Bronx Community College of the City University of New York

Department of Mathematics and Computer Science

**SYLLABUS: MTH 33** – Analytic Geometry and Calculus III (5 Credits – 5 Hours per week)

**PREREQUISITE: MTH 32** – Calculus and Analytic Geometry II or equivalent; and CUNY English Proficiency, or ENG 100 or 110, if required

**TEXT**: Calculus (Ninth Edition) by Stewart et al., Cengage Learning. ISBN 978-1-337-62418-3

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**SECTION TOPIC SUGGESTED EXERCISES**

**Sequences, Series, and Power Series**

11.1 Sequences 773/ 3-55 odd

11.2 Series 785/ 1-12, 15, 23-26, 45-49 odd

11.3 The Integral Test 796/ 1-25 odd

11.4 The Comparison Tests 802/ 1, 2, 7-33 odd, 48, 51

11.5 Alternating Series and Absolute Convergence 810/ 1-33 odd, 49

11.6 The Ratio and Root Tests 816/ 3-33 odd

11.7 Strategy for Testing Series 819/ 1-37 odd

11.8 Power Series 824/ 1-31 odd

11.9 Representation of Functions as Power Series 831/ 3-19 odd, 27-33

11.10 Taylor and Maclaurin Series 846/ 1-33 odd

11.11 Applications of Taylor Polynomials 856/ 1-21 odd

Review Exercises 860/ 1-43 odd

**Vectors and the Geometry of Space**

12.1 Three-Dimensional Coordinate Systems 873/ 1-15 odd, 19, 21, 23, 27-37 odd

12.2 Vectors 881/ 1-25 odd

12.3 The Dot Product 890/ 1-53 odd

12.4 The Cross Product 899/ 1-43 odd

12.5 Equations of Lines and Planes 910/ 1-43 odd

Review Exercises 922/ 1-19 odd

**Vector Functions**

13.1 Vector Functions and Space Curves 933/ 1-19 odd

13.2 Derivatives and Integrals of Vector Functions 940/ 1-27 odd  
13.3 Arc Length and Curvature 951/ 1-33 odd  
 Review Exercises 966/ 1-13 odd

**Partial Derivatives**

14.1 Functions of Several Variables 984/ 3-27 odd

14.2 Limits and Continuity 998/ 1-37 odd

14.3 Partial Derivatives 1008/ 9-35 odd, 41-63 odd

14.4 Tangent Planes and Linear Approximation 1019/ 1-23 odd

14.5 The Chain Rule 1029/ 1-34 odd

14.6 Directional Derivatives and the Gradient Vector 1043/ 9-39 odd

14.7 Maximum and Minimum Values 1054/ 1-19 odd, 29-37 odd

Review Exercises 1070/ 1-49 odd

**Multiple Integrals**

15.1 Double Integrals over Rectangles 1087/ 1-25 odd, 45, 46

15.2 Double Integrals over General Regions 1097/ 1-39 odd, 47, 48

15.3 Double Integrals in Polar Coordinates 1105/ 1-27 odd

15.6 Triple Integrals 1130/ 1-23 odd

Review Exercises 1156/ 3-7 odd, 9, 19, 21-39 odd

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08/ 08/ 16 (JP) - 08/18/22 (RG) – 01/23 (EA) COVID, removed 07/23