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. Techniques of calculus of several variables including partial differentiation and multiple integrals are introduced. Graphing calculator required (TI-83/84 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 or MATH 1080

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:

6) Apply computational skills to a variety of contexts.

Calculus strategies, including how to determine which strategies to use for a given situation, are taught dealing with differentiation and integration. Algebra skills are a prerequisite and are continually emphasized. Students are evaluated through, and receive feedback on, homework, exams, and by in class observation.

Key Performance Indicators:

- Student learning will be evaluated through use of regular 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.
- Students will be assessed using homework (10-30%), exams (45-70%), and group work (5-15%). Percentages are approximate.

Representative Text and/or Supplies:

- Hughes-Hallet, Gleason, Lock, Flath, et al., *Applied Calculus,* current edition, John Wiley and Sons, Inc., New York.
- Graphing calculator required (TI-83/84 preferred).

Optimum Class Size: 25
Maximum Class Size: 36

Signatures:

I hereby submit this course syllabus:

Jonathan Bodrero, M.S., Assistant 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)