FACULTY OF SCIENCE AND HUMANITIES

B.Sc. Mathematics(SEM-II)

In Effect from Academic Year 2021-22

Subject Code:2SC1040201	**Subject Title: Mathematics**
Course Type: Core Course	

Course Objective:

This course is designed to enable students to acquire the understanding and practice the applications of De'Moivre's theorem and Complex number, Differential Equations and Partial Differentiation.

Teaching scheme (hours) per week		**Credit**			**Theory Marks**		**Practical Marks**		**Total**
Theory	**Tutorial**	**Theory**	**Tutorial**	**Total**	**Uni. Assessment**	**Cont. Assessment**	**Uni. Assessment**	**Cont. Assessment**	
6	**0**	**6**	**0**	**6**	**105**	**45**	**--**	**--**	**150**

Subject Contents			
Unit No.	**Topic**	**Total Hours**	**Weight (%)**
1	(a) De'Moivre's theorem and its applications, (b) Roots of a complex number (c) Application of Expansion of sinnθ,cosnθ, n∈N in terms of sine and cosine of Multiples of θ. (d) Expansion of sinnθ, cosnθ and tannθ in terms of sine, cosine and tangent. Respectively.	18	25
2	(a) Exponential, Circular and hyperbolic function, Logarithmic and inverse functions. (b) Sequence and series: Definition of sequence, series. Definition of convergence Of sequence and series, partial sum. Application of comparison test, ratio test, Root test.	18	25
3	(a) Linear differential equation $\frac{dy}{dx}$ + Py = Q, P and Q are functions of x, Bernoulli's Differential equation. (b) Differential equation offirst order and higher degree solvable for s, solvable For y, solvable for P=$\frac{dy}{dx}$. (c) Solution of Clairaut's and Lagrange's differential equation. (d) Linear differential equation with constant coefficients.	18	25
4	Partial Differentiation: Definition of partial derivative involving two variables only up to first and second order. Idea of linear homogeneous functions, Euler's theorem (statement only) and its application, Use of partial derivatives in problems relating to utility functions and cost minimization under constraints.	18	25

Course Outcome:

After successfully completion of the course, the student will be able to …

- Practice the application of De'Moivre's theorem

- Find the roots of a complex number, expansions of $\sin n\theta$, $\cos n\theta$ in terms of sine and cosine multiples of θ.
- Practice the applications of differential equations in real life situations.
- Practice the applications of partial differential equations in real life situations.

List of References:

1) Complex Variables and Application, by Ruel V. Churchill & James Ward Brown, McGraw-Hill Publishing Company, New Delhi.
2) Complex Analysis, by J.V.DESHPANDE, Tata McGRAW-Hill Publishing Co. Ltd. New Delhi.
3) Business Statistics, by Sudhir Prakashan, Ahmedabad.
4) Differential Calculus, by Shantinarayan.