

King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Math 453 – Syllabus
2019-2020 (T192)
Dr. Othman Echi

Title: Introduction to Topology

Textbook: P. L. Shick, *Topology, Point-Set and Geometric*, Wiley (2007).

Description: Topological Spaces: Basis for a topology, The Order Topology. The Subspace Topology. Closed sets and limit points. Continuous functions. The Product Topology, The Metric Topology. Connected spaces. Compact spaces. Limit point compactness. The countability axioms. The separation axioms. Urysohn's Lemma. Urysohn's Metrization Theorem. Complete metric spaces.

Grading Policy:

Exam 1	Exam 2	HW+Attend.	Presentations	Final Exam
20%	20%	10%+5%	10%	35%

Learning outcomes: A students who succeeded in this course, should be able to:

1. Use axioms of set theory.
2. Define and construct a topology.
3. Distinguish open and closed sets
4. Construct closure, interior, and boundary of a set.
5. Distinguish between a metric topology a nonmetrizable topology
6. Decide whether a given function is continuous.
7. Define and apply connectedness and compactness
8. Understand and apply Tychonoff theorem
9. Distinguish between countability and separation axioms including countable basis, countable dense subsets, normal spaces, Urysohn lemma and Tietze extension theorem
10. Understand the metrization problem and Urysohn Metrization theorem
11. Know some properties and applications of complete metric spaces

Syllabus

Chapter	Title	Week(s)
2, 3	Background on Sets and Functions, Topological Spaces	1
3	Topological Spaces(continued)	2
4	More on Open and Closed Sets and Continuous Functions	2
5	New Spaces from Old	2
6	Connected Spaces	2
7	Compact Spaces	2
8	Separation Axioms	2
9	Metric Spaces	2

Exams

Material of First Major Exam	Cha. 2, 3, 4
Material of Second Major Exam	Cha. 5, 6, 7
Final Exam (Comprehensive)	Saturday 02, May, 2020, 01:00 – 04:00 PM