

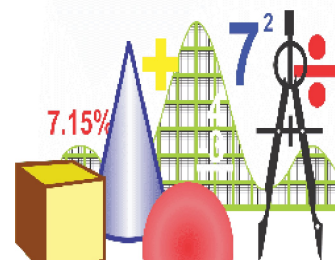
21SMCA101 ELEMENTARY MATHEMATICS

Hours Per Week :

L	T	P	C
1	-	2	2

Total Hours :

L	T	P
15	-	30



Source :

<https://www.pngegg.com/en/png-wgyoj/download>

Course Description and Objectives:

This course will impart basic mathematical skills for students with biology background in analyzing the data and exploring the trends and relationships between variables as required for studies in agriculture

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes
1	Skills to analyse data to understand trends and changes, methods to visualize data and explore relationships between variables
2	Acquire knowledge on differential calculus : definition of function, limit and continuity, simple problems on limit, simple problems on continuity
3	Learn about integral calculus : integration of simple functions, integration of product of two functions, integration by substitution method

SKILLS:

- ✓ Ability to choose appropriate mathematical tools to solve the problems
- ✓ Handle different software used for statistical analysis

ACTIVITIES:

- o Design, conduct, analyze, and communicate the biological research
- o Analyze the problems by using statistical packages and make valid decisions

UNIT - 1

Introduction : Definition of matrices, order of a matrix - Type of matrices - Addition - Subtraction - Multiplication - Transpose of matrix - Minor

UNIT - 2

Logarithmic differentiation (simple problems based on it): Introductory Concepts of Differentiation, Differentiation by substitution simple problems) - Differentiation of inverse trigonometric functions - Equations of tangent - Normal of given curve at given point

UNIT - 3

Straight line and write different types: Define straight line and write different types of straight line forms with examples. Solve the angles between two straight lines - Area of triangle and quadrilateral

UNIT - 4

General and standards equations of parabola: Definition of general and standards equations of parabola - Vertex - Focus – Equation of directrix - Length of lotus rectum

UNIT - 5

Circle: Standard and general equation of circle – equation of circle whose diameter is line joining two points. Equation of circle passing through three points.

LABORATORY EXPERIMENTS**LIST OF EXPERIMENTS**

1. Problems on Addition - Subtraction - Multiplication - Transpose of matrix 3rd order
2. Problems on minor - Co-factor of matrix - Inverse of matrix up to 3rd order
3. Cramer's rule and simple problems based on it and problems on determinants
4. Function limit and continuity with simple problems
5. Problems on differentiation of x^n - e^x - $\sin x$ and $\cos x$ by first principle
6. Derivatives of sum - difference product and quotient of two functions - Differentiation of functions of functions - Simple problems based on it
7. Logarithmic - Inverse - Trigonometric functions- Functions of functions – Equations of tangent - Normal of given curve at given point - Simple problems
8. Problems on integration of functions - Integration of product of two functions - Integration by substitution method
9. Integral (simple problems based on it) - Area under simple well-known curves (simple problems based on it)
10. Problems on different types of straight line forms
11. Problems on angles between two straight lines - Area of triangle and quadrilateral
12. Problems on equation of circle passing through three given points
13. Problems on parabola – Vertex – Focus - equation of directrix - Length of lotus rectum
14. Problems on equation of tangent and normal to a given point - Conditions of tangency of line $y = mx + c$ to $y^2 = 4ax$
15. Problems on standard form of the ellipse - Focus – Directrix - Vertex of the ellipse in both cases ($a > b$, $b > a$). Equation of tangent - Normal at given points to a given ellipse - Simple problems

REFERENCES:

1. MVSL DN Raju and Dr. K .V. Ramana – *Engineering Mathematics - 1*
2. MVSL DN Raju and Dr. K .V. Ramana – *Engineering Mathematics - 2*
3. MVSL DN Raju and K.V. Ramana - *Agricultural Mathematics*
4. *Text Book for A.P Intermediate Mathematics – Paper (IA & IIB)*