

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

**MATH 230 – CALCULUS I WITH PRECALCULUS
COURSE OUTLINE**

Text: Rogawski, Calculus – Early Transcendentals,
W. H. Freeman & Co. (2008)
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Note: The above textbook includes multi-variable calculus. If you do NOT intend to take MTH 232, 233, you may instead purchase Rogawski, Single Variable Calculus: Early Transcendentals.

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

Lesson	Section	Topic	Homework Problems
1	1.1	Functions and Graphs	1.1/ 13,15,49,51,67
2	1.2	Linear and Quadratic Graphs	1.2/ 21, 25, 29, 31, 33, 37, 39
3	1.3	Basic Functions: Polynomials, Rational Functions, Composition of Functions	1.3/ 6,7,8,11, 19, 25, 27,28,30
4	1.4	Trigonometric Functions: $\sin(x)$, $\cos(x)$, $\tan(x)$. Definitions of $\sec(x)$, $\csc(x)$, $\cot(x)$	1.4/ 3, 7, 19, 21
5	1.4	Trigonometric Identities: Pythagorean identity, addition formula, double-angle. Law of cosines	1.4/ 23, 24, 27,38, 41, 45
6	1.5	Inverse Functions	1.5/ 3, 17, 31, 33, 39, 43, 49
7	1.6	Exponential and Logarithmic Functions	1.6/ 1, 3, 7, 9, 25, 27, 29, 35
8	2.1	Limits and rates of change	2.1/ 1,3, 7,8, 15, 23, 29
	2.2	Limits: Numerical and graphical	2.2/ 5,8, 21, 23, 25, 27, 31, 37, 38
9	2.3	Limit laws	2.3/ 13,15,17, 19, 21, 25, 27
	2.4	Continuity	2.4/1,3, 5, 7, 19, 23, 25, 27, 67, 73, 77
10	2.5	Evaluating limits algebraically	2.5/ 1,9, 15, 19, 25, 27, 39, 47, 49, 51
	2.6	Trigonometric limits	2.6/ 7, 9, 13, 23, 24,25, 27, 35,41
11	2.7	Intermediate Value Theorem	2.7/ 1, 3, 5
	2.8	Formal definition of a limit	2.8/ 1, 3, 5
12		Review	
13		Exam 1	
14	3.1	Definition of the derivative	3.1/ 1,3,5, 7, 11, 13, 53, 55, 57
15	3.2	Derivative as a function	3.2/ 1,3, 11, 12, 24, 27, 39, 55, 57
16	3.3	Product and quotient rules	3.3/ 13,14, 23, 31, 35, 53
17	3.4	Rates of change	3.4/ 5, 7, 9, 11, 13,15, 20,31,33,35
18	3.5	Higher derivatives	3.5/ 17, 19, 29, 53
	3.6	Trigonometric functions	3.6/ 9, 15, 17, 21, 33,43

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19	3.7	Chain rule	3.7/ 3,5, 6, 7, 19, 35, 39, 77
20	3.8	Implicit differentiation	3.8/ 1,2,5, 11, 17, 31, 41,43
21	3.9	Derivatives of inverse functions	3.9/ 3, 7, 9, 11, 13, 15, 23, 27
	3.10	Derivatives of exponentials and logs	3.10/ 1, 7, 9, 17, 27,35, 37
22	3.11	Related rates	3.11/ 3, 5, 9, 15, 17, 21, 25, 27, 29, 31
23		Review	
24		Exam 2	
25	4.1	Linear approximation	4.1/ 9, 13, 15, 19, 25, 41, 45, 49
26	4.2	Extreme values	4.2/ 1, 7, 11, 15, 39, 47, 53, 65
27	4.3	First derivative test	4.3/ 1, 13, 15, 16, 21, 29, 33, 35, 39, 51
28	4.4	Second derivative test	4.4/ 1, 2, 4, 5, 9, 13, 17, 29, 33, 43, 45
29	4.5	Graph sketching and asymptotes	4.5/ 1, 5,11, 15, 21, 29, 49, 53, 57, 63, 65, 67, 73, 75, 77
30	4.6	Optimization	4.6/ 1, 5, 9, 11, 13, 15, 19, 21, 22, 41, 43, 47
31	4.7	L'Hopital's Rule	4.7/ 11,13, 27, 31, 33, 35, 43, 45, 47, 61
	4.8	Newton's method (optional)	Matlab Project
32		Review	
33		Exam 3	
34	4.9	Antiderivatives	4.9/ 7,8,25, 27, 33, 43, 45, 47, 65, 67, 69, 75
35	5.1	Approximating area	5.1/ 2,3, 13, 15, 17, 21, 23, 27, 57
36	5.2	Definite integral	5.2/3,7, 9, 13, 17, 29, 37, 57, 83
37	5.3	Fundamental Theorem of Calculus I	5.3/ 9, 17, 23, 27, 37, 43, 45, 51, 55, 57
38	5.4	Fundamental Theorem of Calculus II	5.4/ 5, 15, 21, 23, 25, 31, 33, 37, 39, 43
39	5.5	Net change (optional)	5.5/ 1, 3, 5, 7, 11, 13, 17
40	5.6	Integration by substitution	5.6/ 33, 35, 37, 39, 43, 47, 51, 67, 69, 73, 75, 85, 91
41	5.7	Integration of transcendental functions	5.7/ 3, 7, 13, 17, 27, 33,43,47,57
	5.8	Exponential growth & decay (optional)	5.8/ 1, 5, 9, 11, 17, 23, 33, 41
42		Review	