King Abdul-Aziz University
Department of Mathematics

Academic year 1433/1434
2012/2013

Math 110 (S & E) Syllabus

Textbook : Mathematics for preparatory year students, Department of Mathematics, KAU

Lectures

Mathematical Terminology & Concepts							**Due to (end of)**
Mathematical Terminology	Mathematical Terminology Symbols, Mathematical Terminology Simplified for classroom use, Mathematical Term Range						First Week
Chapter Title	**Section**	**Theoretical (Definitions & Theorem)**	**Exam.**	**Exer.**	**HW**	**Assign.**	**Due to (end of)**
Ch1: **Elementary Algebra**	1.1 Basics of Sets	Definitions, Algebraic Operations on the Sets, Main Sets of Numbers.	1,2,3	6,8	1-5,7		Second week
	1.2 Equations and Inequalities	Linear Equations of one Variable, Second Degree Equations of one Variable, Inequalities, Absolute Variable.	1,2,5,6-9	13,20	4,12,15, 19		
	1.3 Lines	The Slope, Four Kinds of Lines in the Plane.	1-5	1,6	2,3		Third week
Ch2: **Functions**	2.1 Functions and Their Graphs	Definition 2.1.1, Domain and Range of a Function, Graphs of Functions, Piecewise Functions, Summary of Standard Curves.	3-6,12	10, 14, 18, 23, 27	Odd		

	2.2 Identifying Functions, Mathematical Models	Linear Functions, Polynomial Functions, Power Functions, Algebraic Functions, Rational Functions, Trigonometric Functions, Exponential Functions, Logarithmic Functions, Transcendental Functions, Increasing, Decreasing Functions, Even and Odd Functions.	1,2	Even	Odd		Fourth week
	2.3 Combing Function, Shifting and Scaling Graphs	Composite Functions, Shifting a Graphs of a Functions.	1,3	11	Even		
	2.4 Trigonometric Functions	The Six Basic Trigonometric Functions, Periodicity and Graphs of Trigonometric Functions, identities.	1,3	Odd (1-17)	Even (1-17)		Fifth week
	2.5 Exponential Functions	Laws of Exponents, The Number e.	1-3	3	1,2,5		
	2.6 Inverse Functions, Logarithms Function and Inverse Trigonometric Functions	Inverse Functions, Logarithms Function, Natural Logarithms, Inverse Trigonometric Functions.	1-14	16,22, 24	Odd		Sixth week
Ch3: **Limits and Continuity**	3.1 Limits of Real – Valued Functions	Numerical Introduction to Limit	1,2				Seventh week
	3.2 Calculating Limits Using the Limits Laws	The Limits Laws, Eliminating Zero Denominators Algebraically, The Sandwich Theorem.	1-19	-	Odd		
	3.3 One Side Limits and Limits at Infinity	One Side Limits, Limits of Trigonometric Functions, Limits at Infinity and Horizontal Asymptotes, Limits at Infinity of Rational Functions & Polynomials.	7-10,13-24	-	Odd		Eighth Week
	3.4 Infinite Limits and Vertical Asymptotes	Infinite Limits, Vertical Asymptotes.	1-4	3,9,19	Even		Ninth Week
	3.5 Continuity	Continuity at A Point, Properties of Continuous Functions.	2,3,5,8,10,11,14,17,18	-	Odd		

Ch4: **Differentiation**	4.1 The Derivative as Function	Alternative Formula for the Derivative, One-Sided Derivative, The relationship between Differentiability and Continuity.	1,4,5	-	Odd		Tenth Week
	4.2 Differentiation Rules	Differentiation Rules	1-15	7,13,19, 21	Even		
	4.4 Derivatives of Trigonometric Functions	Derivative of Sine Function, Derivative of Cosine Function, Derivative of other Basic Trigonometric Function.	1-4	Odd	Even		Eleventh Week
	4.5 The Chain Rule and Parametric Equations	The Chain Rule.	1-9	Even	Odd		
	4.6 Implicit Differentiation	Implicit Differentiation, Derivatives of Higher Order, Derivatives of Inverse Trigonometric Functions.	1-6	-	Odd		Twelfth Week
	4.7 Derivatives of Logarithmic Functions	Derivatives of Logarithmic Functions, The Power Rule, The Number e as a Limit.	1-6,9	-	Odd		
Ch5: **Applications of Derivatives**	5.1 Extreme Values	Extreme Values, Critical Number, Rolle's Theorem, The Mean Value Theorem.	3-5	11,19	Even		Thirteenth Week
	5.2 Monotonic Function and Concavity	Monotonic Function and Concavity, First Derivative Test For Monotonic Function, Derivative Test For Local Extreme, Concave Up and Concave Down, The Second Derivative Test for Concavity.	1-4	5	Odd		

Marks distribution

First Exam (90 Min; 30 Marks); Second Exam (90 Min; 30 Marks); Final Exam (120 Min; 40 Marks).