

INSTITUTE OF MATHEMATICS  
College of Science  
University of the Philippines Diliman

**Math 142 Course Syllabus**

**A. Course Catalogue Description**

Course Number	Math 142
Course Title	Elementary Topology
Course Description	Topological spaces; continuous functions and homeomorphisms; compactness and connectedness; separation axioms
Prerequisite	Math 123.1 or COI
Course Credit	3 units
Number of Hours	3 hours/week

**B. Course Content**

- I. Course Introduction and Orientation
- II. Topological Spaces and Continuous Functions
  1. Topological spaces
  2. Basis for a topology
  3. Construction of subspace, product, quotient and sum topologies
  4. Closed sets and limit points
  5. Continuous functions and homeomorphisms
  6. Metric topology and the metrization problem
- III. Compactness
  1. Sequential compactness and total boundedness
  2. Limit point compactness
  3. Compact spaces
  4. Tychonoff's Theorem
- IV. Connectedness
  1. Connected spaces
  2. Connected sets in the real line
- V. Countability and Separation Axioms
  1. Countability axioms
  2. Separation axioms and characterization of various spaces
  3. The Urysohn Lemma: Tietze Extension Theorem
  4. The Uryshon Metrization Theorem

For a more detailed syllabus, send an email request to [ddapr@math.upd.edu.ph](mailto:ddapr@math.upd.edu.ph).