

College of Staten Island, City University of New York (CUNY)  
**Math 231 (Section 17922 ): Fall 2014 Syllabus**

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Analytic Geometry and Calculus I

Instructor: **Joseph Maher**

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Office hours: M 12:20-2:15, W 1:25-2:15

Course location: M 4:40 - 6:20 1S-115

W 4:40 - 6:20 1S-115

Textbook: Rogawski, *Calculus, Early Transcendentals*, ET 2nd Ed edition, W.H. Freeman  
ISBN: 978-1429208383

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.csi.cuny.edu/privacy/cuny\\_academic\\_integrity.pdf](http://www.csi.cuny.edu/privacy/cuny_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# 978-1429208383

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 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 1.4	Review: Linear and quadratic functions Review: Trigonometric functions	1.2/ <b>13, 14, 18</b> , 21, 25, 29, <b>33</b> , 37, 39 1.4/ 3, 7, <b>13, 15</b> , 19, 21, 23, 45
2	1.5 1.6	Review: Inverse functions Review: Exponential and log functions	1.5/ 3, <b>4, 28, 32</b> , 33, 39, 43, 49 1.6/ 1, 7, 9, <b>22, 28, 29</b> , 31, 33, <b>34</b> , 40
3	2.1 2.2	Limits and rates of change Limits: Numerical and graphical	2.1/ <b>1, 3, 7, 17, 24, 25, 30</b> 2.2/ <b>1, 7, 17, 19, 21, 24, 28</b> , 47, 49, 53
4	2.3	Limit laws	<b>4, 5, 9, 16, 17</b> , 19, 27, <b>29</b> , 31
5	2.4	Continuity	<b>1, 3, 17, 19, 22, 25</b> , 51, <b>57</b> , 65, 71, 77
6	2.5	Evaluating limits algebraically	<b>5, 7, 9, 17, 21, 27, 30</b> , 39, <b>47</b> , 51, 52
7	2.6	Trigonometric limits	<b>2, 7, 12, 17, 21</b> , 33, 34, 36, <b>44</b>
8	2.7	Limits at infinity	<b>7, 10, 11, 16, 19</b> , 22, 30, <b>38</b>
9	2.8	Intermediate Value Theorem	3, 5, 7, 9, 15
10	3.1	Definition of the derivative	<b>7, 11, 13, 15</b> , 24, 27, 51, 53, 55
11	3.2	Derivative as a function	<b>9, 11, 17, 23, 32, 35</b> , 43, 52, 53, 66, 68
12	3.3	Product and quotient rules	<b>6, 9, 19, 21, 29, 30, 31</b> , 35, 41, 43, 53
13	3.3	Product and quotient rules	
14	3.4	Rates of change	<b>2, 7, 9, 10, 14, 16, 25</b> , 38, <b>41, 43</b>
15		Review	
16		<b>Exam 1</b>	
17		<b>Exam 1</b>	
18	3.5	Higher derivatives	<b>5, 9, 11, 19, 21</b> , 27, 39, 41, 53
19	3.6	Derivatives of trig functions	<b>1, 7, 10, 17</b> , 18, 23, 29, 43
20	3.7	Chain rule	<b>5, 7, 11, 13, 27, 35, 36</b> , 43, 47, 55, 87
21	3.7	Chain rule	
22	3.8	Derivatives of inverse functions	<b>3, 4, 7, 9, 11, 13, 15, 19, 20, 33</b>
23	3.9	Derivatives of exponentials and logs	<b>1, 3, 7, 9</b> , 17, 45, 47
24	3.10	Implicit differentiation	<b>3, 5, 11, 17, 23</b> , 32, 60
25	3.11	Related rates	<b>3, 5, 11, 15, 16, 19, 21, 25, 29</b>
26	3.11	Related rates	
27	4.1	Linear approximation	<b>5, 7, 9, 13, 24, 25</b> , 37, 41, 47, 51, 54

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28	4.2	Extreme values	<b>1, 4, 9, 17, 21, 41</b> , 49, 55, 63
29	4.2	Extreme values	
30	4.3	First derivative test	1, 11, 12, 13, 21, <b>22, 30, 34, 42, 46, 51</b>
31	4.3	First derivative test	
32	4.4	Concavity and second derivative	<b>1, 2, 7, 13, 16, 18</b> , 21, <b>35</b> , 46, 47, 55
33	4.4	Concavity and second derivative	
34	4.5	L'Hopital's Rule	<b>8, 12, 16</b> , 22, 23, <b>31, 40</b> , 43, 46, 63
35	4.6	Graph sketching and asymptotes	1, 11, <b>17, 26, 29</b> , 36, 43, <b>52</b> , 55
36	4.6	Graph sketching and asymptotes	
37	4.7	Optimization	<b>1, 4, 6, 7, 8, 12</b> , 16, 17, <b>20, 23</b> , 33, <b>47</b>
38	4.7	Optimization	
39		Review	
40		<b>Exam 2</b>	
41		<b>Exam 2</b>	
42	4.9	Antiderivatives	<b>3, 5, 7, 17, 19, 22, 24, 27, 40, 47, 51</b>
43	4.9	Antiderivatives	
44	5.1	Approximating area	<b>3</b> , 13, 15, <b>19, 20</b> , 45, 77
45	5.2	Definite integral	9, <b>8, 13</b> , 19, 23, <b>29</b> , 41, <b>56</b> , 83
46	5.2	Definite integral	
47	5.3	Fundamental Theorem of Calculus I	<b>10, 11, 13, 25</b> , 33, 37, 45, 47, 53, 55, 62
48	5.4	Fundamental Theorem of Calculus II	<b>5, 8, 15, 19, 21, 35</b> , 37, 39, 45
49	5.6	Integration by substitution	<b>27, 28, 33, 49, 59, 63, 67, 69, 70, 81</b>
50	5.6	Integration by substitution	
51	5.7	Integration of transcendental functions	<b>3, 9, 13, 16</b> , 53
52	5.7	Integration of transcendental functions	
53		Review	
54		<b>Exam 3</b>	
55		<b>Exam 3</b>	
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.