

## DEPARTMENT OF MATHEMATICS SYLLABUS

Course # & Name:     MAT 16B: Short Calculus    

Recommended Text(s) & Price:     Calculus: An Applied Approach, 7<sup>th</sup> edition, by  
Larson/Edwards (\$117.00)    

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Lecture(s)	Sections	Comments/Topics
1.5	4.1 – 4.3	Exponential functions and their derivatives.  Note: You may want to skip the “proof” on page 273 that the exponential function is its own derivative, and justify this after you show in section 4.5 how to differentiate $y = \ln x$ , using the def. of the derivative).
1	4.4	Logarithmic functions
1.5	4.5	Derivatives of logarithmic functions  Note: Show how to differentiate functions of the form $y = [f(x)]^{[g(x)]}$
1	4.6	Exponential growth and decay  Note: notice that the proof on page 299 is incomplete.
1	5.1	Antiderivatives and indefinite integrals
1	5.2	The General Power Rule  Note: Use this section as a simple introduction to substitution, rather than emphasizing the general power rule itself.
0.5	8.5	Simple trig integrals  Note: Introduce the integration rules on page 588. Point out that the substitution $u = x$ in example one is never needed.
1	5.3	Exponential and logarithmic integrals
1.5	5.4	Definite integrals and the Fundamental Theorem of Calculus  Note: Mention that a more standard approach to definite integrals is presented in Appendix A.
1	5.5	Area of a region  Note: Present some examples of regions bounded by graphs of functions of $y$ , since these are not included in the examples.
1.5	5.7	Volumes of solids of revolution (disc/washer method).  Note: You may want to show how to find the volume when a region is revolved around a general vertical or horizontal line.
1	6.1	Integration by substitution

1.5	6.2	Integration by parts Note: you may want to introduce tabular integration (vertical integration by parts).
1	8.5	Trigonometric integrals Note: Introduce the integrals on page 592. Mention that there are two common ways to write the anti-derivative of the tangent function.
1	6.3	Partial fractions Note: Make it clear when division is necessary.
1.5	6.6	Improper integrals
1	9.1	Discrete probability Note: This section is meant to motivate the ideas in the next two sections.
1	9.2	Continuous random variables
1.5	9.3	Mean and median; variance and standard deviation; uniform, normal, and exponential probability density functions.
0.5	5.6	The midpoint rule Note: Point out that any integrals cannot be evaluated using the Fundamental Theorem of Calculus.
1	6.5	The trapezoidal rule and Simpson's rule. Note: do not require memorization of the error formulas on page 431.
0.5	6.4	Integration tables and completing the square. Note: Make it clear that the formulas on pages 417-419 do not have to be memorized.

### Additional Notes:

You might prefer to cover Section 5.6 immediately before Section 5.7 to motivate the formulas given in that section.