MATH 241 Calculus IV

1. Catalog Description

MATH 241 Calculus IV 4 units

Prerequisite: MATH 143.

Partial derivatives, multiple integrals, introduction to vector analysis. 4 lectures. Crosslisted as HNRS/MATH 241.

2. Required Background or Experience

Math 143.

3. Learning Objectives

The student should be able to:

a. Do partial differentiation and study applications such as tangent planes, maximum/minimum problems with and without constraints.
b. Do multiple integration and/or applications such as volumes, surface area and moments.
c. Work with vector fields, and vector integral theorems.

4. Text and References

- Weir, Maurice, et al., Thomas’ Calculus. Addison-Wesley.

5. Minimum Student Materials

Paper, pencils, and notebook.

6. Minimum University Facilities

Classroom with ample chalkboard space for class use.

7. Content and Method

The sections listed below are considered to be the core of the course. It is estimated that about 30 lectures will be needed to cover them. Quarters vary from 38 to 41 lectures. Possible uses for any remaining lectures include: covering more sections, covering some sections in more depth computer labs, and group projects/class presentations.

<table>
<thead>
<tr>
<th>Content</th>
<th>No. of Lectures</th>
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<tbody>
<tr>
<td>CHAPTER 12 – Vectors and the Geometry of Space</td>
<td></td>
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<tr>
<td>12.6 Cylinders and Quadric Surfaces</td>
<td>1</td>
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2017/18
8. Methods of Assessment

The primary methods of assessment are: essay examinations, quizzes and homework. Typically, there will be one or more hour-long examinations during the quarter, and a required comprehensive final examination. Students are required to show their work and are graded not only on the correctness of their answers, but also on their understanding of the concepts and techniques.