

**BARUCH COLLEGE**  
**DEPARTMENT OF MATHEMATICS**  
**MATH 2610 – CALCULUS I SYLLABUS**  
**4 HOURS – 4 CREDITS**

**Textbook or ebook:** Calculus 11<sup>th</sup> Edition by Larson & Edwards, Cengage Learning Publisher  
 The Webassign homework correlates with the section number and topic in the textbook. The Webassign homework for lesson 14 will appear under the heading Business and Economic Applications.

The material needed for the Precalculus review is found in chapter P, the material for Lesson 14 is found in Appendix F on the following link

[http://www.cengage.com/resource\\_uploads/downloads/1285057090\\_377848.pdf](http://www.cengage.com/resource_uploads/downloads/1285057090_377848.pdf)

Precalculus Review: The material in the review section is a prerequisite for Math 2610, the material is found in in the textbook, chapter P ( before chapter 1)

P2                    P.16: 4,9,16,17, 20, 21,22, 32,47,59  
 P3                    P.27: 5, 9,11,13,14,18, 21, 39-42(all),59, 61 P4  
 P.38: 5-15(odd)16,17,19,21,22,33-36(all),47,48,49,75

<b>Lesson #</b>	<b>Topics</b>	<b>Reading</b>	<b>Homework Problems</b>
1, 2	Limits: Introduction and Properties	1.2	P.59: 6,7,21-29 (all), 33
	Continuity and One sided Limits	1.3	P.71: 5, 7, 15, 19, 21, 23, 27, 31, 33, 37, 41-51(odd), 52, 53, 63-71(odd)
		1.4	P.83: 5, 7,9, 11, 15, 19,21,23,31,34,41,43, 47, 52
3, 4, 5	Infinite limits	1.5	P.92: 4,5, 11, 13,17, 23, 25, 33, 35, 37, 38,41
	Limits at Infinity	3.5	P.206: 13, 19,21, 23, 25, 27, 29, 35
	Derivatives: Tangent, Line Velocity, Acceleration & other Rates of Change	2.1	P.107: 5,7,9, 15, 18, 21, 23, 25, 27,29,31,37, 77, 78, 79,80
6, 7	Differentiation Rule I	2.2	P.118: 7-55 (odd), 56, 59,61, 91-98 (all), 106, 111,115
	Differentiation Rule II	2.3	P.129: 11, 17, 20,21, 23, 25,27, 29,33, 41, 43, 45,47, 51, 52,53,59, 61, 64, 65, 66, 67, 74, 79, 91, 95, 97, 100,101
	The Chain Rule	2.4	P.140: 9,10,11, 15,6, 17, 20, 21, 23, 25, 27, 37,46,47,57, 61,66, 69, 73, 75, 83, 87
8	Implicit Differentiation	2.5	P.149: 5, 7, 9, 10, 11,12,13,15, 21, 25,28, 49, 57,61
9	Related Rates	2.6	P.157: 3, 4, 6,8, 11–17 (all) 21, 23, 25, 27, 40,41

## MATH 2610-CALCULUS I

10	Increasing and Decreasing Functions and The First Derivative Test	3.3 3.1	P.187: 6,7, 11,13, 19-27 (odd), 31, 33,35, 41, 43, 47 P.171: 17, 19, 21,25,27,28,43, 57,58
11	Concavity and The Second Derivative Test	3.4	P.196: 5,6, 7,9, 17, 19,21, 33, 35, 37,41, 55,56
12	Curve Sketching	3.6	P.215: <b>Do 31,32,33 first!</b> 9, 13,14,15,19,21, 23,28,29, 33,41,44,51,53,71
13	Optimization Problems (Geometric)	3.7	P.224: 3, 4, 6,8, 9, 11,13, 15, 17, 18, 19, 21, 25, 29
14	Business and Economic Applications	This topic is found in Appendix F on the link given above Appendix F PF5. 3, 5, 7, 9, 11, 12, 15, 18, 20, 21, 22	
15	Mean Value Theorem	3.2	P.178: 5, 39, 42, 43,47, 79, 83
16	Differentials	3.9	P.240: 5, 19,21,23,26,34,35, 36
17, 18	Antiderivatives and Indefinite Integration	4.1 4.5	P.255: 5-39 (odd),49, 57, 58,59, 62,65 P.305: 5-8 (all), 9-33 (odd), 39, 41,42,43,45,46,47 53,55,57
19	Area	4.2	P.267: 5-13 (odd), 17-35 (odd), 36,37,39, 47,49
20	Riemann Sums and the Definite Integral	4.3	P.277: 5, 7,9, 13, 14, 17, 19, 23, 25, 31, 39, 41, 43
21	Fundamental Theorem of Calculus	4.4 4.5	P.292: 5-25 (odd), 29, 33, 35, 37, 39, 40,41,42, 45,53, 55, 59,75,77, 83, 85 P.305: 61-67 (odd), 71,72,79
22, 23, 24	Natural Logarithmic Function, Differentiation and Integration	5.1 5.2	P.321: 43-61 (odd), 75,77,79 P.330: 5, 7, 9,11,18, 23, 24, 26, 27, 39,41, 51-57 (odd), 60, 62
	Exponential Function, Differentiation	5.4	P.348: 33-41 (odd), 46, 61, 64, 76, 91-107 (odd)
	Integration Base other than $e$	5.5	P.362: 39,61, 65,69, 70

**LEARNING GOALS OF COURSE:** Upon completion of this course, students will be able to:

- Compute limits of functions, and use limits to determine the derivative of a function.
- Use appropriate theorems to determine derivatives of algebraic, exponential, logarithmic, and trigonometric functions, and their inverses; apply trigonometric functions to the study of periodic phenomena.
- Interpret the derivative as a rate of change, and apply this interpretation to other disciplines.
- Apply the first and second derivatives to determine the slope and concavity of a graph and locate its extreme points.
- Solve optimization problems in geometry, business, and economics.
- Approximate functions locally using differentials or linearization.
- Antidifferentiate functions directly and by change of variable.
- Use the Intermediate Value Theorem and the Mean Value Theorem to analyze functions. Apply these theorems to study certain phenomena.
- Express the definite integral as the limit of a sum of products; evaluate definite integrals; and find solutions to problems that require definite integrals.