Course Title: Maths

Course Level: Undergraduate (Beginner)

Credit Value: 3

Duration: 12 weeks

Course Outline:

Module 1: Fundamentals of Mathematics

Objectives:

* To introduce students to the basic concepts and principles of mathematics.
* To develop students' critical thinking, problem-solving, and analytical skills.

Course Content:

* **Introduction:**
    * Definition and scope of mathematics
    * Importance of mathematics in various fields
* **Number Systems:**
    * Real numbers, integers, rational numbers, irrational numbers
    * Operations on different number systems
* **Algebra:**

**   * Basic algebraic concepts (variables, expressions, equations)**

**   * Solving linear equations and inequalities**

**   * Polynomials and their properties**

*** **Geometry:****

**   * Introduction to basic geometric shapes and their properties**

**   * Measurement of angles, areas, and volumes**

*** **Statistics:****

**   * Collecting, organizing, and interpreting data**

**   * Basic statistical concepts (mean, median, mode)**

****Module 2: Algebra and Trigonometry****

****Objectives:****

*** To develop students' understanding of algebraic and trigonometric concepts.**

*** To apply these concepts to real-world situations.**

****Course Content:****

*** **Algebra:****

**   * Systems of equations and inequalities**

**   * Quadratic equations and their solutions**

**   * Exponents and logarithms**

*** **Trigonometry:****

**   * Measurement of angles and trigonometric ratios**

**   * Trigonometric identities and equations**

**   * Applications of trigonometry in real-world problems**

*** **Real-World Applications:****

**   * Solving word problems involving algebra and trigonometry**

**   * Applications in science, engineering, and business**

****Interactive Element:****

*** Online simulations and interactive exercises to reinforce algebraic and trigonometric concepts.**

****Module 3: Calculus****

****Objectives:****

*** To introduce students to the fundamental concepts of calculus.**

*** To develop students' understanding of functions, derivatives, and integrals.**

****Course Content:****

*** **Functions:****

**   * Definition and types of functions**

**   * Graphing and analyzing functions**

*** **Derivatives:****

**   * Definition and calculation of derivatives**

**   * Applications of derivatives (e.g., optimization, related rates)**

*** **Integrals:****

**   * Definition and calculation of integrals**

**   * Applications of integrals (e.g., finding areas and volumes)**

*** **Real-World Applications:****

**   * Using calculus to solve problems in physics, economics, and other fields**

****Assessment:****

*** Quizzes, assignments, and projects throughout the semester to assess understanding of concepts and application skills**

*** Final exam to evaluate overall learning outcomes and analytical thinking abilities**