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

Math 231 (Section 92499): Fall 2013 Syllabus

Analytic Geometry and Calculus I

Instructor: **Joseph Maher**

Office: 1S-222
Phone: (718) 982-3623
Email: joseph.maher@csi.cuny.edu

Office hours: M 12:20-2:15, W 12:20-1:10

Course location: M 10:10 - 12:05 1S-219
W 10:10 - 12:05 1S-219

Textbook: Rogawski, *Calculus, Early Transcendentals*, ET edition, W.H. Freeman
ISBN: 14292-95031

Grading policy: $\max(0.1\text{HW} + 0.5\text{MT} + 0.4\text{FE}, \text{FE})$, where HW is Webwork and other assignments, MT is the midterms and FE is the Final Exam

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, Calculus – Early Transcendentals, 2nd Edition.
W. H. Freeman & Co. (2012)
ISBN-13:   978-1-4292-0838-3;   ISBN-10:   1-4292-0838-4

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

Note: Below, each lesson corresponds approximately to a one-hour class. Outline is subject to changes, which will be announced in class. Topics in [brackets] may be omitted by some instructors. Many homework problems correspond to similar WeBWorK problems, which must be submitted online.

Lesson	Section	Topic	Homework Problems
1	1.2	Review: Linear and quadratic functions	1.2/ 21, 25, 29, 37, 39
	1.4	Review: Trigonometric functions	1.4/ 3, 7, 19, 21, 23, 45
2	1.5	Review: Inverse functions	1.5/ 3, 17, 31, 33, 39, 43, 49
	1.6	Review: Exponential and log functions	1.6/ 1, 7, 9, 29, 31, 33, 40
3	2.1	Limits and rates of change	1, 7, 17, 25, 30
4	2.2	Limits: Numerical and graphical	17, 19, 21, 24, 28, 47, 49, 53
5	2.3	Limit laws	5, 9, 19, 27, 29, 31
6	2.4	Continuity	1, 5, 19, 22, 24, 25, 51, 65, 71, 77
7	2.5	Evaluating limits algebraically	7, 9, 21, 25, 27, 39, 49, 51, 52
8	2.6	Trigonometric limits	12, 17, 21, 33, 34, 36, 44
9	2.7	Limits at infinity	9, 13, 19, 22, 30
10	2.8	Intermediate Value Theorem	2.8/ 3, 5, 7, 9, 15
	[2.9	Formal definition of a limit	2.9/ 3, 5, 7, 2]
11		Review	
12		[Review]	
13		**Exam 1**	
14	3.1	Definition of the derivative	7, 11, 13, 24, 27, 51, 53, 55
15	3.2	Derivative as a function	9, 23, 39, 43, 52, 53, 66, 68
16	3.3	Product and quotient rules	23, 27, 31, 35, 41, 43, 53
17	3.4	Rates of change	7, 9, 10, 16
18	3.5	Higher derivatives	7, 15, 19, 23, 27, 39, 41, 53
19	3.6	Derivatives of trig functions	7, 13, 15, 18, 23, 29, 43
20	3.7	Chain rule	5, 7, 13, 21, 23, 43, 47, 55, 87
21	3.7	Chain rule	
22	3.8	Derivatives of inverse functions	3, 9, 11, 13, 15, 19
23	3.9	Derivatives of exponentials and logs	1, 7, 9, 17, 45, 47
24	3.10	Implicit differentiation	5, 11, 17, 23, 32, 60
25	3.11	Related rates	5, 11, 15, 16, 19, 21, 22, 29

26		Related rates	
27		Review	
28		[Review]	
29		**Exam 2**	
30	[4.1	Linear approximation	9, 13, 15, 19, 37, 41, 47, 51, 54]
31	4.2	Extreme values	1, 9, 17, 21, 41, 49, 55, 63
32		Extreme values	
33	4.3	First derivative test	1, 11, 12, 13, 21, 27, 31, 33, 37, 45, 51
34		First derivative test	
35	4.4	Concavity and second derivative	1, 2, 7, 13, 15, 21, 34, 35, 46, 47, 55
36	4.5	L'Hopital's Rule	22, 23, 31, 40, 43, 46, 63
37	4.6	Graph sketching and asymptotes	1, 11, 21, 28, 36, 43, 52, 55
38		Graph sketching and asymptotes	
39	4.7	Optimization	4, 6, 7, 12, 16, 17, 21, 23, 33
40		Optimization	
41		Review	
42		[Review]	
43		**Exam 3**	
44	4.9	Antiderivatives	21, 26, 27, 41, 44, 65, 68, 70, 75
45		Antiderivatives	
46	5.1	Approximating area	13, 15, 19, 20, 45, 77
47	5.2	Definite integral	9, 13, 19, 23, 41, 57, 83
48	5.3	Fundamental Theorem of Calculus I	9, 15, 29, 33, 37, 45, 47, 53, 55, 62
49		Fundamental Theorem of Calculus I	
50	[5.4 [5.5	Fundamental Theorem of Calculus II Net change]	5.4/ 5, 17, 23, 25, 26, 31, 37, 39, 45] 5.5/ 1, 3, 4, 7, 11, 15, 19]
51	5.6	Integration by substitution	27, 29, 35, 39, 41, 45, 52, 69, 70
52		Integration by substitution	74, 76, 85, 89
53	[5.7	Integration of transcendental functions	3, 9, 13, 15, 53]
54	[5.8	Exponential growth & decay	1, 9, 11, 14, 15, 35, 42]
55		Review	
56		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.