

**SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES**

Mathematics

Revision Date: 2015-07-21

Term:	2015 Summer
Course:	MATH-1400-ES31 (Applied Calculus)
Class Time:	TT 12:00–13:55 CDT
Class Room:	ESQ 100C
Instructor:	Toby Bartels, PhD
Email:	TBartels@Southeast.edu
Voice mail:	402-323-3452
Text:	402-805-3021
Office Hours:	MWF 10:00–11:00 CDT, M 12:30–13:30 CDT, F 12:00–13:00 CDT
Office:	ESQ 112
<i>Course policies are available at http://TobyBartels.name/MATH-1400/2015ss/.</i>	

I. CATALOG DESCRIPTION

Course Number: MATH-1400
 Course Name: Applied Calculus
 Prerequisite: A grade of C or higher in MATH-1150 or MATH-1300 or appropriate score on the math placement test.
 Catalog Description: Fundamentals of differential and integral calculus with emphasis on applications from business, economics and the life sciences. Not open to pre-engineering or pre-architectural majors.
 Credit Hours: 4.5
 Class Hours: 40¼
 Lab Hours: 0
 Total Contact Hours: 40¼

II. COURSE OBJECTIVES: *Course will:*

- A. Introduce the two major branches of Calculus: The Differential and the Integral.
- B. Demonstrate the use of calculus techniques to solve problems in the fields of business, economics and life science.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Differentiate polynomial, rational, exponential and logarithmic functions using the power rule, product rule, quotient rule and chain rule.
 - 2. Integrate a wide variety of functions using techniques such as *u*-substitution and integration by parts.
 - 3. Use techniques of calculus to solve optimization problems and problems in marginal analysis, identify local extrema, and find areas between curves.
- B. General Education Learning Outcomes
 - 1. GELO 4: Problem Solving
 The student will demonstrate the ability to define a problem, develop a plan to solve the problem, collect and analyze information, solve the problem, evaluate results, and define any need for further work.

2. GELO 6: Quantitative Reasoning
The student will demonstrate the ability to reason and solve quantitative problems using mathematical applications such as formulas, data sets, graphs, tables, etc.

IV. CONTENT/TOPICAL OUTLINE

- A. Fundamentals of differential and integral calculus with emphasis on applications from business, economics and the life sciences.
- B. Covered topics include
 1. Limits
 2. Continuity
 3. Product and quotient rules
 4. Chain rule
 5. Marginal analysis
 6. First and second derivative tests
 7. Graphing rational functions
 8. Locating extrema
 9. Optimization problems
 10. Continuous compound interest
 11. Elasticity of demand
 12. Exponential functions and their derivatives
 13. Logarithmic functions and their derivatives
 14. Implicit differentiation
 15. Related rates
 16. Indefinite integrals
 17. Integration by substitution
 18. Definite integrals
 19. Area between curves
 20. Integration by parts

V. INSTRUCTIONAL MATERIALS

- A. Required Text(s):
 1. Barnett, *Calculus for Business, Economics, Life Sciences*, 13th Edition, Pearson (Prentice-Hall): hardback or looseleaf.
- B. Optional Resources:
 1. A graphing calculator

VI. METHODS OF PRESENTATION/INSTRUCTION

- A. Lecture
- B. Class discussion
- C. Group activities

VII. METHODS OF EVALUATION

- A. Individual homework
- B. In-class assignments in small groups
- C. Individual extra-credit and make-up homework
- D. Comprehensive final exam
- E. SCC grading scale:

A+	95%+	C+	75%+	F	59%–
A	90%+	C	70%+		
B+	85%+	D+	65%+		
B	80%+	D	60%+		

VIII. SPECIFIC COURSE REQUIREMENTS

None

Southeast Community College Syllabus Statements

Academic Integrity

Academic integrity is one of the basic principles of a college community. SCC encourages and expects the highest standards of academic honesty from all students. Please note that cheating, plagiarism, or other forms of academic dishonesty are monitored and subject to disciplinary action.

Americans with Disabilities Act - Reasonable Accommodations

If you have a disabling condition that may substantially limit your ability to participate in this class, please contact the Dean of Student Services for additional information and assistance. The campus telephone numbers are: Beatrice (402) 228-8220, Lincoln (402) 437-2619, Milford (402) 761-8270.

Electronic Devices

Instructors may allow the use of cell phones and personal electronic devices in the classroom or lab for instructional purposes to help meet course objectives or participation in course activities. The use of cell phones or other electronic devices for **personal use** during class time may not be allowed. Each instructor can identify when the use of cell phones or personal electronic devices will be allowed. Failure to follow the instructor's directions may lead to formal disciplinary action.

Firearms/Weapons Strictly Prohibited

SCC policy prohibits the possession of firearms, weapons, or fireworks on College property or at any College-sponsored event. Effective January 1, 2007, Nebraska State Statute 69-2441 makes it unlawful to carry a concealed handgun into a meeting of the governing body of a political subdivision, a collegiate athletic event, a school, school grounds, a school-owned vehicle, or a school-sponsored activity or athletic event. These prohibitions apply to EVERYONE (employees, students, invitees, and visitors) and are enforceable EVERYWHERE (all college property and all college-related events.) Violations of the prohibitions will result in disciplinary and/or law enforcement action.

Hazardous Chemicals – Right to Know Statement

Some courses offered at Southeast Community College use hazardous chemicals as part of their curriculum. If the course you are attending requires you to use or exposes you to hazardous chemicals, your instructor will provide you with information and instruction about those chemicals. That information will include: requirements regarding personal protective equipment, methods of safe handling, use, clean up, first aid measures, and etc.

Statement of Equal Opportunity

The policy of Southeast Community College is to provide equal opportunity and nondiscrimination in all admission, attendance, and employment matters to all persons without regard to race, color, religion, sex, age, marital status, national origin, ancestry, veteran status, sexual orientation, disability, or other factors prohibited by law or College policy. Inquiries concerning the application of Southeast Community College's policies on equal opportunity and nondiscrimination should be directed to the Vice President of Affirmative Action, Equity and Diversity, 301 S 68th Street Pl, Lincoln NE 68510-2449; Phone 402-323-3412; Fax 402-323-3420; Email JSoto@Southeast.edu.