King Fahd University of Petroleum & Minerals

Department of Mathematics & Statistics

SYLLABUS (Math 521, Term **182)**

Dr. Othman Echi

Course:	**Math 521**
Title:	**General Topology I**
Textbook:	J.R. Munkres, Topology, A First Course, Prentice-Hall, 2000
Catalogue Description	Basic Set Theory (countable and uncountable sets, Cartesian products). Topological Spaces (basis for a topology, product topology, functions, homeomorphisms, standard examples), Connected spaces, path connectedness. Compact spaces, compactness in metrizable spaces, Countability axioms, first countable and second countable spaces. Separation axioms, Urysohn's Lemma, Urysohn's metrization theory. Compact metric spaces.
Office Hours	**Monay and Wednesday:** (09:00-11:00)

Grading Policy

Instructor: Dr. Othman Echi **Office**: 5-201/4 **Tel**: 860-1802 **E-mail**: echi@kfupm.edu.sa **Web page:** http://faculty.kfupm.edu.sa/MATH/echi/	
Grading Policy: M.Exam 30%, Presentations 25%, Hw+attendance 10%, F.Exam 35%.	

EXAMS:

1. **M. Exam** tba
2. **F. Exam:** April 22, 2019 at 7:00 PM

Weeks	Material
1	**Set Theory**: Functions, Relations, Cartesian Products, Finite sets, Countable and Uncountable Sets, Infinite Sets and the Axiom of Choice, Well-ordered Sets
2,3,4,5	**Topological Spaces and Continuous Function:** Topological Spaces, Basis for a Topology, The Order topology, The Product Topology, The Subspace Topology, Closed Sets and Limit Points, Continuous Functions, The Product Topology, The Metric Topology , The Quotient Topology
6,7,8	**Connectedness and Compactness:** Connected Spaces, Connected Subspaces of the Real Line, Components and Local Connectedness, Compact Spaces, Local Compactness
9,10, 11	**Countability and Separation Axiom:** The Countability Axioms, Separation Axioms, Normal Spaces, The Urysohn Lemma, The Urysohn Metrization Theorem, The Tietze Extension Theorem
12	**The Tychonoff Theorem:** The Tychonoff Theorem, The Stone-Cech Compactification
13	**Metrization Theorems and Paracompactnes:** Local Finiteness, Nagata-Smirnov Metrization Theorem, Paracompactness, The Smirnov Metrization Theorem
14,15	**Complete Metric Spaces and Function Spaces:** Complete Metric Spaces, Compactness in Metric Spaces, Pointwise and Compact Convergence, Ascoli's Theorem