Course Update  
Math 104, Spring 2007

Date: 1/8

Sections: 1.1, 1.2

Log: Review of course policies. Slopes, intercepts and equations of straight lines. The point-slope and slope-intercept forms. Fitting a line to two given points. Parallel and perpendicular lines. Linear functions. Supply and demand functions. Equilibrium price and quantity.

Assignment: Read examples 5-7 in 1.2, and do the syllabus problems from 1.1 and 1.2.

Notes: The first quiz will be on 1/12. It will cover sections 2.1 and 2.2.

Date: 1/10

Sections: 2.1, 2.2

Log: Functions. Domain and range. Evaluation of functions. Quadratic functions. The quadratic formula. Graphing $f(x) = ax^2 + bx + c$. The sign of $a$, the $y$-intercept, the roots, discriminant and vertex. Application to revenue maximization.

Assignment: In 2.1, read examples 3 and 6, and do the problems on the syllabus except for 55. In 2.2, read example 7, and the problems on the syllabus except for 6 and 25.

Date: 1/12

Sections: 2.2, 2.3


Assignment: In 2.3, do problems 10, 23, 40, 44.

Notes: Quiz 2 will be on Friday, 1/19. It will be over section 2.3.

Date: 1/17

Sections: 3.1

Log: Limits. Limits from the left and right. Calculation of limits.

Assignment: Syllabus: 3.1, first set.
Date: 1/19  
Sections: 3.1, 3.2  
**Log:** Calculation of limits. Limits as \( x \to \pm \infty \). Continuity. Quiz 2.  
**Assignment:** Syllabus: 3.1, second set and 3.2, first set.

Date: 1/22  
Sections: 3.2, 3.3  
**Log:** Continuity. Average and instantaneous rates of change.  
**Assignment:** Syllabus: 3.2, second set and 3.3, first set.  
**Notes:** Quiz 3 will be on Friday, 1/26. It will be over section 3.3.

Date: 1/24  
Sections: 3.3, 3.4  
**Log:** Average and instantaneous rates of change of a function. The secant and tangent lines. The instantaneous rate of change as the slope of the tangent line. The derivative \( f'(a) \).  
**Assignment:** Syllabus: 3.3, second set.

Date: 1/26  
Sections: 3.4  
**Log:** The derivative \( f'(x) \). Computing instantaneous rates of change and slopes and equations of tangent lines. Quiz 3.  
**Assignment:** Syllabus problems from 3.4. Read example 8.  
**Notes:** Exam 1, covering sections 1.1, 1.2, 2.1-2.3, 3.1-3.4 and 4.1, will be on Friday 2/2. The outline is on the web. Extra help is available on Mondays and Wednesdays, 3:30-4:20, in Avery 110.

Date: 1/29  
Sections: 4.1  
**Log:** Rules for computing derivatives. Derivatives of constants, power functions, sums and differences of functions etc. Marginal revenue.  
**Assignment:** Syllabus problems from 4.1, first set. Read example 8.  
**Review:** In 2.r, do 7, 9, 13, 17, 23, 69. In 3.r, do 5-25 odd, 31, 35-39 odd, 46a, 48a-g.
Date: 1/31
Sections: 4.2
Log: The product and quotient rules.
Assignment: Syllabus problems from 4.1, second set, and 4.2, first set.
Notes: Quiz 4, covering material from 4.2 and 4.3, will be given on Friday, 2/9.

Date: 2/2
Log: Exam 1.

Date: 2/5
Sections: 4.2, 4.3
Assignment: Syllabus problems from 4.2, second set.
Notes: Quiz 4, covering material from 4.2 and 4.3, will be given on Friday, 2/9.

Date: 2/7
Sections: 4.3
Log: The chain rule.
Assignment: Syllabus problems from 4.3, first set.
Notes: Quiz 4, over the product, quotient and chain rules, will be given on Friday, 2/9.

Date: 2/9
Sections: 4.3
Assignment: Syllabus problems from 4.3, second set.
Notes: Quiz 5, over sections 2.4 and 2.5, will be given on Friday, 2/16.

Date: 2/12
Sections: 2.4
Log: Exponential functions. The exponential function $\exp(x) = e^x$. Simple, compound and continuously compounded interest.
Assignment: Syllabus problems from 2.4.
Notes: Quiz 5, over sections 2.4 and 2.5, will be given on Friday, 2/16.
Date: 2/14  
Sections: 2.5  
Log: Logarithms. The natural log function $\ln x = \log_e x$. Using logarithms in financial problems.  
Assignment: Syllabus problems from 2.5.

Date: 2/16  
Sections: 2.6  
Assignment: Syllabus problems from 2.6.  
Notes: Quiz 6, over sections 4.4 and 4.5, will be given on Friday, 2/23.

Date: 2/19  
Sections: 2.6, 4.4  
Log: Exponential functions in finance. Effective interest rate, present value. Differentiation of exponential functions.  
Assignment: Syllabus problems from 2.6 and 4.4.

Date: 2/21  
Sections: 4.5  
Log: Differentiation of logarithmic functions.  
Assignment: Syllabus problems from 4.5, first set.  
Notes: Quiz 6, over sections 4.4 and 4.5, will be given on Friday, 2/23.

Date: 2/23  
Sections: 4.5, 5.1  
Log: Differentiation of logarithmic functions. Open intervals on which a function is increasing or decreasing. Critical numbers. Quiz 6.  
Assignment: Syllabus problems from 4.5, second set, and from 5.1, first set.  
Notes: Exam 2, over sections 2.4-2.6 and 4.2-4.5, will be given on Wednesday, 2/28. The outline is on the web.
Date: 2/26
Sections: 5.1, Review
Log: Review of problems from 2.6, 4.5 and 5.1.
Assignment: Syllabus problems from 5.1, second set. Read examples 2b and 3.
Review: If you want additional practice for the exam, you can try 53-63 odd and 71-85 odd, from 2.r, and 1-33 odd, 41, 43, 49 and 53-57 odd, from 4.r.

Date: 2/28
Log: Exam 2.

Date: 3/2
Sections: 5.2
Log: Local extrema. The first derivative test.
Assignment: Syllabus problems from 5.2, first set.
Notes: Quiz 7, covering 5.2 and perhaps part of 5.3, will be given on Friday, 3/9.

Date: 3/5
Sections: 5.2, 5.3
Assignment: Syllabus problems from 5.2, second set.
Notes: Quiz 7, covering 5.2 and higher derivatives, will be given on Friday, 3/9.

Date: 3/7
Sections: 5.3
Assignment: Syllabus problems from 5.3. Read examples 5 and 7.
Date: 3/9
Sections: 5.4
Log: Curve sketching.
Assignment: Syllabus problems from 5.4. Quiz 7.

Date: 3/19
Sections: 5.4
Log: Curve Sketching.
Assignment: Syllabus problems from 5.4.
Notes: Quiz 8, covering 6.1, will be given on Friday, 3/23.

Date: 3/21
Sections: 6.1
Log: Absolute extrema.
Assignment: Syllabus problems from 6.1. Read example 2.
Review: Problems 9-23 odd, from 4.r.

Date: 3/23
Sections: 6.2
Log: Applications of extrema.
Assignment: Syllabus problems from 6.2. Read examples 1 and 2.
Review: Problems 25-33 odd, from 4.r.
Notes: Exam 3 will be given on Friday, 3/30. It will cover sections 5.1-5.4 and 6.1-6.2.

Date: 3/26
Sections: 6.2
Log: Applications of extrema.
Review: Problems 5-37 odd, from 5.r, and 11-23 odd, 34, 36 and 38 from 6.1.
Notes: I have changed my Thursday office hour to 10:00-10:50.
Date: 3/28  
Log: Review.  
**Review**: Problems 1, 3, 28-30 from 6.r.

Date: 3/30  
Log: Exam 3.

Date: 4/2  
Sections: 6.6  
Log: The differential of a function. The principle of linear approximation, parts I and II.  
**Assignment**: Syllabus problems from 6.6.  
**Notes**: Quiz 9, covering material from 6.6 and 6.3, will be given on Friday, 4/6.

Date: 4/4  
Sections: 6.3  
Log: Elasticity of demand. Computing and interpreting the elasticity of demand. Elasticity and revenue.  
**Assignment**: Syllabus problems from 6.3, *second set*.  
**Notes**: Quiz 9, covering material from 6.6 and 6.3 (elasticity), will be given on Friday, 4/6.

Date: 4/6  
Sections: 7.1  
Log: Antiderivatives and the indefinite integral. The power rule for indefinite integrals.  
**Assignment**: 7.1, problems 9-28.  
**Notes**: Quiz 10, over material from 7.1 and 7.2, will be given on Friday, 4/13. My new Thursday office hour is 10:00-10:50.
Date: 4/11
Sections: 7.2
Log: The method of substitution for indefinite integrals.
Assignment: Syllabus problems from 7.2. Read example 5.

Date: 4/13
Sections: 7.3
Log: Area, Riemann sums, the definite integral.
Assignment: Syllabus problems from 7.3, first set.
Notes: Exam 4, over sections 6.3, 6.6 and 7.1-7.3, will be given on Friday, 4/20.

Date: 4/16
Sections: 7.3
Log: Riemann sums, the definite integral. The definite integral of a nonpositive function.
Assignment: Syllabus problems from 7.3, second set.

Date: 4/18
Log: Review.
Notes: If you need to take an alternative final, see Lori (Avery 210) as soon as possible. Old finals are on sale at the Union Bookstore.

Date: 4/20
Log: Exam 4.
Date: 4/23
Sections: 7.4
Log: The fundamental theorem of calculus. Using the fundamental theorem to evaluate definite integrals.
Assignment: Syllabus problems from 7.4, both sets.
Notes: The final exam will be on Tuesday, 5/1, 6:00-8:00 PM, in TEAC 105. Bring your UNL ID.
Date: 4/25

Sections: 7.5

Log: The area enclosed by curves. The consumer’s and producers’ surpluses.

Assignment: Syllabus problems from 7.5.

Notes: The final exam will be on Tuesday, 5/1, 6:00-8:00 PM, in TEAC 105. Bring your UNL ID.

Date: 4/27

Sections: 8.2

Log: The average value of a function. Review.

Assignment: Syllabus problems from 8.2.

Notes: The final exam will be on Tuesday, 5/1, 6:00-8:00 PM, in TEAC 105. Bring your UNL ID.