**Bronx Community College  
 of the City University of New York**

**Department of Mathematics and Computer Science**

**SYLLABUS: MTH 32** - Calculus and Analytic Geometry II (4 credits/ 6 hours per week)

**PREREQUISITE: MTH 31** - Calculus and Analytic Geometry I or equivalent; and CUNY English Proficiency, or ENG 100 or 110, if required

**TEXT**: Calculus: Early Transcendentals (Ninth Edition) by Stewart et al., Cengage Learning. ISBN 978-1337613927

Students who do not need Math 33 may use Single Variable Calculus: Early Transcendentals (Ninth Edition) by Stewart et al., Cengage Learning. ISBN 978-0357022269

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**Learning Objectives.** On successful completion of this course, students will be able to

* Use integrals to compute lengths of curves, areas of plane regions, and volumes of rotational solids
* Recognize when the use of integration by parts is appropriate and use the technique to compute integrals
* Recognize and apply the specific methods to integrals of different classes of functions: trigonometric, radical, and rational.
* Determine convergence and evaluate improper integrals.
* Determine the limit of an infinite sequence
* State and use different convergence tests (integral, comparison, divergence, alternate series, root, ratio) to determine whether a series diverges, conditionally converges, or absolutely converges.
* Determine the radius and interval of convergence for a power series.
* Compute the Taylor and Maclaurin series of a function.
* Use power, Taylor, and Maclaurin series to evaluate some converging series.
* Approximate a function by its Taylor polynomial.

SECTION TOPIC SUGGESTED EXERCISES

**Chapter 5: Integrals**

**Week 1**

5.5 The Substitution Rule 428/ 1-53 odd, 59-79 odd

**Chapter 6: Applications of Integration**

6.1 Areas between Curves 443: 137 odd, 41

**Week 2**

6.2 Volumes 456: 139 odd, 59-71 odd

6.3 Volumes by Cylindrical Shells 465: 129 odd

**Week 3**

Review

Exam

**Chapter 7: Techniques of Integration**

7.1 Integration by Parts 491: 147 odd, 5362

**Week 4**

7.1 Integration by Parts 491: 147 odd, 5362

7.2 Trigonometric Integrals 499: 131 odd

**Week 5**

7.3 Trigonometric Substitution 506: 135 odd

7.4 Integration of Rational Functions 515: 125 odd, 41-53 odd

by Partial Fractions

**Week 6**

7.5 Strategy for Integration 522: 167 odd

7.8 Improper Integrals 550: 1, 539 odd, optional 57– 69 odd, 70,71

**Week 7**

**Chapter 8: Further Applications of Integrals**

8.1 Arc Length 566: 1 21 odd

Review

Exam

**Week 8**

**Chapter 11: Sequences, Series, and Power Series**

11.1 Sequences 736/ 1 – 61 odd

11.2 Series 748/ 1 – 7 odd, 15 – 31 odd

**Week 9**

11.3 The Integral Test 759/ 1 – 27 odd

11.4 The Comparison Tests 765/ 1, 2, 3 – 35 odd, 49, 51

**Week 10**

11.5 Alternating Series and

Conditional Convergence 773/ 1 – 33 odd, 45, 49, 51, 52

11.6 The Ratio and Root tests 778/ 7 – 33 odd

**Week 11**

11.7 Strategy for Testing Series 781/ 1– 47 odd

11.8 Power Series 786/ 1 – 39 odd

**Week 12**

11.9 Representation of Functions as Power

Series 793/ 5 – 21 odd, 27 – 33 odd

11. 10 Taylor and Maclaurin Series 809/ 1 – 37 odd

**Week 13**

11.11 Applications of Taylor Polynomials 818/ 1 – 21 odd

Review

**Week 14**

Exam

Review for the final exam

**Academic Integrity**

Academic dishonesty (such as plagiarism and cheating) is prohibited at Bronx Community College and is punishable by penalties, including failing grades, dismissal and expulsion. For additional information and the full policy on Academic Integrity, please consult the BCC College Catalog.

**Accommodations/Disabilities**

Bronx Community College respects and welcomes students of all backgrounds and abilities. In the event you encounter any barrier(s) to full participation in this course due to the impact of a disability, please contact the disAbility Services Office as soon as possible this semester.  The disAbility Services specialists will meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations for this course. You can reach the disAbility Services Office at: [disability.services@bcc.cuny.edu](mailto:disability.services@bcc.cuny.edu), Loew Hall, Room 211, (718) 289-5874.

10/2014 M.M. & I.P. - 08/2016 A.W. - 08/2022 R.G. - Last updated 08/18/2022

02/23 I.P.