King Abdulaziz University

Math 110 Syllabus

Department of Mathematics

Ugeqpf 'Semester 2010-11

Ugeqpf 'Semester 1431-32

Textbook: Calculus, early transcendentals, Sixth Editions (2008),   Authors: James Stewart

Chapter Title	Section Title	Lectures				
		Subtitle	Examples	Exercises	HW	
Appendices	**Appendix A** (2 Lectures)	Numbers**,** Intervals, solving Inequalities, and Absolute Value. All of the content except example 9	1-8		1, 4, 5, 11, 13, 19, 27, 29, 49, 51, 55.	
	Appendix B (1.5 Lectures)	Coordinate Geometry and Lines. All of the content	1-8		1, 5, 7, 21, 24, 27, 31, 32, 33, 35, 37, 43, 47.	
	Appendix D (1.5 Lectures)	Trigonometry. Contents of pages: A24, A25, A26, A27 except example 5, A28. Just the graphs of the Trigonometric functions pages A30 and A31.	1-4		1, 5, 7, 11, 17, 20, 23, 27, 29.	

Chapter Title	Section Title	Lectures			HW	
		Subtitle	Examples	Exercises	HW	
Chapter 1 Functions and Models	**1.1** Four Ways to Represents of Functions (1 Lecture)	Representation of Functions, Piecewise Defined Functions, Symmetry, Increasing & decreasing Functions	1-3, 6,7,8,11	1	2,5,8,21,25,27,29,31,35, 41,44,45,50,62-66,70	
	1.2 Mathematical Models (1 Lecture)	Polynomials , power, Rational , Algebraic, trigonometric, Exponential, logarithmic and transcendental functions	5,	2,4,8(f(x))	1,5,6,7,8,9	
	1.3 New functions from old functions (2 Lectures)	Transformation, combination of functions	1-3,5-9	1,6	3-5,7,10,13,16,17,23,28 29,32,35,39,41,46,49	
	1.5 Exponential functions (1 Lecture)	The number e	1,3	1,14,17	5,8,10,15,18,29	
	1.6 Inverse functions and logarithms (2 Lectures)	Definitions, Logarithmic functions, natural logarithm , inverse trigonometric functions	1-13	25,26	5,6,10,11,16,17,18,21,22 27,29,33,35,38,45,48,49, 50,51,71,59-65	

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Chapter 2 Limits and Derivatives	**2.2** The limit of a function (2 Lectures)	One side limits, infinite limits	1,3,4 7-10		2, 6(j, k, l), 8, 12, 14. 25,27,28,29,31,32,33	
	2.3 Calculating limits using the limit laws (2 Lectures)		2-11	27	2, 6, 8, 10, 12, 16, 20, 22, 26, 28, 38, 42, 48, 50, 55, 56, 60, 61	
	2.5 Continuity (2 Lectures)		1-9	37	1, 3, 5, 7, 9, 11, 13, 17, 23, 25, 31, 35, 39, 41, 43, 55	
	2.6 Limits at infinity; Horizontal asymptotes (2 Lectures)	Infinite limits at infinity	1-10		2, 4, 10, 14. 18, 26, 32, 34, 36, 47, 48, 57	
	2.7 Derivatives and rate of change (1 Lecture)	Tangents, velocities, derivatives, rate of change	1,2,4,5		3, 5, 7, 9, 11, 17, 18, 19, 21, 23, 29, 30, 31, 37, 40, 51	
	2.8 The derivatives as a function (1 Lecture)	Other notation, how can a function fail to be differentiable ?, higher derivatives	1-7	Find a formula for $f^{(n)}(x)$ if $f(x) = \sin x$	1, 5, 9, 17, 21, 25. 27, 35, 41, 52, 53, 54	

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Chapter 3 Differentiation Rules	**3.1** Derivatives of Polynomials and Exponential Functions (2 Lectures)	The power rule, The sum rule, Exponential functions, Derivative of the natural exponential function	1-9		3-32(odd) ,33,35,38,39,42, 45,48,51,54,67,68,70 75	**1**
	3.2 The Product and Quotient Rules (1 Lecture)	The product rule, The quotient rule	1-5		3-26 (odd), 41-45,47 50,51	**1**
	3.3 Derivatives of Trigonometric Functions (1 Lectures)	Derivatives of Trigonometric Functions	1,2,4,5,6		2-16 (odd) 18,24,27,30,32, 39-48 (odd)	**1**
	3.4 The Chain Rule (2 Lectures)	Derivative of a Composite Function, The Power Rule Combined with the Chain Rule, The Chain Rule with Powers of a Function	1-9		2,5,9,26,36-42,44- 46,48,53,55,56,61,68 74,94,95	**1**
	3.5 Implicit Differentiation (2 Lectures)	Implicitly Defined Functions, Derivatives of Inverse Trigonometric Functions, Rational Powers of Differentiable Functions,	1-5		1-6,11-18, 24-28,33, 46,60	**1**
	3.6 Derivatives of Logarithmic Functions (2 Lectures)	Logarithmic Differentiation, The Number e as a Limit	1-8		2-22 (odd), 26,30,32,33 37-48 (odd), 50,52	**1**

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Chapter 4 Applications of Derivatives	**4.1** Maximum and minimum values (2 Lectures)		1-9	27	3, 5, 9, 13, 16, 26, 28, 34, 36, 37, 38, 42, 44, 51, 53, 57, 59, 62	
	4.2 The Mean Value Theorem (1 Lectures)		2, 3, 5, 6	5, 7, 23	2, 4, 8, 11, 13, 15, 16, 17, 20, 24, 25, 32	
	4.3 How Derivatives Affect the Shape of a Graph (2 Lectures)	What does f'(x) say about f(x)? What does f''(x) say about f(x)?	1-8	7, 32	1, 5, 6, 10, 13, 18, 20, 24, 31, 33, 45	
	4.4 Intermediate Forms and L'Hôpital's Rule (2 Lectures)	Indeterminate products, differences, powers	1-9	56	1, 11, 18, 22, 27, 39, 50, 51, 54, 60, 61	
	4.5 Summary of curve sketching (1 Lecture)		1,5		9,14,19,25,37,50	

Note:

1. Instructor should cover all theoretical materials that related to the assigned examples.

2. All examples and exercises in the lectures part must be solved by the instructor.

3. All of the exams are Multiple Choices (MC).

4. Homework should be submitted online on or before the due date

5. Any student who misses 25% of the class will receive DN.

6. No Calculator will be allowed in any exam.

Marks distribution

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