

# Mathematics 108, Calculus II for Business, Spring 2000

## Tentative Weekly Syllabus for instructors

**Text:** “Calculus for Business and Social Science, ” by Himonas and Howard, to which the numbers below refer. It is recommended that you demonstrate the mathematica computer assignments and extra notebooks in class if possible. All dates are only tentative e.g. we will probably need to cover some new material on the days currently designated for return of exams.

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### Week 1: 1/18–1/21

- Review 5.1 (The Definite Integral) and Review integration by parts and substitution from 5.2. (These topics were covered thoroughly in 105, but partial fractions was not covered).
- Do partial fractions from 5.2
- Demonstrate/assign Computer Assignment 1 (antidifferentiation)

### 5.3 Area and the anti-derivative

### Week 2: 1/24–1/28

### 5.4 The Definite Integral of Nonnegative Functions

### 5.5 Definite Integral of General Continuous Functions and Area

- Demonstrate/assign Computer Assignment 2 (Riemann Sums)

### 5.6 The Fundamental Theorem of Calculus

### Week 3: 1/31–2/4

### 5.7 Integration by Substitution and by Parts in Definite Integrals

### 5.8 Area between two Curves

### 6.1 Average Value of Continuous Quantities

### Week 4: 2/7–2/11

### 6.2 From Marginal Function to Total Function

- Review

- Exam 1, February 7, Thursday, 8:00-9:15 AM

- Return Exam

**Week 5: 2/14–2/18**

**6.3** Consumer and Producer Surplus

- Demonstrate/assign Computer Assignment 3 (CS and PS)

**6.4** Future and Present Value of a Continuous Income Stream

**7.1** Improper Integrals

**Week 6: 2/21–2/25**

**7.2** Numerical Methods - demonstrate Extra Notebook 1

**8.1** Differential Equations and Applications: Introduction

**8.2** Separable Differential Equations

**Week 7: 2/28–3/3**

**8.3** The Logistic Growth Model

**8.4** The Solow Growth Model - demonstrate Extra Notebook 2

**9.1** Introduction, and Gaussian Elimination (begin)

**Week 8: 3/6–3/10**

- Review

- Exam 2, March 7, Tuesday, 8:00-9:15 AM

- Return exams

**9.1** Gaussian Elimination (cont.)

**Week 9: Spring Break 3/11–3/17**

**Week 10: 3/20–3/24**

**9.2** Three-Dimensional Space

### 9.3 Planes and Linear Functions

#### 10.1 Functions of Two Variables and Their Graphs (begin)

- Demonstrate/assign Computer Assignment 4

#### **Week 11: 3/27–3/31**

#### 10.1 Functions of Two Variables and Their Graphs (cont.)

#### 10.2 Partial Derivatives

#### 10.3 Maxima and Minima for Functions of Two Variables

#### 10.4 The Method of Least Squares or Lines of Regression

- Demonstrate Extra Notebook 3 (least squares)

#### **Week 12: 4/3–4/7**

#### 10.5 Constrained Optimization and Lagrange Multipliers

#### 11.1 Experiments and Sample Spaces

#### **Week 13: 4/10–4/14**

#### 11.2 Assignment of Probabilities

- Review
- Exam 3, April 13, Thursday, 8:00-9:15 AM
- Return Exams

#### **Week 14: 4/17–4/21**

#### 11.3 Discrete Random variables, Expected Values and Variances

#### 11.4 Continuous Random Variables

- Friday (Easter Break)

#### **Week 15: 4/24–4/28**

- Monday (Easter Break)

**11.5** Expected Value, Variance, and Standard Deviation

**11.6** Commonly Used Continuous Probability Densities (begin)

**Week 16: 5/1–5/3**

- Finish 11.6/ TCE's
- Review

**Final Exam:** Fri May 12, 1:45-3:45 PM