



MATH 1100

Division: Natural Science and Mathematics

Department: Mathematics

Course: MATH 1100

Title: Applied Calculus

Catalog Description:

Applied Calculus introduces the techniques of elementary calculus for functions of one variable including differentiation and integration. Applications are emphasized in the areas of biological, management and social sciences. Also techniques of calculus of several variables including partial differentiation and multiple integrals are introduced. Graphing calculator required (TI-83 preferred).

General Education Requirements: N/A

Semesters Offered: Fall, Spring

Credit/Time Requirement: Credit: 4; Lecture: 4; Lab: 0

Clock/Hour Requirements: 0

Offered for Non-Credit: No

Prerequisites: MATH 1050

Corequisites: MATH 1050

Justification:

This course is part of the Prebusiness Core at all institutions in the state. It is a required course for all accounting and business administration majors. It also fills a calculus requirement for Natural Resources and some other biological science majors that require just one semester rather than the calculus series. This course is equivalent to Math 1100 taught at almost all other institutions in the state.

Student Learning Outcomes:

Upon successful completion of this course, students will:

- understand the general ideas of single variable calculus including differentiation and integration
- know how to apply differentiation and integration to selected situations in the fields of business and biological sciences
- understand that the general ideas of single variable calculus may be extended to situations where more than one variable is involved

Content:

This course will include:

- functions and change
- rate of change and derivatives
- applications of the derivative
- accumulated change: the definite integral

- antiderivatives and probability of applications
- functions of several variables.
- Every topic will be presented geometrically, numerically, algebraically, and verbally. Whenever possible, concepts will be taught by starting with a practical problem and deriving the general results from it. Graphing calculators will be used to help students learn to think mathematically.

General Education Outcomes:

1) Read effectively, constructively, and critically.

One of the crucial skills in an applications mathematics course is the ability to read carefully and clearly so that one can use appropriate mathematical methods for problem solutions. Much emphasis is given on being able to "read for meaning."

2) Write clearly, informatively, and persuasively.

After students have clearly read the problem and used mathematical methods to find number answers, then it is imperative that they understand what they have found. Much time is spent learning how to correctly interpret and explain verbally and in written form the results obtained.

6) Apply computational skills to a variety of contexts.

Calculus strategies are taught dealing with differentiation and integration. Algebra skills are a prerequisite and are continually emphasized.

Key Performance Indicators:

- Student learning will be evaluated through use of daily assignments and periodic examinations. Understanding will also be evaluated by observation of students during discussions, as they do board work, and as they participate in group activities.
- The effectiveness of the course will also be demonstrated by the ability of students to successfully complete assignments in subsequent major courses using calculus. Immediate feedback can be obtained from subsequent courses that are taught at Snow and where possible from upper division courses taken later.

Representative Text and/or Supplies:

- Hughes-Hallet, Gleason, Lock, Flath, et al., *Applied Calculus*, current edition, John Wiley and Sons, Inc., New York.

Optimum Class Size: 30

Maximum Class Size: 36

Signatures:

I hereby submit this course syllabus:

Kari Arnoldsen, PhD, Professor

I hereby find this course consistent with the goals and resources of the Mathematics Department:

Kari Arnoldsen, PhD, Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

Michelle Olsen, MLS, Campus Librarian (Richfield Campus)