

BS Geography 4 Years Programme, University of the Punjab, Lahore

Prerequisite(s): Mathematics at secondary level

Specific Objectives of the Course:

- To prepare the students, not majoring in mathematics, with the essential tools of algebra to apply the concepts and the techniques in their respective disciplines.

Course Outline:

- **Preliminaries:**
 - Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.
- **Matrices:**
 - Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer's rule.
- **Quadratic Equations:**
 - Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.
- **Sequences and Series:**
 - Arithmetic progression, geometric progression, harmonic progression.
- **Binomial Theorem:**
 - Introduction to mathematical induction, binomial theorem with rational and irrational indices.
- **Trigonometry:**
 - Fundamentals of trigonometry, trigonometric identities.

Recommended Books:

- 1) Dolciani MP, Wooton W, Beckenback EF, Sharron S, Algebra 2 and Trigonometry, 1978, Houghton & Mifflin, Boston (suggested text)
- 2) Kaufmann JE, College Algebra and Trigonometry, 1987, PWS-Kent Company, Boston
- 3) Swokowski EW, Fundamentals of Algebra and Trigonometry (6th edition), 1986, PWS-Kent Company, Boston