

Texas High School Mathematical Models with Applications Syllabus

Instructor: Mr. Edwards

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Room Number: 307

Course Overview

The Mathematical Models with Applications course is designed to provide students with the tools and techniques needed to apply mathematical concepts to real-world situations. This course emphasizes problem-solving, critical thinking, and the practical application of mathematical models. Students will explore a variety of mathematical topics and learn how to use mathematical reasoning to analyze and solve problems in diverse contexts.

Course Objectives

By the end of this course, students will be able to:

1. Develop and analyze mathematical models to solve real-world problems.
2. Apply algebraic, statistical, and geometric concepts to practical situations.
3. Use technology and mathematical software to assist in problem-solving.
4. Communicate mathematical ideas and solutions effectively.
5. Understand and evaluate the role of mathematics in various fields and industries.

Required Materials

- Textbook: Cengage Learning Mathematical Models with Applications (Provided)
- Notebook Paper
- Folder with pockets and brads
- Scientific Calculator (TI-84 or similar) (Provided)

Course Content

1. Introduction to Mathematical Modeling

- **Understanding Models:** Definition and types of mathematical models.
- **Building Models:** Creating and analyzing simple models to represent real-world situations.

2. Algebraic Models

- **Linear Models:** Solving and interpreting linear equations and inequalities.
- **Quadratic Models:** Modeling with quadratic functions and solving related problems.
- **Systems of Equations:** Analyzing and solving systems of linear and nonlinear equations.

3. Statistical Models

- **Data Analysis:** Collecting, organizing, and interpreting data.
- **Probability and Statistics:** Applying probability concepts and statistical methods to real-world scenarios.
- **Regression Analysis:** Using regression techniques to model and analyze data.

4. Geometric Models

- **Geometric Shapes and Properties:** Applying geometric concepts to model physical objects and spaces.
- **Measurement and Scaling:** Solving problems related to measurement, scaling, and optimization.

5. Financial Models

- **Personal Finance:** Modeling and analyzing personal financial decisions, including budgeting, saving, and investing.
- **Loans and Interest:** Understanding and applying concepts related to loans, interest rates, and amortization.

6. Technology and Applications

- **Mathematical Software:** Using technology tools to model and solve problems.
- **Real-World Applications:** Exploring how mathematical models are used in various fields such as engineering, economics, and science.

7. Advanced Topics

- **Optimization Problems:** Solving problems involving optimization and resource allocation.
- **Complex Systems:** Modeling and analyzing complex systems with multiple interacting variables.

Grading Policy

Daily Grades (60%):

- **Homework (30%):** Homework assignments will be given regularly and must be completed on time. Late work will incur a penalty unless prior arrangements are made.
- **Classwork (30%):** Participation in class activities, group work, and daily exercises will be assessed.
- **Recording:** There will be a minimum of 6 daily grades recorded every 6 weeks.

Test Grades (40%):

- **Tests (40%):** There will be three major tests each grading period, covering the material studied. Each test will contribute to the overall grade.
- **Recording:** There will be a minimum of 3 test grades recorded every 6 weeks.

Attendance and Participation

- Regular attendance is crucial for success in Mathematical Models and Applications. Excessive absences may impact understanding of the material and overall grade.
- Active participation in class discussions and activities is expected. This will contribute to your daily grades.

Classroom Policies

- **Respect:** Respect for classmates, instructor, and classroom materials is required.
- **Electronics:** Phones and other electronic devices should be silenced and put away unless instructed otherwise.
- **Late Work:** Assignments turned in late will be penalized unless a valid excuse is provided.

Support and Resources

- **Tutoring:** Extra help is available during scheduled times or by appointment. Additional tutoring sessions may be scheduled as needed.

Important Dates

- **End of First Six Weeks:** Sept. 19, 2025
- **End of Second Six Weeks:** Oct. 31, 2025
- **End of Third Six Weeks:** Dec. 19, 2025
- **End of Fourth Six Weeks:** Feb. 13, 2026
- **End of Fifth Six Weeks:** Apr. 2, 2026
- **End of Sixth Six Weeks:** May 20, 2026

Note: This syllabus is subject to change based on the needs of the class and other factors. Any changes will be communicated promptly.