straighterline

Syllabus

MAT201 | **Precalculus**

Course Text

No need to track down a textbook; this text is provided digitally as part of the course enrollment:

Miller, Julie, and Donna Gerken. *Precalculus,* 2nd edition, McGraw-Hill, 2023.

Course Description

This course provides a working knowledge of concepts and applications of equation solutions, graphs, and trigonometry. It begins with a review of algebraic basics. Emphasis is on linear, polynomial, exponential, logarithmic, and trigonometric functions and their graphs. They will also use trigonometric identities to simplify expressions. Other topics include series and sequences, systems of equations, and matrices.

Learning Outcomes

After completing this course, students will be able to:

1. Solve linear, quadratic, exponential, trigonometric, and other equations and inequalities
2. Model scenarios with linear, quadratic, exponential, trigonometric, and other equations and inequalities
3. Create and interpret graphs of various functions
4. Apply degree and radian measures to solve real-world problems
5. Use reference angles and the six trigonometric rations to identify points along the unit circle
6. Evaluate and simplify trigonometric expressions
7. Use trigonometric functions to solve a right triangle and apply the Law of Sines and the Law of Cosines to solve triangles that are acute or obtuse
8. Differentiate between Cartesian Coordinates, polar coordinates, and vectors
9. Solve systems of linear equations and inequalities by hand and with matrices
10. Calculate the nth element of a sequence and the sum of a series

Course Prerequisites

It is suggested, but not required, that students take a College Algebra course or its equivalent before enrolling in Precalculus.

Academic Integrity Statement

Academic integrity is the pursuit of scholarly activity in an honest, truthful and responsible manner. Violations of academic integrity include, but are not limited to, plagiarism, cheating, fabrication and academic misconduct. Failure to comply with the Academic Integrity Policy can result in a failure and/or zero on the

attempted assignment/examination, a removal from the course, disqualification to enroll in future courses, and/or revocation of an academic transcript.

Course Completion Policy

In order for a course to be considered complete, **all required coursework must be attempted, submitted, and graded.** Required coursework consists of graded assignments. Any Academic Integrity Policy violations may prevent a course from being considered complete.

Assessment Types

StraighterLine courses may include any combination of the assessment types described below. Review the descriptions to learn about each type, then review the Course Evaluation Criteria to understand how your learning will be measured in this course.

Benchmarks

Benchmarks test your mastery of course concepts. You have 3 attempts, and your highest score counts.
Note: Cumulative Benchmarks (final exams) only allow 1 attempt.

Capstones

Capstones are project-based assessments that help you apply concepts to real-world scenarios. You have 2 attempts, and your highest score counts.

Checkpoints

Checkpoints are quick knowledge checks on important course concepts. All are open-book, and most have 1-3 attempts.

AI Use-Case Policies

StraighterLine Capstone assessments operate under one of three AI Use-Case Policies. These designations are selected intentionally to support learners in developing digital literacy, ethical reasoning, and authentic communication skills. Each model requires students to engage meaningfully with the course outcomes while adhering to academic standards.

Independent Work Requirement: Capstones with this designation must be completed independently without using AI tools. The goal is for learners to showcase their own understanding and skills without AI assistance. Students are expected to generate and submit original work developed solely through their own reasoning and effort.

AI-Assisted Planning Option: Capstones with this designation may allow AI tools to support brainstorming and assessment planning. If allowed, students will be asked to document any AI assistance by noting how it informed their work. Documentation must be included within the assignment or in a designated reflection field. Examples include describing how an AI tool helped organize an outline, generate ideas, or surface sources for further exploration.

AI-Integration Requirement: Capstones with this designation require AI tools as part of the learning process. Students will be asked to reflect upon their AI interactions and AI contributions to the assessment. Reflections must include which tools were used, how they were used, and what insights students gained from the process. This promotes transparency, ethical use, and metacognitive skill-building.

Course Evaluation Criteria

Your score provides a percentage score and letter grade for each course. A passing percentage is 70% or higher.

There are a total of 1000 points in the course:

Assessment	Points	Learning Outcomes
Checkpoint 1: Review of Prerequisites	0	N/A
Checkpoint 2: Functions and Relations	0	N/A
Benchmark 1: Checkpoints 1-2	40	1, 2, 3
Checkpoint 3: Polynomial and Rational Functions	0	N/A
Benchmark 2: Checkpoints 2-3	80	1, 2, 3
Checkpoint 4: Exponential and Logarithmic Functions	0	N/A
Benchmark 3: Checkpoints 1-4	150	1, 2, 3
Checkpoint 5: Trigonometric Functions	0	N/A
Benchmark 4: Checkpoint 5	40	3, 4, 5
Checkpoint 6: Analytic Trigonometry	0	N/A
Benchmark 5: Checkpoint 6	40	6
Checkpoint 7: Applications of Trigonometric Functions	0	N/A
Benchmark 6: Checkpoints 5-7	80	7
Checkpoint 8: Trigonometry Applied to Polar Coordinate Systems and Vectors	0	N/A
Benchmark 7: Checkpoints 5-8	150	8
Checkpoint 9: Systems of Equations and Inequalities	0	N/A
Benchmark 8: Checkpoint 9	40	9
Checkpoint 10: Matrices and Determinants and Applications	0	N/A
Benchmark 9: Checkpoints 9-10	80	9
Checkpoint 11: Sequences, Series, Induction, and Probability	0	N/A
Benchmark 10: Checkpoints 1-11	300	1-10
Total	1000	

Course Roadmap

This roadmap provides an overview of the checkpoints and lessons covered in this course.

Checkpoint 1: Review of Prerequisites

- Checkpoint 1 Pre-Reading: What Do You Think?
- Textbook Reading Assignment: Chapter R
- Checkpoint 1 Presentation

Checkpoint 2: Functions and Relations

- Checkpoint 2 Pre-Reading: What Do You Think?
- Checkpoint 2 Presentation
- Textbook Reading Assignment: Chapter 1

Checkpoint 3: Polynomial and Rational Functions

- Checkpoint 3 Pre-REading: What Do You Think?
- Checkpoint 3 Presentation
- Textbook Reading Assignment: Chapter 2

Checkpoint 4: Exponential and Logarithmic Functions

- Checkpoint 4 Pre-Reading: What Do You Think?
- Checkpoint 4 Presentation
- Textbook Reading Assignment: Chapter 3
- Pathfinder: Analyzing Graphs

Checkpoint 5: Trigonometric Functions

- Checkpoint 5 Pre-Reading: What Do You Think?
- Checkpoint 4 Presentation
- Textbook Reading Assignment: Chapter 4

Checkpoint 6: Analytic Trigonometry

- Checkpoint 6 Pre-Reading: What Do You Think?
- Checkpoint 6 Presentation
- Textbook Reading Assignment: Chapter 5
- Pathfinder: Rules of Logarithms and Trigonometric Identities

Checkpoint 7: Applications of Trigonometric Functions

- Checkpoint 7 Pre-Reading: What Do You Think?
- Checkpoint 7 Presentation
- Textbook Reading Assignment: Chapter 6
- Pathfinder: Graphs of Sine and Cosine Functions

Checkpoint 8: Trigonometry Applied to Polar Coordinate Systems and Vectors

- Checkpoint 8 Pre-Reading: What Do You Think?
- Checkpoint 8 Presentation
- Textbook Reading Assignment: Chapter 7

Checkpoint 9: Systems of Equations and Inequalities

- Checkpoint 9 Pre-Reading: What Do You Think?
- Checkpoint 8 Presentation
- Textbook Reading Assignment: Chapter 8

Checkpoint 10: Matrices and Determinants and Applications

- Checkpoint 10 Pre-Reading: What Do You Think?
- Checkpoint 10 Presentation
- Textbook Reading Assignment: Chapter 9
- Pathfinder: Linear Programming

Checkpoint 11: Sequences, Series, Induction, and Probability

- Checkpoint 11 Pre-Reading: What Do You Think?
- Checkpoint 11 Presentation
- Textbook Reading Assignment: Chapter 11

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