

COURSE OUTLINE

Revision: Jian Zou, Heidi Lyman, May 2008

DEPARTMENT: Academic Programs

CURRICULUM: Mathematics

COURSE TITLE: Calculus III

COURSE NUMBER: MATH& 153 (formerly MAT 126)

TYPE OF COURSE: Academic Transfer
Special Requirement Met: QSR

AREA(S) OF KNOWLEDGE: The Natural World: Science, Technology and the Environment/ The Language of Science

COURSE LENGTH: 1 quarter

CREDIT HOURS: 5

LECTURE HOURS: 55

LAB HOURS: 0

CLASS SIZE: 35

PREREQUISITES: Math 152 with a 2.0 or better or placement exam

COURSE DESCRIPTION:

Plane curves, parametric equations and polar coordinates with Calculus. Infinite sequences and series. Vectors and geometry of space, vector-valued functions, partial derivatives, tangent planes and linear approximations.

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Computation- Identify, interpret and utilize higher level mathematical and cognitive skills (for those students who choose to move beyond the minimum requirements as stated above.)

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STUDENT LEARNING OUTCOMES ADDRESSED: (cont.)

2. Communication – Read and listen actively to learn and communicate
3. Critical Thinking and Problem Solving – Think critically in evaluating information, solving problems, and making decisions.
4. Technology – Select and use appropriate technology tools for personal, academic and career tasks.

GENERAL COURSE OBJECTIVES:

1. Students understand parametric equations and polar coordinates
2. Students will be able to utilize the Taylor series
3. Students will extend the concept of the deviates and integrals to functions of several variables
4. Students will be able to calculate partial derivatives to understand the generalized chain rule
5. Students will understand vectors and the geometry of space.

TOPICAL OUTLINE:

APPROX HOURS: 55

The order of topics covered for the MATH 151, 152 & 153 sequence may vary depending on the choice of text or if the sequence is part of an integrated studies course. However, all the topics will be covered in the full three-quarter sequence.

MATH& 151

- I. (brief) Pre Calculus review
- II. Limits and their properties
- III. Differentiation
- IV. Applications of differentiation
- V. Integration

MATH& 152

- I. Transcendental functions, integration and differentiation
- II. Applications of integraton
- III. Techniques of integration, improper integrals
- IV. Arc length, applications to physics and engineering
- V. Differential equations: separable equations, exponential growth and decay

MATH& 153

- I. Plane curves, parametric equations and polar coordinates with Calculus
- II. Infinite sequences and series
- III. Vectors and geometry of space

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TOPICAL OUTLINE: (cont.)

- IV. Vector-valued functions
- V. Partial derivatives, tangent planes, and linear approximations.

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SLO #	Included in Course Objective Number	SSCC Student Learning Outcomes
SLO 1.1		Communication - Read and listen actively
SLO 1.2		Communication - Speak and write effectively
SLO 2.1	1, 2, 3, 4, 5	Computation - Use mathematical operations
SLO 2.2	1, 2, 3, 4, 5	Computation - Apply quantitative skills
SLO 2.3	1, 2, 3, 4, 5	Computation - Identify, interpret, and utilize higher level mathematical and cognitive skills
SLO 3.1		Human Relations - Use social interactive skills to work in groups effectively
SLO 3.2		Human Relations - Recognize the diversity of cultural influences and values
SLO 4.1	1, 2, 3, 4, 5	Critical Thinking and Problem Solving -
SLO 5.1	1, 2, 3, 4, 5	Technology - Select and use appropriate technological tools
SLO 6.1		Personal Responsibility - Be motivated and able to continue learning and adapt to change
SLO 6.2		Personal Responsibility - Value one's own skills, abilities, ideas and art
SLO 6.3		Personal Responsibility - Take pride in one's work
SLO 6.4		Personal Responsibility - Manage personal health and safety
SLO 6.5		Personal Responsibility - Be aware of civic and environmental issues
SLO 7.1		Information Literacy - Access and evaluate information
SLO 7.2		Information Literacy - Use information to achieve personal, academic, and career goals, as well as to participate in a democratic society

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