



North Iowa Area Community College

Course Outline

Please follow the included instructions when completing this form. Direct questions to Division Chair. After Course Outline is completed, please submit to Division Chair for review, who then submits to Administrative Assistant to the Vice President for Academic Affairs for review by the Curriculum and Academic Affairs Council (CAAC).

Prepared by:	Kathy Rogotzke
Date Approved by CAAC:	November 19, 2018
Course Title:	Calculus (Business)
Course Number:	MAT-165
Equivalent Prior Course Numbers:	40-240; MATH-240
Academic Division/Department:	Mathematics

Credits – Semester Hours (s.h.):

Contact Hours As defined by the Iowa Department of Education in consultation with Division Chair/Registrar (see attached instructions).

Lecture:	45	1 s.h. = 15 contact hours
Lab:	0	1 s.h. = 30 contact hours
Clinical Practice:	0	1 s.h. = 45 contact hours
Work Experience:	0	1 s.h. = 60, 75, 90, or 105 contact hours
Total:	45	

Prerequisite(s):

MAT-128 Precalculus with a grade of C or higher; or MAT-121 College Algebra; or ALEKS score of at least 50.

Corequisite(s):

None

Course Description:

This course uses calculus techniques with an emphasis on applications to business, the social sciences, the life sciences, and also to certain career programs. Types of functions included in the course are polynomial, rational and root, exponential and logarithmic. Topics include derivatives and their uses, and integrals and their applications. Students who have successfully completed two years of algebra, one year of geometry, and at least one semester of pre-calculus in high school may register for this class. A graphing calculator is required.

Required Textbook(s) and Other Required Materials:

Calculus for Business, Economics, Life Sciences, and Social Sciences, 12th edition, By Barnett, Ziegler and Byleen, 2011.
A graphing calculator is required for this course.

Purpose of Course Check one [X] in consultation with Division Chair.

☒	Arts and Sciences (General Education)
☐	Arts and Sciences
☐	Career and Technical (General Education)
☐	Career and Technical
☐	Developmental

If course is offered only in specific semesters, please explain below:

Summer only, we do not have high enough enrollments to offer this in the fall or spring. We are able to offer in the summer because we get additional reverse transfer students that take the course in the summer.

Maximum number of weeks for which the course is offered:

8

[Do not edit the following section. Managed by Academic Affairs]

Is this a Core Competency Anchor Course? YES ☐ NO ☐

If "Yes," list Core Competency Student Learning Outcome Numbers being taught and assessed in this course (2.2, 3.1, etc.)

(Example) 2.2 [Press Tab to create new rows for each SLO]

Student Learning Outcomes (SLOs):

The student will be able to:

1. Find domains and limits of polynomial and rational functions.
2. Find derivatives of functions and interpret the results in an applied setting.
3. Use derivatives to calculate marginal revenue, marginal cost, and marginal profit.
4. Calculate and interpret higher derivatives.
5. Use the Chain Rule and the Generalized Power Rule.
6. Sketch graphs of polynomial functions, find critical points, relative extreme points and inflection points, and interpret these results in a variety of settings.
7. Optimize continuous functions on closed intervals.
8. Calculate a derivative implicitly.
9. Apply exponential and logarithmic functions and their derivatives to problems involving ideas such as interest, depreciation, demand, advertising, decay, revenue, and elasticity of demand.
10. Integrate definite and indefinite polynomial, exponential, and logarithmic functions and interpret the results in a variety of applied settings.
11. Use integration to find average value over an interval and the area between curves.
12. Integrate by substitution and use results to calculate average and total sales.