

# King Fahd University of Petroleum & Minerals

## Department of Mathematics & Statistics

### SYLLABUS (Math 521, Term 132)

Dr. Othman Echi

<b>Course:</b>	<b>Math 521</b>
<b>Title:</b>	<b>General Topology I</b>
<b>Textbook:</b>	J.R. Munkres, Topology, A First Course, Prentice-Hall, 2000
<b>Catalogue Description</b>	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.
<b>Office Hours</b>	<b>Sunday, Tuesday and Thursday:</b> (10:00-11:00, 12:15-13:00)

### Grading Policy

<b>Instructor: Dr. Othman Echi</b>	<b>Office: 5-201/4</b>	<b>Tel: 860-1802</b>
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<b>Grading Policy: M.Exam 30%; Presentations 20%, Hw+attendance 20%, F.Exam30%.</b>		

### EXAMS:

1. **M. Exam** tba
2. **F. Exam:** May 20, 2014 at 7:00 PM

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