

Baruch College  
Department of Mathematics

**MATH 3010 SYLLABUS  
ELEMENTARY CALCULUS II**

Textbook or ebook: Calculus – 11<sup>th</sup> Edition by Larson and Edwards, Cengage Learning Publisher. The Webassign homework correlates with the section number and topic in the textbook.

LESSON #	TOPICS	READING	HOMEWORK PROBLEMS
1	Inverse Functions	5.3	p. 339: #5, 7, 11, 13, 17, 19, 22, 27, 29, 35, 39, 43, 64, 67, 70, 71
2	Inv. Trig. Functions and Differentiation	5.7	p. 379: #11, 13, 17, 25, 26, 31, 35, 37, 41, 45, 47, 48, 49, 52, 53, 54
3	Inv. Trig. Functions and Integration	5.8	p. 387: #3, 4, 6, 7, 9, 11, 13, 19, 23, 25, 29, 33, 36, 40, 41
4	Area of a region between two curves	7.1	p. 450: #5 – 11, 17, 23, 25, 29, 33, 35, 39, 45
5	Volume: The Disc Method	7.2	p. 461: #5 – 19 (odd), 23, 25, 27, 29, 33, 40
6	Volume: The Shell Method	7.3	p. 470: #3 – 19 (odd), 25, 27, 29, 31, 47
7	Arc Length and Surfaces of Revolution	7.4	p. 481: #5 – 15 (odd), 21, 25, 27, 29, 37, 39, 41, 57, 59
8	Integration Review	8.1	p. 520: #7, 9, 11, 12, 13, 19, 21, 23, 25, 26, 27, 33, 37, 39, 41, 43, 60, 61, 62, 65, 66, 69, 73, 74, 75, 79 p. 305: #53, 55, 56, 57 p. 330: #31, 59
9	Integration by Parts	8.2	P. 529: # 5, 7, 8, 9, 15, 20, 25, 31, 33, 43, 45, 67, 68, 85
10	Trigonometric Integrals	8.3	p. 538: # 3, 4, 7, 9, 11, 13, 22, 25, 29, 43, 45, 49, 51, 53, 55, 59, 63, 67, 77a
11	Trigonometric Substitution	8.4	p. 547: #5, 9, 13, 19, 20, 21, 23, 25, 27, 29, 32, 37
12	Partial Fractions	8.5	p. 557: #3, 5, 6, 7, 9, 11, 14, 15, 17, 18, 20, 23, 27
13	Numerical Integration	8.6	p. 564: #7, 11, 16, 23, 26, 29
14	Indeterminate Forms	5.6	p. 369: # 7, 9, 11, 13, 17, 19, 23, 25, 35, 43, 45, 49, 57, 69, 72

SYLLABUS: MATH 3010 (continued)

15	Improper Integrals	8.8	p. 579: # 5, 7, 9, 13, 15, 22, 24, 25, 29, 31, 33, 35, 37, 39, 49, 50, 54, 55
16	Sequences	9.1	p. 596: #5, 6, 7, 11, 13, 17, 20, 25, 26, 31, 32, 33, 35, 37, 45, 47, 48, 51, 52, 53, 56, 57, 59, 60, 61
17	Series and Convergence	9.2	p. 605: #7, 10, 11, 13, 15, 17, 19, 21, 23, 28, 30, 31, 32, 34, 35, 37, 43, 47, 48, 49, 53, 54, 55, 68
18	The Integral Test and p-Series	9.3	p. 613: #3, 8, 9, 13, 23, 29, 33, 35, 45, 69 – 80 (all)
19	Comparisons of Series	9.4	p. 620 #5, 6, 8, 9, 10, 11, 13, 15, 17, 19, 21, 23, 26, 27 – 34 (all)
20	Alternating Series	9.5	p. 629: # 9, 11, 17, 18, 21, 29, 33, 34, 37, 39, 40, 42, 44, 45, 49, 50, 51, 53, 71-80 (all)
21	The Ratio and The Root Tests	9.6	p. 637: #19, 20, 23, 27-37 (odd), 39, 43, 45, 53-70 (all)
22	Taylor Polynomials	9.7	p. 648: #5, 7, 17, 19, 23, 27, 31, 33, 39, 43, 45, 48, 57, 61
23	Power Series	9.8	p. 658: #9 – 27 (odd), 30, 33, 41, 49, 51
24	Representation of Functions by Power Series	9.9	p. 666: # 5, 7, 11, 13, 17, 23, 26
25	Taylor and Maclaurin Series	9.10	p. 677: #5, 7, 11, 13, 18, 22, 23, 27, 43, 45, 53, 57, 59, 65

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

- Compute integrals of functions of one variable using various techniques such as integration by parts, trigonometric substitution, and partial fraction decomposition; use integration to calculate area, arc length, and the volume and the surface area of a surface of revolution.
- Use numerical integration techniques such as Riemann sums, Simpson's Rule, and the Trapezoidal Rule to approximate the value of definite integrals.
- Identify an indeterminate form, and use L'hôpital's Rule to compute the limit.
- Determine the convergence or divergence of an improper integral. Compute the value of a convergent improper integral and/or use numerical integration to estimate the value.
- Determine the convergence or divergence of a sequence of real numbers, and find the limit of a convergent sequence.
- Apply appropriate tests to determine the convergence or divergence of an infinite series; find the interval and radius of convergence for a power series; determine power series representations (e.g. Taylor or Maclaurin series) for infinitely differentiable functions; find Taylor polynomials, and use Taylor's Remainder Theorem to determine the accuracy of a polynomial approximation.