

TOPOLOGY

MA 430

Course Description

Topology is an introductory course in which sets, functions, topological spaces, subspaces, continuity, connectedness, compactness, separation properties, metric spaces, and product spaces are studied.

Corequisite: MATH 291 Calculus IV or equivalent.

Goals of the Course

1. To teach the concepts of topological spaces, continuity, connectedness, compactness, separation properties that provide a basis for the study of advanced courses.
2. To increase the student's ability to prove theorems.
3. To help the student learn the concepts of mathematical rigor.
4. To help the student develop the mathematical maturity and sophistication that are required for higher level courses in mathematics.

Instructional Procedures

1. Lecture/Discussion
2. Homework problems from text

Course Content

- A. Preliminary Topics
 1. Topology
 2. Sets
 3. Extended Set Operations
 4. Functions
 5. Images and Inverse Images of Sets
- B. Topological Spaces
 1. Open Subsets of the Real Numbers
 2. Topological Spaces
 3. Closed Sets and Closure
 4. Limit Points, Interior, Exterior, Boundary, and More or 5.
 5. Closure
 6. Basic Open Sets
- C. Subspaces and Continuity
 1. Subspaces
 2. Continuity
 3. Homeomorphisms
- D. Connectedness
- E. Compactness
- F. Separation Properties

Evaluation Measures

1. Hourly Exams
2. Homework
3. Final Exam

Bibliography

Required Text

Baker, Crump, Introduction to Topology, Wm. C. Brown, 1996

Supporting Bibliography

Armstrong, M.A., Basic Topology, Springer-Verlag, 1983

Bourbaki, N., General Topology, Addison-Wesley, 1966

Croom, Fred H., Principles of Topology, Saunders College Pub., 1989

Lipshutz, Seymour, General Topology, Schaumis Outline Series, McGraw-Hill, 1985

Munkres, James R., Topology A First Course, Prentice Hall, 1975

Patty, C. Wayne, Foundations of Topology, PWS-Kent, 1993

Steen, L.A. & Seebach, J.A., Counter Examples in Topology, 2nd Ed., Springer-Verlag, 1978