College of Staten Island, City University of New York (CUNY)

Math 231 (Section 15382): Fall 2018 Syllabus

Analytic Geometry and Calculus I

Instructor: **Joseph Maher**

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Office hours: M12:20-1:10 M1:25-2:15 W1:25-2:15

Course location: MW 4:40-6:20

Textbook: Rogawski and Adams, *Calculus, Early Transcendentals*, 3rd edition, W.H. Freeman
ISBN: 978-1-4641-1488-5

Grading policy: 10% Homework and attendance

50% Midterms

40% Final

Additional info:

Disability policy: Qualified students with disabilities will be provided reasonable academic accommodations if determined eligible by the Office for Disability Services. Prior to granting disability accommodations in this course, the instructor must receive written verification of student's eligibility from the Office of Disability Services, which is located in 1P-101. It is the student's responsibility to initiate contact with the Office for Disability Services staff and to follow the established procedures for having the accommodation notice sent to the instructor.

Integrity policy: CUNY's Academic Integrity Policy is available online at
http://www.cuny.edu/about/info/policies/academic-integrity.pdf

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

MATH 231–CALCULUS I
COURSE OUTLINE

Text: Rogawski and Adams, <u>Calculus – Early Transcendentals</u>, 3nd Edition.
W. H. Freeman & Co. (2015). ISBN# 978-1-4641-1488-5

Note: The textbook is used also for MTH 232, 233. If you are only taking MTH 230 or
231 you may use Rogawski and Adams, <u>Single Variable Calculus: Early Transcendentals</u>.

Note: Below, each lesson corresponds to a one-hour class.   Homework problems in
bold correspond to similar WeBWorK problems, which must be submitted online.

Lesson	Section	Topic	Homework Problems
1	1.2	Review: Linear and quadratic functions	**13**, **14**, **18**, 21, 25, 31, **35**, 39, 41
	1.4	Review: Trigonometric functions	3, 7, **13**, **15**, 19, 21, 47
2	1.5	Review: Inverse functions	3, 4, 28, 33, 36, 37, 47, 49, 53
	1.6	Review: Exponential and log functions	1, 7, 9, 22, 28, **29**, 31, 33, 34, 42
3	2.1	Limits and rates of change	**1**, **3**, 4, 17, **24**, **25**, **30**
	2.2	Limits: Numerical and graphical	**1**, **5**, **7**, 17, 19, **21**, 24, **28**, 30, 51, 55
4	2.3	Limit laws	**4**, 5, 9, **16**, **17**, 19, **27**, **29**, 31
5	2.4	Continuity	**1**, **17**, 19, **22**, **25**, 51, **57**, 65, 71, 77
6	2.5	Evaluating limits algebraically	**5**, **7**, 9, **17**, 21, 27, **29**, 39, **47**, 51, 52
7	2.6	Trigonometric limits	**2**, 12, 17, **21**, **25**, **29**, 33, 34, 36, **44**
8	2.7	Limits at infinity	**7**, **8**,**10**,**14**,**19**, 22, 30, **38**
9	2.8	Intermediate Value Theorem	3, 5, 7, 9, 15
10	3.1	Definition of the derivative	6, **9**, 13, **17**, **18**, **22**, 26, 29, 53, 55, 57
11	3.2	Derivative as a function	**9**, **11**, **17**, **23**, 32, 35, **35**, **41**, 43, 52, 53, 66, 68
12	3.3	Product and quotient rules	**6**, **8**, **9**, 19, **21**, **29**, **30**, 31, 35, 41, 43, 53
13	3.3	Product and quotient rules	
14	3.4	Rates of change	**2**, 7, 9, 10, **14**, 16, **25**, **26**, 38, **41**, 43
15		Review	
16		**Exam 1**	
17		**Exam 1**	
18	3.5	Higher derivatives	**5**, **9**, **11**, **19**, **21**, 27, 39, 41
19	3.6	Derivatives of trig functions	**1**, **7**, **10**, **17**, 18, 23, 29, 43
20	3.7	Chain rule	5, **7**, **11**, **13**, **27**, **35**, **36**, 43, 47, 55, 87
21	3.7	Chain rule	
22	3.8	Implicit differentiation	**3**, **5**, **11**, 17, **23**, 28, **33**, 41, 54, 82
23	3.9	Derivatives of exponentials and logs	**1**, **3**, **7**, **9**, 17, 45, 47
24	3.10	Related rates	**3**, **5**, 11, 15, 16, 19, **21**, **25**, **29**

25	3.10	Related rates	
26	4.1	Linear approximation	**5**, **7**, 9, 13, **24**, **25**, 37, 41, 47, 51, 54
27	4.2	Extreme values	**1**, **4**, **9**, **17**, **21**, **41**, 49, 55, 63
28	4.2	Extreme values	
29	4.3	First derivative test	1, 15, 16, 17, 25, **26**, **34**, **38**, 46, **50**, **55**
30	4.3	First derivative test	
31	4.4	Concavity and second derivative	**1**, 2, 7, **9**, 13, **16**, **18**, 23, **37**, 48, 51, 59
32	4.4	Concavity and second derivative	
33	4.5	L'Hopital's Rule	**8**, 12, **16**, **19**, 22, 23, **31**, **40**, 43, 46, 65
34	4.6	Graph sketching and asymptotes	1, 13, **19**, 28, **31**, **34**, 38, 45, **54**, 57
35	4.6	Graph sketching and asymptotes	
36	4.7	Optimization	**1**, 8, 13, 15, **16**, **22**, 26, 27, **30**, **33**, 43, **57**
37	4.7	Optimization	
38		Review	
39		**Exam 2**	
40		**Exam 2**	
41	5.1	Approximating area	**3**, 15, 17, **19**, **21**, 47, 79
42	5.2	Definite integral	**8**, 9, **13**, 19, 23, **29**, 41, **45**, **56**
43	5.2	Definite integral	
44	5.3	Antiderivatives	**3**, **5**, **7**, **14**, **16**, 17, **19**, 22, 24, **27**, 40, 47, 51, 68
45	5.3	Antiderivatives	
46	5.4	Fundamental Theorem of Calculus I	10, **11**, **13**, **25**, 33, **35**, 37, **40**, 45, 47, 53, 55, 62
47	5.5	Fundamental Theorem of Calculus II	**5**, **8**, **9**, **13**, **15**, **16**, **17**,**19**, **21**, **23**, **24**, **29**, **30**, **33**, **35**, 37 ,39, 45
48	5.7	Integration by substitution	**29**, **30**, **35**, **46**, **51**, **61**, **65**, **71**, **72**, **85**, **95**
49	5.7	Integration by substitution	
50	5.8	Integration of transcendental functions	**3**, **9**, 13, 16, **43**, **44**, **46**, 53
51	5.8	Integration of transcendental functions	
52		Review	
53		**Exam 3**	
54		**Exam 3**	
55		Final review	
56		Final review	

ROLE IN CURRICULUM

LEARNING GOALS AND ASSESSMENT PLAN

Learning Goal	Assessment
Compute by hand limits, derivatives and integrals of simple combinations of algebraic and transcendental functions.	NA
Understand the geometric meaning of derivatives and anti-derivatives	NA
Solve applied optimization problems.	NA
	NA

When assessment activities are done, the results will be summarized in memorandum form and filed with the department chairperson for record keeping purposes.

Information obtained from assessment will be used to assess and self-reflect on the success of the course and to make any necessary changes to improve teaching and learning effectiveness.

Undergraduate Catalog Course Description

College of Staten Island

Course prefix:	MTH
Course number:	231
Course title:	Analytic Geometry and Calculus I
Subject	Mathematics
Minimum credits:	3.0
Maximum credits:	3.0
Hours per week:	4.0
Course description:	The first of a three-semester sequence in calculus. Topics include limits, derivatives, rules of differentiation, trigonometric functions and their derivatives, differentials, graph sketching, maximum and minimum problems, related rates, antiderivatives, areas, exponential and logarithmic functions.
Prerequisite:	MTH 123 with a grade of A or MTH 130 or an appropriate score on the CUNY Mathematics Assessment Test or permission of the Department of Mathematics.
Comments:	MTH 229.