



MATH 1210

Division: Natural Science and Mathematics

Department: Mathematics

Course: MATH 1210

Title: Calculus I

Catalog Description:

This course is an introduction to calculus. Topics include functions, limits, differentiation, and integration of functions. Applications of the derivative and integral for algebraic and trigonometric functions are presented.

General Education Requirements: N/A

Semesters Offered: Fall, Spring

Credit/Time Requirement: Credit: 5; Lecture: 5; Lab: 0

Clock/Hour Requirements: 0

Offered for Non-Credit: No

Prerequisites: MATH 1050 and MATH 1060

Justification:

Calculus is a required topic in a wide variety of major programs. ie. Engineering, Premed (all areas), Mathematics, Physics, Chemistry, etc.

Student Learning Outcomes:

Upon successful completion of this course, students will:

- understand the role of calculus as a means of modeling a dynamic world
- be prepared to continue in the calculus series, or if only one semester is required for their major program, will be mathematically prepared to move forward in that program.

Content:

This course will include:

- brief review of algebra and trigonometry
- functions and limits
- the derivative with applications
- using the derivative to optimize functions
- antidifferentiation
- the fundamental theorem of calculus
- applications of integration.

General Education Outcomes:

6) Apply computational skills to a variety of contexts.

Students will know the topics considered in calculus and their applications in a variety of settings as relates to computer science, engineering and other areas of science.

Students will be able to solve problems related to these topics.

Students will sense the relationship between topics in calculus and "real world" situations.

Key Performance Indicators:

- Written exam for each of the chapters, and a comprehensive final exam.
- Homework will be collected for each section.
- 70%-80% of grade is based on test scores and 20%-30% on homework.

Percentages are approximate.

Representative Text and/or Supplies:

- Varberg, *Calculus*, current edition, Prentice Hall.

Optimum Class Size: 20

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)