King Fahd University of Petroleum & Minerals
Department of Mathematics and Statistics
Syllabus of Math 311 (112)

(Course Instructor: **Dr. Boubaker Smii**; Office: 5-201-7; Tel: 7763; email: boubaker@kfupm.edu.sa)

Course: Math 311
Title: Introduction to Real Analysis
Textbook: *Introduction to Real Analysis" by Robert G Bartle & Donald R. Sherbert, 3rd Ed,*
                Wiley (2000)

Course   The Real Number System, Continuity and Limits, Basic
description: Properties of Functions on R1, Elementary Theory of Differentiation, Elementary
                Theory of Integration, Sequences and series of real numbers.

Objectives: This course is designed to provide a rigorous mathematical basis
for the analysis of "Functions of One Variable". Theorems usually stated without
proof in elementary calculus courses will be completely proved in this course.
Students Learning Outcome: After completion of the course, the students should be
able to:
• Analyse a mathematical statement
• Identify hypothesis and conclusion(s) from the statement of a
mathematical result
• Identify the set of mathematical results that lead to the proof of a statement
• Compose the arguments leading to the proof of a mathematical statement
• Acquire, whenever appropriate, a geometrical feeling of a statement
• Apply the results to solve exercises, mostly theoretical in nature

The second Semester of 2011-12 (112)
Math 311

Instructor: **Dr. Boubaker Smii**
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Office Hours: **Sat – Monday – Wed: 08:00 – 10:00 a.m.**

Also by Appointment

Exams and Distribution of Marks:

Exam I (25%).
Exam II (25%).

Homework and Attendance: 10%

**Final Exam 40% (Comprehensive): The time and place of the Final Exam will be
determined by the Office of the Registrar.**

The DN Grade: According to the university regulation

Week	Date	Section	Material
1	Jan 28-Feb1 st	2.1 2.2	The algebraic and order properties of \R Absolute value and real line
2	Feb 4-8		Mathematical induction
3	Feb 11- 15	2.4 3.1	Applications of the Supremum property Sequences and their limits
4	Feb 18–22	3.4	Subsequences and Bolzano-Weierstrass Theorem
5	Feb 25-29	4.1 4.2	Limits of functions Limit Theorems
6	Mar 3- 7	5.1 5.4	Continuous functions Uniform continuity
7	Mar 10-14	5.6	Monotone and Inverse functions
8	Mar 17-21	6.1 6.2	The Derivative in R^1 The mean value Theorem
	Mar 24-28		**MIDTERM VACATION**
9	Mar 31-Apr4	6.4	Taylor's Theorem
10	Apr7-11	7.1	The Riemann Integral
11	Apr 14-18	7.2	Riemann integrable Functions
12	Apr21-25	7.3	The Fundamental Theorem
13	Apr 28-May2	8.3	Exponential and Logarithmic functions
14	May5-9	9 9.1 9.2	Infinite Series: Absolute convergence Tests for Absolute Convergence
15	May12-16	9.3	Tests for non-absolute convergence