



**Department of Mathematics**  
**Faculty of Sciences, Jamia Millia Islamia**

**Skill Enhancement Course in Mathematics**  
**(2024-25)**  
**Course Structure and Syllabus**

Semester	Code	Title of the Paper	Credits
II	24MATS151	Set Theory and Number Theory	3

**24MATS151 Set Theory and Number Theory**

Unit-I	Cartesian products of sets, Equivalence relations, and partition, Fundamental Theorem of equivalence relation, Equivalent set, Countable and uncountable sets, Cantor's Theorem.
Unit-II	Cardinal numbers, Power of continuum, Cardinal arithmetic, Inequalities in cardinals, Schroeder-Bernstein Theorem, Partially and totally ordered sets.
Unit-III	Linear Diophantine equation, Prime counting function, Statement of prime number Theorem, Goldbach conjecture, Linear congruences, Complete set of residues, Properties of congruences, Chinese Remainder Theorem, Fermat's Little Theorem, Lagrange's Theorem, Wilson's Theorem.

**Books Recommended**

1. David M. Burton: Elementary Number Theory, 6th Ed., Tata McGraw - Hill, Indian reprint, 2007.
2. Neville Robbins: Beginning Number Theory, 2nd Ed., Narosa Publishing House Pvt. Ltd., Delhi, 2007.
3. Seymour Lipschutz: Set Theory and related topics. McGraw-Hill Education; 2nd edition, 1998.
4. J. Hunter: Number Theory, Oliver & Boyd, Edinburgh and London, 1964.