Text: "Calculus for Business, Economics, and the Social and Life Sciences (Brief)", 11th edition, by Hoffmann, Bradley, Sobecki, Price

Technology: If you require a graphing calculator, use it and recommend a TI-84, TI-83 Plus or TI-83. If you do not allow the use of a calculator, be prepared to a) not use one yourself (lest ye be accused of hypocrisy) and b) write exams so that the simplification of arithmetically complex problems does not overshadow the actual concept they are being tested on.

Calculators like the TI-89, TI-92 and some Casio calculators (e.g. Casio FX-115ES and FX-991ES) can do differentiation and integration. The Casio calculators are not "graphing calculators", so simply banning any calculators that graph is insufficient. You may need to be *very specific* about your calculator policy if you want to limit this kind of assistance on exams.

Course Goals: A student successfully completing the course should, in general, have a foundation in non-trigonometric integral calculus, elementary differential equations, and introductory multivariable calculus. The student can model the mathematical topics described among the learning outcomes in words, then solve or simplify the relevant equations and/or expressions, and finally write a summary statement of the solution. In short, all of the learning outcomes should be incorporated with skill at mathematical modeling.

Learning Outcomes: A successful student can...

- find antiderivatives of polynomial, exponential, and logarithmic expressions.
- use substitution to evaluate an indefinite integral.
- identify a Riemann sum as an approximation to a definite integral.
- relate a definite integral to the area between a curve and the horizontal axis.
- use definite integration to evaluate applications to business and economics, include producer and consumer surplus, continuous income streams, and average value.
- evaluate and interpret improper integrals in context.
- determine whether a function defines a probability density function.
- compute probabilities and the expected value associated with a continuous random variable.
- evaluate and find the domain of a function of two variables.
- compute partial derivatives of a function of two variables.
- find relative maximum and minimum values of a function of two variables.
- employ the method of Lagrange Multipliers in finding a constrained extremum.

Most importantly, the student can model the mathematical topics described among the learning outcomes in words, then solve or simplify the relevant equations and/or expressions, and finally write a summary statement of the solution.

Week	Sections to Cover		Notes
1	5.1, 5.2	5.1 (3 hrs)	The course starts off with virtually no (built-in) review, jumping into anti-differentiation and elementary differential equations immediately, so expect some pushback from students who are either underprepared or took 241 a while ago
		5.2 (2 hrs)	Relating substitution to its derivative analog (chain rule) can be helpful, but this still requires quite a bit of processing on their part, as well as explicit reminders about the differentiation involved in the substitution
2	5.2, 5.3	5.3 (2 hrs)	There is relatively little focus on the Riemann sum in the text, so keep that in mind for your lesson planning; although 5.4 is officially the section with "applications" of the definite integral, include some word problems in 5.3 as well
3	5.3, 5.4	5.4 (2 hrs)	Units can help clear up the distinction between integrating a function (e.g. $\int_a^b$ (units per time) d(time) = units, whereas the average value $V = \frac{1}{\text{units}} \cdot \int_a^b$ (units per time) d(time) = units per time, the same as the integrand)
4	5.5, 6.3	5.5 (1.5 hrs)	Consumer and producer surplus are a classic tie-in with economics courses, as are continuous income streams.
		6.3 (1 hr)	The most useful improper integrals are those of the form $\int_0^\infty f(t)\,dt$, i.e. the "long run" trend in some function.
5	6.4, 7.1	6.4 (1 hr)	
		7.1 (1.5 hrs)	There are lots of good functions of more than one variable in application, try to include a few.
6	7.2, 7.3	7.2 (2 hrs)	The most confusing part of partial derivatives can just be the ∂ notation; many students initially have a very hard time with the "hold this variable constant while the other changes" process.
		7.3 (2 hrs)	Absolute extrema on a closed, bounded region can be very time-consuming, so plan accordingly if you discuss the topic.
7	Exam		If giving one (or more) midterm exams, try to have one this week and include lots of review so that students have feedback before the week 7 drop deadline.
8	7.3		
9	7.5, 7.6	7.5 (1.5 hrs)	It can be difficult to find a balance between exercises that you *want* to use Lagrange Multipliers for (as opposed to direct substitution) and those that are manageable using Lagrange Multipliers.

		7.6 (0-1.5 hrs)	Double integrals are not critical material, but if you have the time they are good additional practice in integration.
10	Catch-up and review		
11	Final Exam	(http://registrar.uoregon.edu/calendars/final_exam?schedule=2014-2015)	

Additional Notes:

- The typical consumer of this course is a pre-business major satisfying their mathematics requirement. They will need 241, 242, and 243 completed for a grade in order to apply to the business school. More than any other math class, these students can be resentful of the need to take the course. There are also a sizable number of economics students who take this class instead of 252.
- Common areas of difficulty: Basic algebra (factoring, simplifying and operations on fractions), chain rule, implicit differentiation, logarithms, applications of any sort, modeling mathematically in particular. Be conscious of these facts when you approach each topic so that you can be ready for the confused looks, frustrated sighs, and eye rolling. Combat them with detailed examples and ample opportunities for practice. Basic algebra review is most effective when integrated into new concepts, so do it on an as-needed basis. Students complain about the abstract problems because they arent relatable. Students complain about word problems because theyre hard. Its a difficult situation to win, but a responsible math class for predominantly non-majors involves both abstract mathematics and applications.
- Many instructors choose to cover 6.1 (integration by parts). That's a reasonable choice, although the business school has identified it as not a priority. My halfway measure is to define $\int te^{kt}\,dt$ explicitly and then skip integration by parts, as this is typically the only integral of use in business applications anyway.
- Word problems should be a key feature of the course. Consider introducing new topics in a non-mathematical context (there is lots of evidence that this helps students learn the material to begin with, but also to retain it longer). Differential equations are an especially powerful stage on which to present business and economics phenomena in context.
- Mike has lecture guides, worksheets, quizzes, exams, and practice packets available upon request.

Other Important Dates (http://registrar.uoregon.edu/calendars/academic?ts=Fall-2014):

Monday of 2nd week Last day to drop without a W (but only 75% tuition refund)
Wednesday of 2nd week Last day to add a class
Sunday after 7th week Last day to drop — period!