Math 110 (S & E) Syllabus

TENTATIVE SCHEDULE

Chapter Title	Topic/Activity	Exam.	Exer.	HW	Due to (end of)
Ch1: Elementary Algebra	**1.1 Basics of Sets** Definitions, Algebraic Operations on the Sets & intervals, Main Sets of Numbers.	3,4	16	7,9,14,18	First Week
	1.2 Equations and Inequalities Linear Equations of one Variable, Quadratic Equations of one Variable, Rational Equations, Inequalities, Absolute Variable.	2-5,8-10, 12,13, 16-18, 19,20	-	Odd numbers	
	1.3 Lines The Slope, Types of Lines in a Plane, The Distance & Midpoint Formulas	1-7, 9-12k 13,14	-	Odd numbers	Second week
	1.4 Trigonometry Convert from Degree to Radian, Convert from Radian to Degree, The Basic Trigonometric functions. Identities.	1-4	-	Odd numbers	
Ch2: Functions	**2.1 Functions and Their Graphs** Definition 2.1.1, Domain and Range of a Function, Identifying Functions, Graphs of Functions, Increasing & Decreasing Functions	4-16 17-22	8,23,27	Odd numbers	Third Week
	2.2 Combining Functions, Even & Odd Functions and Shifting & Scaling Graphs Composite Functions, Even and Odd Functions, Shifting a Graph of a Function	1-5, 6,7,9 10-13	-	Odd numbers	Fourth week
	2.3 Exponential Functions Laws of Exponents, The Number e.	4-6, 9	-	Odd numbers	
	2.4 Inverse Functions, Logarithms Function and Inverse Trigonometric Functions Inverse Functions, Logarithms Function, Natural Logarithms, Inverse Trigonometric Functions.	1,2,4 7-10,11-13 15-18	5,12,25 29	Odd numbers	Fifth week

Ch3: Limits and Continuity	**3.1 Limits of Real – Valued Functions** Numerical Introduction to Limit.	2,5,6	-	-	Sixth & Seventh weeks
	3.2 Calculating Limits Using the Limits Laws The Limits Laws, Eliminating Zero Denominators Algebraically, The Sandwich Theorem.	1-27	8,14,22,27	Odd numbers	
	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.	3-10,13-17 18-30	-	Odd numbers	Eighth Week
	3.4 Infinite Limits and Vertical Asymptotes Infinite Limits, Vertical Asymptotes.	1,2,6,9, 10-12	-	Odd numbers	Ninth Week
	3.5 Continuity Continuity at A Point, Properties of Continuous Functions, Some Types of Continuous Functions, Composite of Continuous Functions.	1-6,12-14 17-22, 29	-	Odd numbers	
Ch4: Differentiation	**4.1 The Derivative as a Function** Alternative Formula for the Derivative, One-Sided Derivative, The relationship between Differentiability and Continuity.	1,4	-	-	Tenth Week
	4.2 Differentiation Rules Differentiation Rules, Finding the Equation of the tangent Line, The Derivative of Higher Orders.	1-15	-	Odd numbers	
	4.3 Derivatives of Trigonometric Functions Derivative of Sine Function, Derivative of Cosine Function, Derivative of other Basic Trigonometric Function.	1-6	-	Odd numbers	Eleventh Week
	4.4 The Chain Rule and Parametric Equations The Chain Rule.	1-10, 12,13	Even	Odd numbers	
	4.5Implicit Differentiation Implicit Differentiation, Derivatives of Higher Order, Derivatives of Inverse Trigonometric Functions.	1-6	-	Odd numbers	Twelfth Week
	4.6 Derivatives of Logarithmic Functions Derivatives of Logarithmic Functions, The Power Rule, The Number e as a Limit.	1-7,9-11	-	Odd numbers	
Ch5: Applications of Derivatives	**5.1 Extreme Values** Extreme Values, Critical Number, Rolle's Theorem, The Mean Value Theorem.	1-5, 7-11	-	Odd numbers	Thirteenth &

	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.	1-7	5	Odd numbers	fourteenth Week
	5.3 Indeterminate Forms and L'HOPITAL'S Rule	1-16		Odd numbers	

Required Textbook

Mathematics for Preparatory Year Students, Khawarizm Academic Publishing, Eighth Edition, **2013**

Mid-term Exam

The first mid-term exam will be given during the 6th week of class and will include the material covered in weeks 1-4.

The second mid-term exam will be given during the 11th week of class and will include the material covered in weeks 5-9.

Final Exam

The final exam will be given during the last week of class and will cover all material covered in the course.

Evaluation Method

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