

MESABI RANGE COMMUNITY & TECHNICAL COLLEGE – VIRGINIA/EVELETH

Course Outline

Course Title: Calculus III

Semester Course Prefix and Number: Math 2563

Old Quarter Course Prefix and Number: Math 220

Submitted By: G.E. Suoja

Approval Date: Jan. 9, 2002

Revision Date: Nov. 8, 2001

Number of Credits: 5 Number of Lecture Credits: 5

Semester(s) Offered: F Number of Lab Credits: Number of Lab Hours:

Recommended Class Size: 35 Number of Studio/Demonstration/Internship Credits:

Course Purpose Code:

- _____ 0 – Developmental Courses
- _____ 1 – General Studies (Eveleth Campus only)
- _____ 2 – Technical course related to career programs
- _____ 3 – College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
- _____ 4 - Other college course not considered a part of general education (MNTC) e.g. computer science, health, physical education
- X 5 – Course which is intended to fulfill general education, Minnesota Transfer Curriculum (MNTC) requirements.
- _____ 9 – Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

Catalog Description:

This course covers vectors and analytic geometry in space; vector-valued functions and motion in space; calculus of functions of several variables; multiple integration and applications; vector analysis including line integrals, surface integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem. In addition the student will study matrices and determinants and their use in solving systems of linear equations.

Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): Math 1562 Calculus II

Reading Prerequisite:

Composition Prerequisite:

Mathematics Prerequisite: Math 1562 Calculus II

Career Programs and Transfer Majors Accessing this Course:

This course may be required for engineering majors, math majors, and computer science majors.

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable: Notes: No more than two goals may be met by any one course. (Curriculum Committee review and the Chief Academic Officer's approval are required).

0. _____ None

6. _____ The Humanities and Fine Arts

- | | | | |
|--|--|------------------------------|----------------------------------|
| 1. <input type="checkbox"/> | Communications | 7. <input type="checkbox"/> | Human Diversity |
| 2. <input type="checkbox"/> | Critical Thinking | 8. <input type="checkbox"/> | Global Perspectives |
| 3. <input type="checkbox"/> | Natural Sciences | 9. <input type="checkbox"/> | Ethical and Civic Responsibility |
| 4. <input checked="" type="checkbox"/> | Mathematical/Logical Reasoning | 10. <input type="checkbox"/> | People and the Environment |
| 5. <input type="checkbox"/> | History and the Social and Behavioral Sciences | | |

Learning outcomes, including any relevant competencies listed in the Minnesota Transfer Curriculum:

Find and interpret dot and cross products of vectors in a plane and in space
Graph and write equations for surfaces in space
Differentiate and integrate functions of two or more independent variables
Solve problems to find volumes, surface area, mass, moments, and average values
Integrate in vector fields and apply to fluid motion
Use matrices to solve a system of linear equations and evaluate determinants

Student assessment methods:

Four or five one-hour exams
Graded daily assignments
A two-hour comprehensive final exam

Use of instructional technology (includes software, interactive video and other instructional technologies):

The students will be instructed and encouraged to use graphing calculators and required to use computer software "Derive", "Maple", or "Mathematica"

Outline of the major course content:

- I. Vectors in the plane and polar functions
- II. Vectors and Motion in Space
- III. Multivariable Functions and their Derivatives
- IV. Multiple Integrals
- V. Integration in Vector Fields

Additional special information (special fees, directives on hazardous materials, etc.)

Transfer Information: (Please list colleges/majors that accept this course in transfer.)

I have had this course accepted at every college we have sent students to except West Point and they don't accept credits from any school.

Approvals:

Body	Representative Signatures	Date
Curriculum Committee	Kim Giermann	1-8-2002
Faculty Association	Dr. L. Hazareesingh	1-8-2002
Meet and Confer	Dr. Jill Peterson	1-9-2002
Chief Academic Officer	Dr. Jill Peterson	1-9-2002

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