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.)
STUDENT LEARNING OUTCOMES ADDRESSED: (cont.)

2. Communication – Read and listen actively to learn and communicate
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
IV. Vector-valued functions
V. Partial derivatives, tangent planes, and linear approximations.

REVISED BY: J. Zou and H. Lyman
DATE: May 2008
MATH& 153 Calculus III  
May 2008

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

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