Math 104, Spring 2009 Course Log

Date: 1/12
Sections: 1.3, 1.4
Assignment: Review problems listed on the syllabus.
Notes: Quiz 1, over lines and functions, will be given on Friday, 1/16.

Date: 1/14
Sections: 1.5
Log: Limits. Calculation of limits. Properties of limits. Examples: Functions $f(x)$ for which $\lim_{x \to c} f(x)$ does not exist. Functions $f(x)$ for which $\lim_{x \to c} f(x)$ exists but is not equal to $f(c)$. One-sided limits.
Assignment: Syllabus problems from section 1.5, first set.
Notes: Sai Wentum will conduct question-and-answer sessions for Math 104 students on Tuesdays and Thursdays, 3:30-4:30, in Avery 111. Note that the syllabus gives the wrong text for the course.

Date: 1/16
Sections: 1.5, 1.6
Assignment: Syllabus problems from 1.5, second set.
Notes: Quiz 2, over limits, will be given on Friday, 1/23.

Date: 1/21
 Sections: 1.6, 2.1
Assignment: Syllabus problems from 1.6.

Date: 1/23
Sections: 2.1
Log: The slope of a secant line. The derivative. The derivative as an instantaneous rate of change. The derivative as the slope of a tangent line. Computing derivatives. Finding the equation of the tangent line to a graph at a given point. Quiz 2.
Assignment: Syllabus problems from 2.1.
Notes: Quiz 3, over 2.2 and 2.3, will be given on 1/30.

Date: 1/26
Sections: 2.1, 2.2
Assignment: Syllabus problems from 2.2.
Date: 1/28
Sections: 2.3
Log: Average rates of change and marginals (derivatives). Discrete and continuous variables. Marginal cost, marginal revenue, marginal profit. The demand function $p = f(x)$.
Assignment: Syllabus problems from 2.3.
Notes: Quiz 3, over 2.2 and 2.3, will be given on 1/30.

Date: 1/30
Sections: 2.4
Assignment: Syllabus problems from 2.4.
Notes: Exam 1, covering material from sections 1.5, 1.6 and 2.1-2.5, will be given on Friday, 2/6.

Date: 2/2
Sections: 2.5
Log: The chain rule. The generalized power rule (GPR) version of the chain rule.
Assignment: Syllabus problems from 2.5, first set.

Date: 2/4
Sections: 2.5, 2.6
Assignment: Syllabus problems from 2.5, second set.

Date: 2/6
Log: Exam 1.

Date: 2/9
Sections: 2.6, 2.7
Assignment: Syllabus problems from 2.6. Section 2.7, problems 1, 5, 6, 8, 13, 17 and 19.
Notes: Quiz 4, over 2.6 and 2.7, will be given on Friday, 2/13. The solutions to exam 1 have been posted.

Date: 2/11
Sections: 2.7, 2.8

Date: 2/13
Sections: 3.1
Date: 2/16
Sections: 3.1
Log: Increasing and decreasing functions. Critical numbers.
Assignment: Syllabus problems from 3.1.
Notes: Quiz 5, over 3.1 and 3.2, will be given on Friday, 2/20.

Date: 2/18
Sections: 3.2
Log: Relative extrema and the first derivative test. Absolute extrema.
Assignment: Syllabus problems from 3.2.
Notes: Quiz 5, over 3.1 and 3.2, will be given on Friday, 2/20.

Date: 2/20
Sections: 3.3
Log: Concavity, inflection points, the second derivative test. Quiz 5.
Assignment: Syllabus problems from 3.3.
Notes: Quiz 6, over sections 3.3 and 3.4, will be given on Friday, 2/27. Exam 2, over sections 2.6-3.5, will be given on Monday, 3/2.

Date: 2/23
Sections: 3.3, 3.4
Log: The second derivative test. Optimization. Primary and secondary equations, feasible domain.
Assignment: Syllabus problems from 3.4.
Notes: Quiz 6 has been cancelled. No quiz this week.

Date: 2/25
Sections: 3.5
Log: Applications of optimization. Cost, average cost, revenue and profit. Using the demand function as a secondary equation in optimization.
Assignment: Syllabus problems from 3.5.
Notes: The outline for exam 2, along with a list of review problems, has been posted.

Date: 2/27
Log: Review.

Date: 3/2
Log: Exam 2.

Date: 3/4
Sections: 3.6
Log: Horizontal and vertical asymptotes of rational functions.
Assignment: Syllabus problems from 3.6.
Date: 3/6  
Sections: 3.7  
Log: Curve sketching.  
Assignment: Syllabus problems from 3.7.

Date: 3/9  
Sections: 3.8  
Log: Differentials, the tangent line approximation and marginal analysis.  
Assignment: Syllabus problems from 3.8.  
Notes: Quiz 6, over sections 3.8 and 4.1, will be given on Friday, 3/13.

Date: 3/11  
Sections: 4.1, 4.2  
Log: Exponential functions. The number $e$ and the natural exponential function.  
Assignment: Syllabus problems from 4.1.

Date: 3/13  
Sections: 4.2  
Assignment: Syllabus problems from 4.2.

Date: 3/23  
Sections: 4.2, 4.3  
Log: Effective interest rate. Present value. Differentiating exponential functions.  
Assignment: Syllabus problems from 4.2.  
Notes: Quiz 7, over sections 4.2 and 4.3, will be given on Friday, 3/27.

Date: 3/25  
Sections: 4.3, 4.4  
Log: Differentiation of exponential functions. Natural logarithms.  
Assignment: Syllabus problems from 4.3, except for 33.  
Notes: Exam 3, over sections 3.6-3.8 and 4.1-4.5, will be given on Friday, 4/3.

Date: 3/27  
Sections: 4.4  
Assignment: Syllabus problems from 4.4.

Date: 3/30  
Sections: 4.5  
Log: Differentiation of logarithmic functions. Minimization of average cost.  
Assignment: Syllabus problems from 4.5.

Date: 4/1  
Log: Review.
Date: 4/3
Log: Exam 3.

Date: 4/6
Sections: 4.6
Log: Exponential growth and decay.
Assignment: Syllabus problems from 4.6. Read examples 2 and 4.
Notes: Quiz 8, over section 5.1, will be given on Friday, 4/10.

Date: 4/8
Sections: 5.1
Assignment: Syllabus problems 5.1.

Date: 4/10
Sections: 5.1

Date: 4/13
Sections: 5.2, 5.3
Log: Integration by the method of substitution. Integration of exponential functions.
Assignment: Syllabus problems from 5.2.
Notes: Quiz 9, over sections 5.2 and 5.3, will be given on Friday, 4/17.

Date: 4/15
Sections: 5.3, 5.4
Log: Integration of logarithmic functions. The definite integral. The area under a curve. The Fundamental Theorem of Calculus.
Assignment: Syllabus problems from 5.3.

Date: 4/17
Sections: 5.4
Assignment: Syllabus problems from 5.4, both sets.
Notes: Exam 4, over sections 4.6-5.4, will be given on Friday, April 24.

Date: 4/20
Sections: 5.4, 5.5
Log: The average value of a function. The area between two curves. Consumer and producer surplus.
Assignment: Syllabus problems from 5.5, both sets.

Date: 4/22
Log: Review.
Date: 4/24
Log: Exam 4.

Date: 4/27
Sections: 5.6
Log: Approximation of the definite integral. The midpoint rule.
Assignment: Syllabus problems from 5.6.
Notes: The final exam will be given on Tuesday, May 5th, 6:00-8:00 PM, in Bessey 117. Bring your UNL identification card. Old exams are available at the UNL bookstore.

Date: 4/29
Log: Review.
Notes: The final exam will be given on Tuesday, May 5th, 6:00-8:00 PM, in Bessey 117. Bring your UNL identification card. Old exams are available at the UNL bookstore.

Date: 5/1
Log: Review.
Notes: The final exam will be given on Tuesday, May 5th, 6:00-8:00 PM, in Bessey 117. Bring your UNL identification card. Old exams are available at the UNL bookstore.