pm – 6:00 pm	Room K
Fridays	4:00 pm – 5:30 pm	Room K

Required Materials

OpenStax Precalculus 2e; https://openstax.org/details/books/precalculus-2e

Canvas: is our learning management system at the Simmons Academy. Everything you need to know about the course is here (links to the e-text, homework assignments, lecture content, etc.).

Learning Outcomes

Functions and Graphs

- Analyze functions: Determine domain, range, symmetry, intercepts, and transformations of parent functions.
- Perform operations: Add, subtract, multiply, divide, and compose functions, including finding inverse functions.
- Polynomial and rational analysis: Find zeros, factor high-degree polynomials, and identify

asymptotes of rational functions.

Exponential and Logarithmic Functions

- Model growth and decay: Graph and analyze exponential and logarithmic functions.
- Solve equations: Use properties of logarithms and exponents to solve complex, real-world application equations.

Trigonometry

- Evaluate ratios: Define trigonometric functions using right triangles and the unit circle with radian and degree measures.
- Graph trig functions: Sketch sine, cosine, and tangent curves while adjusting for amplitude, period, and phase shifts.
- Apply identities: Simplify expressions, prove trigonometric identities, and solve conditional trigonometric equations.

Grading

Your course grade will be based on homework, in-class activities and assignments, two unit exams and a comprehensive final exam.

Homework	25%
In-Class Assignments	15%
Unit Exams	40%
Comprehensive Final Exam	20%
Total	100%

Approximate letter grades according to overall course grade (%).

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
94 - 100%	90 - 93.9%	87 - 89.9%	83 - 86.9%	80 - 82.9%	77 - 79.9%	73 - 76.9%	70 - 72.9%	67 - 69.9%	63 - 66.9%	60 - 62.9%	<60%

Assignments

Exams. There will be a total of three exams. These unit exams will cover different topics but are not comprehensive. At the end of the course you will complete a cumulative final exam. This means that it will cover material from the whole semester. All exams will consist of questions taken from the material covered in the textbook, class activities, any supplemental readings, and the lecture.

Preparation and participation. You will read below that we expect you to prepare for each class period and then participate in class. In-class activities will typically consist of responses to quiz and hands-on demonstrations or activities.

Homework assignments. Homework will typically be assigned after class. Each homework assignment comprises only a small portion of your overall grade, so they are a low-stakes way to allow you to see what course material you have mastered and what you still need to work on. They will help you focus your study efforts as you prepare for exams.

Course Policies

Attendance.

General Expectations. Consistent class attendance sets you on a good path to earning a satisfactory grade in the class. If you must be absent, contact the instructor and check Canvas to see what work you are responsible for that you missed.

Format. This course is designated to meet in-person (face-to-face).

Make-up Policy

Even if you strive for perfect attendance, we understand that you may have to miss class due to unavoidable occurrences like getting sick or injured, having a family emergency, or participating in a school-sponsored event.

Homework assignments within a unit may be submitted late up until the exam for that unit (See Turning in Assignments, below).

Exams may be made up if the absence was excused (i.e., due to illness, accidental injury, family emergency, or participation in a University-sponsored event). Work with your instructor to schedule the make-up exam, which may consist of an alternative format, such as an essay exam.

Turning in Assignments

Format. Unless otherwise specified, submit all homework assignments electronically through Canvas.

Our expectations of each other to promote an environment conducive to learning

Students:

- Treat one another and the professor with respect.
- Minimize disturbance that would detract from the learning environment.
    - Come to class on time.
    - Mute cell phones.
    - Be unobtrusive if you need to leave the classroom to use the restroom or to get

water.

- Keep side conversations to a minimum to allow everyone to hear the instructor and other students when they are speaking.

- Use electronic devices only for engaging with the course material.

- Come to class prepared to engage in the material and the day's activities.

- Stay up to date with course announcements by checking your email and the course Canvas site daily.

Professor: The Professor will be respectful to the students and each other during the course. To promote an atmosphere conducive to learning, the professor will ensure that students follow the guidelines listed above and agree to adhere to the following guidelines:

- I will be prepared to begin each class on time.

- I will not keep students in the classroom after the scheduled class period.

- I will mute my cell phone before entering the classroom.

- I will return assignments promptly.

- I will be responsive to student questions and requests for assistance. I will be available to students during posted student hours.

- I will take different learning styles, personalities, educational backgrounds, etc. into account in planning lessons and assessments.

- I will use inclusive teaching practices and stay proactive about identifying and addressing biases.

- I will not condone acts, behavior, language, or symbols that represent or reflect intolerance or discrimination.

Academic Integrity: An academic community, regardless of delivery modality (e.g., in-person, online), must operate with complete openness, honesty and integrity. Responsibility for maintaining this atmosphere lies with the students, faculty and administration. Therefore, the achievement of personal and academic goals through dishonest means will not be tolerated.

Academic misconduct includes but is not limited to:

1. **Cheating:** the unauthorized use, access, or exchange of information before or during a quiz, test or semester examination. Unauthorized collaboration on a class assignment, submitting the same work in two courses without the professor's permission, and buying

or selling work for a course are also forms of cheating.

2. **Plagiarism**: the representation of someone else's words or ideas as one's own. The various forms of plagiarism include but are not limited to copying homework, falsifying lab reports, submitting papers containing materials written by another person, and failing to document correctly in one's written assignment words, arguments or ideas secured from other sources including content available from websites. Plagiarism detection software may be used with assignment submissions to verify original work.

3. **Providing or receiving assistance in a manner not authorized by the professor** in the creation of work to be submitted for academic evaluation including papers, projects and examinations; presenting as one's own the ideas or words of another for academic evaluation without proper acknowledgement.

4. **Doing unauthorized academic work** for which another person will receive credit or be evaluated.

5. **Misrepresenting student identity:** posing as another or having someone pose as you is an act of academic misconduct. Identity verification may be required to complete course activities and assessments.

6. **Attempting to influence one's academic evaluation** by means other than academic achievement or merit including unauthorized access to computer systems.

7. **Assisting in misconduct**: cooperation with another in an act of academic misconduct. A student who writes a paper, posts a paper or exam questions online, or does an assignment for another student is an accomplice and will be held accountable just as severely as the other. Any student who permits another to copy from his or her own paper, examination, or project shall be held as accountable as the student who submits the copied material. Students are expected to safeguard their work and should not share papers, projects, homework, or exam answers with other students unless specifically directed to by their professors.

8. **Failure to protect University accounts and computer systems** such as sharing of accounts, passwords, and other assigned resources whether with intention or through negligence.

Accessibility statement. Simmons Academy views disability as an important aspect of diversity and is committed to providing equitable access to learning opportunities for all students.

If you have, or think you have, a disability in any area, such as mental health, attention, learning, chronic health, sensory, or physical, please contact Dr. McLeod-Simmons to arrange a confidential discussion regarding equitable access and reasonable accommodations. Eligible students will be provided with an Accommodation Letter and reasonable accommodations will be arranged after timely delivery of the Accommodation Letter to the instructor. Students are encouraged to deliver Accommodation Letters as early in the semester as possible.

Students with short-term disabilities, such as a broken arm, can often work with instructors to minimize classroom barriers in situations where additional assistance is needed.

Trigonometry and Pre-Calc Class, 11th Grade, 2025-26

Course Schedule

Fall 2025

Date	Day	Topic	Learning Activities	Readings	Assessments	Attendance: Emma	Attendance Sarah
09/04/25	Thursday	Introduction to Angles and Radian Measure	Interactive notes; angle conversion practice; Desmos exploration	Ch. 7	Homework assignment	☑	☑
09/09/25	Tuesday	The Unit Circle	Unit circle labeling activity; partner quiz game	Ch. 7	Quick quiz	☑	☑
09/11/25	Thursday	Sine and Cosine Functions	Graphing activity using Desmos; worksheet	Ch. 7	Homework assignment	☑	☑
09/16/25	Tuesday	Tangent Function	Collaborative graph analysis; practice problems	Ch. 7	Homework assignment	☑	☑
09/18/25	Thursday	Graphing Trigonometric Functions	Lecture; problem solving; worksheet	Ch. 7	Homework assignment	☑	☑
09/23/25	Tuesday	Amplitude and Period	Teacher modeling; calculator investigation	Ch. 7	Practice worksheet	☑	☑
09/25/25	Thursday	Phase Shift and Transformations	Partner graphing activity; flower design project	Ch. 7	Project rubric	☑	☑
09/30/25	Tuesday	Modeling with Sine and Cosine	Real-world application; sound waves, pitch and volume	Ch. 7	Project rubric	☑	☑
10/02/25	Thursday	Inverse Trigonometric Functions	Guided examples; calculator practice; worksheet	Ch. 7	Homework assignment	☑	☑
10/07/25	Tuesday	Solving Basic Trigonometric Equations	Whiteboard problem-solving activity	Ch. 7	Homework assignment	☑	☑
10/09/25	Thursday	Applications of Trigonometry	Lecture; problem solving; worksheet	Ch. 7	Homework assignment	☑	☑
10/14/25	Tuesday	Unit Review	Study Guide; practice questions	Ch. 7		☑	☑
10/16/25	Thursday	Unit Exam	Exam 1	Ch. 7	Unit test	☑	☑
10/21/25	Tuesday	Trigonometric Identities Introduction	Identity matching activity; guided notes	Ch. 8	Homework assignment	☑	☑
10/23/25	Thursday	Pythagorean Identities	Lecture; problem solving; worksheet	Ch. 8	Homework assignment	☑	☑
10/28/25	Tuesday	Verifying Trigonometric Identities	Lecture; problem solving; worksheet	Ch. 8	Classwork check	☑	☑
10/30/25	Thursday	Sum and Difference Identities	Teacher modeling; guided examples	Ch. 8	Homework assignment	☑	☑
11/04/25	Tuesday	Double-Angle and Half-Angle Identities	Interactive foldable activity	Ch. 8	Homework assignment	☑	☑
11/06/25	Thursday	Solving Trigonometric Equations	Lecture; problem solving; worksheet	Ch. 8	Quiz	☑	☑
11/11/25	Tuesday	Graphical Solutions to Trigonometric Equations	Desmos graphing investigation	Ch. 8	Classwork assessment	☑	☑
11/13/25	Thursday	Applications of Trigonometric Equations	Real-world application problems; worksheet	Ch. 8	Homework assignment	☑	☑
11/18/25	Tuesday	Law of Sines	Triangle-solving investigation	Ch. 8	Homework assignment	☑	☑
11/20/25	Thursday	Law of Cosines	Collaborative problem solving	Ch. 8	Quiz	☑	☑
11/25/25	Tuesday	Thanksgiving Break	No class			☐	☐
11/27/25	Thursday	Thanksgiving Break	No class			☐	☐
12/02/25	Tuesday	Bearings and Navigation Problems	Worksheet	Ch. 8	Homework assignment	☑	☑
12/04/25	Thursday	The Complex Plane	Lecture; problem solving; worksheet	Ch. 8	Homework assignment	☑	☑
12/09/25	Tuesday	Final Trigonometry Review	Interactive review game	Ch. 8	Study guide	☑	☑
12/11/25	Thursday	Final Trigonometry Assessment and	Exam 2	Ch. 8	Unit Test	☑	☑

Spring 2026

Date	Day	Topic	Learning Activities	Textbook Section	Assessment	Attendance: Emma	Attendance Sarah
01/06/2026	Tuesday	Functions and Function Notation	Interactive notes and notation practice	1.1	Homework assignment	☑	☑
01/08/2026	Thursday	Domain and Range	Lecture, problem solving, worksheet	1.2	Worksheet	☑	☑
01/13/2026	Tuesday	Rates of Change and Behavior	Lecture, problem solving, worksheet	1.3	Homework assignment	☑	☑
01/15/2026	Thursday	Composition of Functions	Function machine collaborative practice	1.4	Practice assignment	☑	☑
01/20/2026	Tuesday	Transformations of Functions	Transformation matching activity	1.5	Homework assignment	☑	☑
01/22/2026	Thursday	Transformations of Functions 2	Lecture, problem solving, worksheet	1.5		☑	☑
01/27/2026	Tuesday	Absolute Value Functions	Lecture, problem solving, worksheet	1.6	Inverse function	☑	☑
01/29/2026	Thursday	Inverse Functions	Review stations and quiz games	1.7		☑	☑
02/03/2026	Tuesday	Linear Functions	Linear modeling with data	2.1	Homework assignment	☑	☑
02/05/2026	Thursday	Modeling with Linear Functions	Guided examples and graphing exploration	2.2	Application problem set	☑	☑
02/10/2026	Tuesday	Fitting Linear Models to Data	Spreadsheet regression investigation	2.3	Homework assignment	☑	☑
02/12/2026	Thursday	Piecewise Functions	Piecewise graphing challenge	2.4	Review study guide	☑	☑
02/17/2026	Tuesday	Ch. 1 and 2 Exam	Exam	Review Ch.1, 2	Exam 1	☑	☑
02/19/2026	Thursday	Quadratic Functions	Quadratic graph exploration	3.1	Homework assignment	☑	☑
02/24/2026	Tuesday	Power and Polynomial Functions	Lecture, problem solving, worksheet	3.2	Homework assignment	☑	☑
02/26/2026	Thursday	Graphs of Polynomial Functions	Graph sketching workshop	3.3	Homework assignment	☑	☑
03/03/2026	Tuesday	Dividing Polynomial Functions	Lecture, problem solving, worksheet	3.4		☑	☑
03/05/2026	Thursday	Dividing Polynomial Functions2	Synthetic division practice	3.4		☑	☑
03/10/2026	Tuesday	Zeros and Factorization	Factorization collaborative problems	3.5	Factorization assessment	☑	☑
03/12/2026	Thursday	Rational Functions	Lecture, problem solving, worksheet	3.6	Homework assignment	☑	☑
03/17/2026	Tuesday	Radical Functions	Lecture, problem solving, worksheet	3.7	Homework assignment	☑	☑
03/19/2026	Thursday	Exponential Functions	Growth and decay modeling	4.1	Exponential growth worksheet	☑	☑
03/24/2026	Tuesday	Graphs of Exponential Functions	Technology-based graph analysis	4.2	Homework assignment	☑	☑
03/26/2026	Thursday	Logarithmic Functions	Lecture, problem solving, worksheet	4.3		☑	☑
03/31/2026	Tuesday	*Easter Break*	*no class*			☐	☐
04/02/2026	Thursday	*Easter Break*	*no class*			☐	☐
04/07/2026	Tuesday	Properties of Logarithms	Property matching practice	4.4	Properties assignment	☑	☑
04/09/2026	Thursday	*Out of town*	*no class*			☐	☐
04/14/2026	Tuesday	Exponential and Logarithmic Equations	Equation solving relay	4.5	Equation solving	☑	☑
04/16/2026	Thursday	Exponential and Logarithmic Models	Real-world exponential modeling	4.6	Homework assignment	☑	☑
04/21/2026	Tuesday	Exponential and Logarithmic Models 2	Lecture, problem solving, worksheet	4.6		☑	☑
04/23/2026	Thursday	Finding Limits Numerically and	Limit exploration with graphs	12.1	Homework assignment	☑	☑
04/28/2026	Tuesday	Limit Laws	Collaborative limit law examples	12.2		☑	☑
04/30/2026	Thursday	Continuity	Continuity investigation tasks	12.3		☑	☑
05/05/2026	Tuesday	Calculus Readiness Review	Calculus readiness activities	12 Review	Study guide reivew	☑	☑
05/07/2026	Thursday	Comprehensive Final Assessment	Comprehensive assessment	Assessme	Final exam	☑	☑