Summary

This course is designed to provide students with a foundational understanding of key mathematical concepts and skills. Topics will include algebra, geometry, calculus, and statistics, with an emphasis on problem-solving and real-world applications.

Objectives and Target Group

By the end of this course, students will develop a solid foundation in basic mathematical principles, enhance their problem-solving and critical thinking skills, and apply mathematical concepts to real-life situations and data analysis.

Course Content

Module 1: Algebra
- **Week 1: Introduction to Algebra**
- Understanding Variables and Constants
- Basic Algebraic Operations
- Solving Simple Equations

- **Week 2: Functions and Graphs**
- Definition of Functions
- Graphing Linear Functions
- Slope and Intercept Concepts

- **Week 3: Advanced Algebraic Concepts**
- Polynomials and Factoring
- Quadratic Equations
- Introduction to Exponents and Radicals

Module 2: Geometry
- **Week 4: Basic Geometric Shapes**
- Points, Lines, Angles, and Planes
- Properties of Triangles and Quadrilaterals

- **Week 5: Circles and Area**
- Understanding Circles: Radius, Diameter, and Circumference
- Calculating Area of Basic Shapes

- **Week 6: Volume and Surface Area**
- Volume of Solids: Prisms, Cylinders, and Spheres
- Surface Area Calculations

Module 3: Trigonometry
- **Week 7: Introduction to Trigonometric Ratios**
- Sine, Cosine, and Tangent Functions
- Right Triangle Applications

- **Week 8: Graphs of Trigonometric Functions**
- Understanding the Unit Circle

- Graphing Sine, Cosine, and Tangent Functions

Module 4: Calculus
- **Week 9: Limits and Continuity**
- Understanding Limits
- Continuous Functions

- **Week 10: Derivatives**
- Introduction to Differentiation
- Rules of Differentiation

- **Week 11: Applications of Derivatives**
- Finding Tangents and Normal Lines
- Maximum and Minimum Problems

Module 5: Statistics
- **Week 12: Introduction to Statistics**
- Understanding Data Types
- Measures of Central Tendency: Mean, Median, Mode

- **Week 13: Probability**
- Basics of Probability Theory
- Introduction to Discrete and Continuous Probability Distributions

- **Week 14: Data Interpretation**
- Reading and Interpreting Graphs
- Basics of Inferential Statistics

Assessment and Evaluation
- **Homework Assignments**: Weekly problem sets to reinforce concepts.
- **Quizzes**: Short quizzes at the end of each module to assess understanding.
- **Midterm Exam**: Comprehensive exam covering Modules 1-3.
- **Final Project**: A project applying mathematical concepts to a real-world problem.