Mathematical Models with Applications

Course Overview and Syllabus

Grade Level: 9–12

Prerequisite Courses: Algebra I **Credits:** 1.0

Course Description

Broadening and extending the mathematical knowledge and skills acquired in Algebra I, this full-year course has the primary purpose of using mathematics as a tool to model real-world phenomena students may encounter daily, such as finance and exponential models. Engaging lessons cover financial topics, including growth, smart money, saving, and installment-loan models. Prior mathematical knowledge is expanded and new knowledge and techniques are developed through real-world application of useful mathematical concepts.

Course Objectives

Throughout the course, you will meet the following goals:

- Model real world situations using the various forms of linear and quadratic functions
- Graph trigonometric functions and identify their properties
- Use exponential functions to model and solve mathematical and real-world problems such as population growth and compound interest
- Understand the fundamentals of personal finance and financial planning
- Apply counting methods to calculate binomial probabilities
- Interpret and represent data in various formats and use it to model and make predictions
- Translate between the properties of geometric shapes in the plane to three-dimensional figures

The course objectives are implemented throughout specific lessons, focusing on applying theorems and properties, using mathematical reasoning to construct arguments and solving real world and mathematical problems.

The lesson objectives are assessed through assignments, quizzes, unit tests, performance tasks and cumulative exams.

Student Expectations

This course requires the same level of commitment from you as a traditional classroom course. Students are expected to spend approximately five to seven hours per week online on:

- Interactive lessons that include a mixture of instructional videos and tasks
- Assignments in which you apply and extend learning in each lesson
- Assessments, including quizzes, tests, and cumulative exams

Communication

Your teacher will communicate with you regularly through discussions, e-mail, chat, and system announcements, and will provide you with hours of availability, contact policies, and any synchronous attendance requirements. You will also communicate with classmates, either via online tools or face to face, as you collaborate on projects, ask and answer questions in your peer group, and develop your speaking and listening skills.

Grading Policy

You will be graded on the work you do online and the work you submit electronically to your teacher. The weighting for each category of graded activity is listed below.

Grading Category	Weight
Lesson Quizzes	20%
Unit Tests	40%
Cumulative Exams	20%
Assignments	10%
Projects	10%
Additional	0%

Scope and Sequence

When you log into Edgenuity, you can view the entire course map—an interactive scope and sequence of all topics you will study. The units of study are summarized below:

Unit 1: Problem-Solving Models

Unit 2: Graphical and Statistical Models

Unit 3: Function Models

Unit 4: Financial Models

Unit 5: Exponential, Trigonometric, and Variation Models

Unit 6: Geometric Models

Standards Alignment

The course was designed to meet the requirements of the 2016 Oklahoma Academic Standards for Mathematics. The standards aligned to each lesson are available in the student portal in the lesson information panel.

Materials and Technology Requirements

All course materials are provided through the student portal. You will become familiar with them through an orientation video and the student handbook. These resources are available within the Student Organizer, where you can also check the status of your operating system, processor speed, plug-ins and connection speed.

Accessibility

The course is designed for accessibility to all students. The system provides features and accommodations to meet the needs of ELL and students with IEP's, 504 plans, and Section 508. These accommodations include addressing multiple learning styles, accommodations for assessments, video caption/transcripts, read-aloud and translation tools, and many other features/accommodations.