



Korambayil Ahamed Haji Memorial UNITY WOMEN'S COLLEGE, MANJERI

Affiliated to the University of Calicut Reaccredited by NAAC at B++
Grade Narukara PO, Manjeri, Malappuram, Kerala, India

Department of Mathematics

Certificate Course: Mathematics in Real Life

Duration: 30 hours

Module 1: Basic Mathematical Tools for Everyday Life

- 1. Basic Arithmetic**
 - Addition, subtraction, multiplication, division
 - Fractions, decimals, percentages
 - Proportions and ratios
- 2. Units and Measurements**
 - Metric and imperial units
 - Unit conversions
 - Understanding scales, maps, and blueprints
- 3. Estimation and Rounding**
 - Approximating in day-to-day situations (shopping, cooking, etc.)
 - Understanding significant figures
- 4. Personal Finance Mathematics**
 - Budgeting, income and expenses
 - Simple interest and compound interest calculations
 - EMI, loans, and credit calculations

Real-Life Applications: Budget planning, shopping, cooking, financial decisions.

Module 2: Algebra and Functions in the Real World

- 1. Basic Algebraic Concepts**
 - Linear equations and inequalities
 - Systems of equations
 - Quadratic functions
- 2. Exponential Growth and Decay**
 - Population growth, decay models
 - Applications in finance: compound interest, depreciation
- 3. Graphing and Interpreting Data**
 - Plotting graphs: linear, quadratic, exponential

- Understanding trends in real-world data
- 4. **Real-Life Problem Solving**
 - Break-even analysis
 - Supply-demand curves in economics

Real-Life Applications: Financial planning, population studies, economic forecasting.

Module 3: Geometry and Trigonometry in Practical Applications

1. **Geometrical Shapes and Their Properties**
 - Perimeter, area, and volume calculations
 - Geometry in architecture, design, and engineering
2. **Trigonometry**
 - Introduction to sine, cosine, and tangent
 - Applications in navigation, construction, and astronomy
3. **Pythagoras Theorem and Applications**
 - Real-world uses of the Pythagorean theorem
 - Distance measurement, triangulation techniques
4. **Symmetry and Patterns**
 - Symmetry in nature and art
 - Mathematical patterns in design, music, and textiles

Real-Life Applications: Construction, design, navigation, architecture.

Module 4: Probability, Statistics, and Data Analysis

1. **Introduction to Probability**
 - Basic probability concepts
 - Real-life examples (e.g., weather forecasts, games of chance)
2. **Descriptive Statistics**
 - Mean, median, mode
 - Range, variance, standard deviation
 - Understanding and interpreting data
3. **Data Visualization**
 - Creating and interpreting charts, graphs, and tables
 - Infographics and their uses in media
4. **Decision-Making Using Data**
 - Risk assessment and probability in decision-making
 - Statistical reasoning in everyday life (surveys, polls)

Real-Life Applications: Data analysis in business, health statistics, risk management, and decision making.

References:

1. Glyn James, *Modern Engineering Mathematics*, 5th Edition, Pearson Education, 2015.
2. Ron Larson, *Precalculus: A Concise Course*, Brooks/Cole, Cengage Learning, 2011.
3. Jeffrey Bennett, William Briggs, *Using & Understanding Mathematics: A Quantitative Reasoning Approach*, Pearson, 2014.

4. Leonard Mlodinow, *The Drunkard's Walk: How Randomness Rules Our Lives*, Vintage, 2009.
5. Tim Chartier, *Math Bytes: Google Bombs, Chocolate-Covered Pi, and Other Cool Bits in Computing*, Princeton University Press, 2014.