

King Abdulaziz University	Math 203 Syllabus	Mathematics Department
Faculty of Science		First Semester (1435 – 1436)
Textbook: CALCULUS Early Transcendental, Seventh Edition (2010), Author: James Stewart		

		Lectures				
Chapter Title	Section Title	Subtitle	Examples	Exercises	Home Work	Remarks
Chapter 10 Parametric Equations and Polar Coordinates	10.1 Curves Defined by Parametric Equations	Parametric Equations	1,3,5	13,18,19	11-17, 20-22	
	10.2 Calculus with Parametric Curves	Tangents, Areas, Arc Length, Surface Area.	1,2,3,4,5,6		1-6,8,9,10, 41,42,45,46	
	10.3 Polar Coordinates	Polar Coordinates, Polar Curves, Symmetry, Tangent to Polar Curves, Graphing Polar Curves with Graphing Devices.	1,2,3,4,5,7,9	16,24,25	1-6,9,11,15, 17,22	
	10.4 Areas and Arc Length in Polar Coordinates	Area, Arc Length.	1	1,3,45,46	2,4,17, 19,47	
	10.5 Conic Sections	Parabola, Ellipse, Hyperbola, Shifted Conics.	1,2,3,4,5,6,7	8,16,33,34,37,40,45,47	1-7,11-15, 31-48	
	10.6 Conic Sections in Polar Coordinates	Conic Sections in Polar Coordinates	1,2	1,2,3,9,13	4-8,10-15	

Chapter 12 Vectors and the Geometry of Space	12.1 Three-Dimensional Coordinate Systems	Distance Formula in Space, Equation of a Sphere.	1,2,4, 6	10,18,31	7,8,15-17,24	
	12.2 Vectors	Combining Vectors, Vector Algebra Operations, Components, Unit Vectors	1,2,3, 4,5,6	21,25	7-16,17,18, 20,22	
	12.3 The Dot Product	Definition and Properties of the Dot Product, Angle Between Vectors, Direction Angles and Direction Cosines, Projections.	1,2,3,4, 5,6	38,41	1,2,3-10, 15-20,35-40	
	12.4 The Cross Product	Definition and Properties of the Cross Product, Triple Products.	1,2,3,4,5	35	1-6,29-32,36	
	12.5 Equations of Lines and Planes	Parametric Equations of the Line, Planes.	1,2,4, 5,6,7,9	20,21,22, 30,71	2-5,20, 23-28, 31,35,43-45	
	12.6 Cylinders and Quadric Surfaces	Cylinders, Quadric Surfaces. (Table 1)	1,2,3, 4,6			
Chapter 13 Vector Functions	13.1 Vector Functions and Space Curves	Limit and Continuity.	1,2,4		1,3,4,6,15	
	13.2 Derivatives and Integrals of Vector Functions	Derivatives, Unit Tangent Vector, Integrals.	1, 4,5	18	9-12,17,18, 23,24,33-37	
	13.3 Arc Length and Curvature	Length, Curvature, The Normal and Binormal Vectors.	1,3,4, 5,6	4	1,2,5,9, 21-25,43,44	
	13.4 Motion In Space: Velocity and Acceleration	Velocity, Speed, Acceleration, Tangential and Normal Components of Acceleration.	1,2,3,7	39	3-14,16, 33,34	

Chapter 14 Partial Derivatives	14.1 Functions of Several Variables	Functions of Two Variables, Domain, Rang, Level Curves, Functions of Three or More Variables.	1,4,6,8	9,13,20	7,8,9,10,12, 13,19	
	14.2 Limits and Continuity	Limits (Tables 1,2), Continuity, Functions of Three or More Variables.	1,2,4,5, 7,8	14,17, 33	5,6,7,9,10,12 , 18,30,37,38	
	14.3 Partial Derivatives	Partial Derivatives of a Function of Two Variables, Functions of More Than Two Variables, Higher Derivatives, Laplace's Equation, Wave Equation.	1,2,3,5, 6,7,8,9	17,34, 41,63	15,16,19,20, 21,22,26,27, 35,41,45,46, 48,51,53,61, 65	
	14.4 Tangent Planes and Linear Approximation	Linearization, Total Differential.	2,4	12,25	2,3,4,6,11, 13,14,26,27	
	14.5 The Chain Rule	The Chain Rule, Implicit Differentiation.	1,3,5,8,9	10,21, 30,34	2,4,6,7,8,24, 25,27-29,31	
	14.6 Directional Derivatives and Gradient Vector	Directional Derivatives, The Gradient Vector, Functions of Three Variables, Maximizing the Directional Derivatives, Tangent Planes to Level Surfaces, Normal Line.	2,3,4,5, 6,8	9,12, 25,42	4,5,6,7,8,11, 12,21,24,25, 39,44	
	14.7 Maximum and Minimum Values	Local Maximum and Minimum Value, Saddle Point.	3	6,7	1,2,8-18	
	14.8 Lagrange Multipliers	Lagrange Multiplier.	2	4,7	3,5,6,8,9, 10-13	

Notes:

- 1- All examples and exercises in the lectures part must be solved by the instructor.
- 2- Homework should be solved and submitted to instructor.