

Effective Fall 2008

DIVISION OF NATURAL SCIENCES AND MATHEMATICS

TIDEWATER COMMUNITY COLLEGE

VIRGINIA BEACH CAMPUS

COURSE PLAN

Course Number and Title: Math 270 – Applied Calculus

Lecture Hours: 3

Lab Hours: 0

Credit Hours: 3

Submitted by: T. Froncillo, J. Gallo, M. Kirby

Date 5/15/08

Approved by: M. Kirby and C. Newsom  
Assistants to the Dean

Date \_\_\_\_\_

Academic Dean G. Frank

Date \_\_\_\_\_

**I. COURSE DESCRIPTION**

This course provides an overview of calculus for students in the fields of business, economics, and certain sciences. It covers limits, differentiation, and integration of algebraic, exponential, and logarithmic functions, and introduces the calculus of several variables. It emphasizes the use of these concepts in various application problems.

**II. PREREQUISITES**

MTH 163 or the appropriate score on the placement test.

**III. INTRODUCTION**

This course is designed to provide students with the basics in differential and integral calculus as a tool to graph and solve application problems in their fields.

**IV. INSTRUCTIONAL MATERIALS**

Textbook: Applied Calculus for the Managerial, Life, and Social Sciences: A Brief Approach, 8th Ed., by S. T. Tan; (2009); ISBN 978-0-495-38754-1; Brooks/Cole **REQUIRED**

Scientific calculator or graphing calculator **REQUIRED**

Student Solutions Manual  
ISBN 0-495-38898-X **OPTIONAL**

Online Resource Center  
ISBN 0-495-56369-2 **OPTIONAL**

**V. MATERIAL TO BE COVERED**

Unit I	Sections 2.4-2.6, 3.1-3.5	4 weeks
Unit II	Sections 3.6, 3.7, 4.1-4.5, 5.4, 5.5	4 weeks
Unit III	Sections 6.1-6.7	4 weeks
Unit IV	Sections 7.1, 7.2, 7.4, 7.5, 8.1, 8.2	3 weeks

**VI. BASIC CONCEPTS****Chapter 2: Functions, Limits, and the Derivative**

2.1 Omit

2.2 Omit

2.3 Omit

2.4 Limits

*A lot of material: will need a couple of classes to cover*

2.5 One-Sided Limits and Continuity

*Cover lightly: emphasize one-sided limits and continuity*

2.6 Derivative

### **Chapter 3: Differentiation**

- 3.1 Basic Rules of Differentiation
- 3.2 The Product and Quotient Rules
- 3.3 The Chain Rule
- 3.4 Marginal Functions in Economics
- 3.5 Higher-Order Derivatives
- 3.6 Implicit Differentiation and Related Rates
- 3.7 Differentials

*Cover lightly: emphasize meaning of differential and examples 3 and 6*

### **Chapter 4: Applications of the Derivative**

- 4.1 Applications of the First Derivative
- 4.2 Applications of the Second Derivative
- 4.3 Curve Sketching
- 4.4 Optimization I
- 4.5 Optimization II

### **Chapter 5: Exponential and Logarithmic Functions**

- 5.1 Omit
- 5.2 Omit
- 5.3 Omit
- 5.4 Differentiation of Exponential Functions
- 5.5 Differentiation of Logarithmic Functions
- 5.6 Omit

### **Chapter 6: Integration**

- 6.1 Antiderivatives and the Rules of Integration
- 6.2 Integration by Substitution
- 6.3 Area and the Definite Integral
- 6.4 The Fundamental Theorem of Calculus
- 6.5 Evaluating Definite Integrals
- 6.6 Area between Two Curves
- 6.7 Applications of the Definite Integral to Business and Economics

*Cover first two sections: surplus and income stream*

### **Chapter 7: Additional Topics in Integration**

- 7.1 Integration by Parts
- 7.2 Integration Using Tables of Integrals *Cover lightly*
- 7.3 Omit
- 7.4 Improper Integrals
- 7.5 Applications of Calculus to Probability

### **Chapter 8: Calculus of Several Variables**

- 8.1 Functions of Several Variables
- 8.2 Partial Derivatives

## VII. SUGGESTED WEEKLY SCHEDULE – 16 WEEK SEMESTER

Week 1: 2.4, 2.5

Week 2: 2.6, 3.1, 3.2

Week 3: 3.3, 3.4

Week 4: 3.5, **Test 1**

Week 5: 3.6, 3.7, 4.1

Week 6: 4.2, 4.3

Week 7: 4.4, 4.5

Week 8: 5.4, 5.5

Week 9: **Test 2**, 6.1

Week 10: 6.2, 6.3, 6.4

Week 11: 6.5, 6.6

Week 12: 6.7, **Test 3**

Week 13: 7.1, 7.2, 7.4

Week 14: 7.5, 8.1

Week 15: 8.2, **Test 4**

Week 16: **Final Exam** to be given at the scheduled exam period.

## VIII. SUGGESTED WEEKLY SCHEDULE – 10 WEEK SEMESTER

Week 1: 2.4, 2.5, 2.6

Week 2: 3.1-3.4

Week 3: 3.5, **Test 1**, 3.6

Week 4: 3.7, 4.1-4.3

Week 5: 4.4, 4.5, 5.4

Week 6: 5.5, **Test 2**, 6.1

Week 7: 6.2-6.5

Week 8: 6.6, 6.7, **Test 3**

Week 9: 7.1, 7.2, 7.4, 7.5

Week 10: 8.1, 8.2, **Test 4, Final Exam**

## IX. ADDITIONAL MATERIAL AVAILABLE TO STUDENTS

TCC Student ID required to use following three resources

1. Student Solutions Manual Available in Math Lab
2. Instructor's Solutions Manual Available in Math Lab
3. DERIVE-mathematical software with graphing, differentiation, and integration capabilities Available in Math Lab

Next two resources available for purchase from publisher website - type address <http://ecatalog.cengage.com/150/> , then type ISBN in Search box at top of window

4. iLrn? Tutorial, Personal Tutor with SMARTHINKING Instant Access Code: includes Personal Tutor with SMARTHINKING (online tutoring) and iLrn (online diagnostic, homework, and tutorial system) – ISBN 0-495-05091-1  
Cost: approximately \$30
5. Video Skillbuilder CD-ROM: video instruction – ISBN 0-534-49229-0  
Cost: approximately \$20

**John Gallo at the Virginia Beach campus is the college contact person for MTH 270 and will be glad to discuss any questions you may have about the course.**

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