INSTITUTE	**FACULTY OF SCIENCE**
PROGRAM	**BACHELOR OF SCIENCE (CHEMISTRY)**
SEMESTER	**1**
COURSE TITLE	**BASIC CALCULUS**
COURSE CODE	**02MA0132**
COURSE CREDITS	**4**

Course Outcomes: After completion of this course, student will be able to:

1 Solve problems related to polynomials.
2 Evaluate limits and continuity of various functions.
3 Use various differentiation techniques to solve differential calculus problems.
4 Compute the integrals of algebraic as well as transcendental functions.
5 Implement the concepts of polynomials, limits, differentiation and integration for solving problems of science.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**Polynomial** Polynomial with single variable, Degree of a polynomial, Classification of polynomials based on degree, Classification of polynomials based on no. of terms, Remainder theorem, Factor theorem, Factorization of polynomials, Roots of Quadratic and Cubic equations.	15
2	**Limit and continuity:** Limit of a single variable function, Standard limit formulae, Existence of limit, Continuity of a function, Conditions for continuity at a given point.	15
3	**Differentiation:** Limit definition of differentiation, Standard differentiation formulae, Differentiation of a function at a given point, Chain rule, Multiplication rule for differentiation, Division rule for differentiation.	15

Contents : Unit	Topics	Contact Hours
4	**Integration:** Definite integral of functions of single variable, Standard integration formulae, Integration by parts, Integration using partial fraction.	15
Total Hours		**60**

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking**
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
3. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

1. https://www.coursera.org/learn/multivariate-calculus-machine-learning
2. https://www.coursera.org/learn/introduction-to-calculus
3. https://archive.nptel.ac.in/courses/111/106/111106146/
4. https://ocw.mit.edu/ans7870/resources/Strang/Edited/Calculus/Calculus.pdf