

Course Title: Mathematics for Chemists-I

Course Code: MATH-118

Credit Hours: 3-0

Pre-requisite: Nil

1. **Course Objectives:** The main objective of this first course is to describe the fundamental concepts of calculus for chemistry students. Illustrations of the calculus concepts have been considered by presenting examples. Some of these examples demonstrate important and practical applications in chemistry.
2. **Course Outcomes:** On successful completion of this course students will be able to:
  - a. Familiarize themselves with the central concepts of calculus.
  - b. Develop strong skills to deploy these concepts in chemistry and their relevant applications of different courses i.e., Physics, Chemistry, Physical Chemistry, Thermodynamics, Chemical Kinetics etc.
3. **Course Contents:** Numbers, Variables and Units; Algebraic Functions; Transcendental Functions; Differentiation; Integration; Methods of Integration; Sequences and Series; Complex Analysis; Spherical Coordinates; Vectors
4. **Details of lab work, workshops practice (if applicable).** N/A
5. **Recommended Reading (including Textbooks and Reference books).**

**Textbook:**  
The Chemistry Maths Book by Erich Steiner, 2<sup>nd</sup> Edition,  
Publisher: Oxford University Press, 2008. (ES)

**Reference Books:**

  - a. Maths for Chemists by Martin Cockett and Graham Doggett, Second Edition,  
Publisher: Royal Society of Chemistry, 2012.
  - b. Mathematics for Physical Chemistry by Robert G. Mortimer, Fourth Edition,  
Publisher: Elsevier, 2013.