

**NEP 2.0**

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's  
**New Arts, Commerce, and Science College**  
**Ahmednagar (Autonomous)**  
(Affiliated to Savitribai Phule Pune University, Pune)



**National Education Policy (NEP)**  
**Choice Based Credit System (CBCS)**

**Programme Framework and Syllabus for**

**Skill Enhancement Courses:**

**Mathematics**

कौशल्य वृद्धी अभ्यासक्रम: गणित

**Implemented from**

**Academic Year 2024-25**

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's  
**New Arts, Commerce and Science College, Ahmednagar**  
**(Autonomous)**  
**Board of Studies in Mathematics**

Sr. No.	Name	Designation
1.	Dr. S. B. Gaikwad	Chairman
2.	Dr. S. V. Ingale	Member
3.	Mr. S. A. Tarate	Member
4.	Mr. K. A. Kshirsagar	Member
5.	Ms. B. N. Todkari	Member
6.	Ms. D. G. Gade	Member
7.	Mr. A. S. Jadhav	Member
8.	Ms. P. D. Kasule	Member
9.	Ms. P. S. Ansari	Member
10.	Mr. T. A. Bhakare	Member
11.	Mr. H. N. Shaikh	Member
12.	Dr. A. A. Kulkarni	Member
13.	Prof. (Dr). A. V. Mancharkar	Member
14.	Dr. N. S. Darkunde	Academic Council Nominee
15.	Dr. S. B. Bhalekar	Academic Council Nominee
16.	Dr. G. S. Kadu	Vice-Chancellor Nominee
17.	Mr. P. L. Pawar	Alumni
18.	Mr. Shirish Padalkar	Industry Expert

## NEP 2.0

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's  
**New Arts, Commerce and Science College, Ahmednagar  
(Autonomous)**

### Introduction of Skill Enhancement Courses: Mathematics

Mathematics is not just about numbers and equations; it's a language that describes the patterns of the universe, from the symmetry of a snowflake to the trajectories of celestial bodies. Whether you're a student looking to strengthen your mathematical foundation, a professional aiming to enhance your analytical skills, or simply an enthusiast eager to delve deeper into the world of numbers, our courses are designed to meet your needs and exceed your expectations.

Our curriculum is carefully crafted to cater to learners of all levels, from beginners to advanced practitioners. Through a combination of interactive lectures, hands-on exercises, and real-world applications, you'll gain fluency in key mathematical concepts and develop problem-solving strategies that can be applied across various domains.

### Skill Enhancement Courses: Framework and Course Distribution: Subject: Mathematics

S r . N o .	Y e a r	S e m e s t e r	L e v e l	Course Type	Course Code	Title	Cr e d i t s
1.	I	II	5.0	SEC-01	SEC-MT-01T	Bio-Mathematics	02
2.	II	III	5.5	SEC-02	SEC-MT-02T	Mathematics for Life Sciences	02
3.	II	IV	6.0	SEC-03	SEC-MT-03T	Mathematical Thinking and Problem Solving	02
<b>Total</b>							06

## NEP 2.0

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's  
New Arts, Commerce and Science College, Ahmednagar  
(Autonomous)

### Skill Enhancement Courses: Mathematics

Title of the Course: Bio-Mathematics								
Year: I				Semester: II				
Course Type	Course Code	Credit Distribution		Credits	Allotted Hours	Allotted Marks		
		Theory	Practical			CI E	ES E	Total
SEC-01	SEC-MT-01T	02	00	02	30	15	35	50

#### Learning Objectives:

1. Classify different types of functions based on their algebraic properties.
2. Understand the concept of limits and their significance.
3. Understand the derivative as a function and its relationship to the original function.
4. Analyze the effect of derivatives on the shape of a graph, including concavity and points of inflection.

#### Course Outcomes (Cos)

1. Students will gain proficiency in determining the domain, range, and behavior of functions.
2. Students will understand the concept of continuity and be able to identify points of discontinuity.
3. Students will gain proficiency in applying derivatives to analyze rates of change and solve real-world problems.
4. Students will gain proficiency in using derivatives to understand the shape and behavior of graphs.

#### Detailed Syllabus:

##### Unit 1: Functions

(06 Hrs.)

- 1.1 Definition, Examples
- 1.2 Types of functions,
- 1.3 Domain and Range of functions
- 1.4 Graphs of functions

##### Unit II: Limits

(08 Hrs.)

- 2.1 Limits of Sequences
- 2.2 Limits of Functions at Infinity
- 2.3 Limits of Functions at Finite Numbers
- 2.4 Limits: Algebraic Methods
- 2.5 Continuity

## **NEP 2.0**

Unit III: Derivatives (08 Hrs.)

3.1 Derivatives and Rates of Change

3.2 The Derivative as a Function

3.3 Basic Differentiation Formulas

3.4 The Product and Quotient Rules

3.5 The Chain Rule

Unit IV: Applications of Derivatives (08 Hrs.)

4.1 Exponential Growth and Decay

4.2 Maximum and Minimum Values

4.3 How Derivatives Affect the Shape of a Graph

4.4 L'Hospital's Rule: Comparing Rates of Growth

### **Suggested Readings/Material:**

1. Biocalculus Calculus for the Life Sciences, James Stewart, McMaster University and University of Toronto, Troy Day Queen's University
2. Calculus Early transcendentals Sixth edition James Stewart McMaster University
3. Thomas' Calculus Early Transcendentals, George B. Thomas Jr., Maurice D. Weir, Joel R. Hass, Frank R. Giordano
4. Introduction to Calculus and Analysis, Springer