Fond du Lac Tribal and Community College
COURSE OUTLINE FORM

Updated 9/23/14

Please return this form to the college vice president of academic affairs and the chairperson of the Academic Affairs and Standards Council (AASC)

1. Prepared by:_____

2. Date submitted:_____

3. Date approved: ___Fall 1997___   Date revised ___10/14/14___

4. Department/discipline: ___Mathematics_____

5. Department(s) endorsement(s):_____
(Signatures of the person(s) providing the endorsement are required.)

6. Course Title: ___Calculus II_____
Abbreviated course title (25 characters or less):_____

7. Course Designator:___MATH_____   8. Course Level: 1XXX   9. 2002

10. Number of Credits: Lecture ___5___   Lab _____

11. Control Number (on site)___35___   Control Number (online)_____

12. Catalog/Course description:

   Continuation of topics from calculus I: integration techniques, infinite series, conic sections, parametrized curves, multi-variable functions & partial derivatives. (Prerequisite: MATH 2001 OR instructor permission).

13. Course prerequisite(s) or co-requisite(s): Accuplacer scores/ Other courses

   Prerequisite(s): MATH 2001 Calculus I OR instructor permission

   Co-requisite:

14. **Course Materials** (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

   1) textbook: Calculus by Thomas or Stewart are suitable choices.
   2) graphing calculator

15. **Course Content** (Provide an outline of major topics covered in course)

   1. Integration techniques.
   2. Infinite series and sequences.
   3. Conic sections.
   4. Parametrized curves.
   5. Vectors
   6. Multi-variable functions and partial derivatives.

16. **Learning Goals, Outcomes, and Assessment**
   At FDLTCC we have 4 Competencies Across the Curriculum (CAC) areas. They are as follows:

A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information)
B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)
C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)
D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one's own traditions and culture, knowledge of others' traditions and cultures, culture of work, culture of academic disciplines and/or respect for global diversity.)

Course learning outcomes will fulfill the identified competencies.

Course Learning Outcomes:

Upon completion of this course, students will be able to:

1. Utilize standard integration techniques to integrate important classes of integrals: integration by parts, partial fractions, trigonometric substitutions, integral tables, and computer algebra systems such as Mathematica, Maple, or SageMath. (C)
2. Obtain the Taylor series polynomial for a function from a center point, and analyze its accuracy within a radius of the center. (C)
3. Solve initial value differential equations using power series. (C)
4. Determine the Cartesian and polar equations of an elliptical orbit from a geometrical description. (C)
5. Differential and integrate functions in polar and parametric forms. (C)
6. Apply vector operations (arithmetic, dot product, cross product) to solve geometric problems with lines and planes in space and in the plane. (C)
7. Convert between Cartesian, cylindrical, and spherical coordinates. (C)
8. Explain Kepler's laws as consequences of Newton's law of gravity and laws of motion. (C)
9. Solve multi-variable applications by calculating partial derivatives an using the chain rule. (C)
10. Use gradient to find the directional derivative of a function at a point. (C)
11. Find extrema of multi-variable functions. (C)

17. **Minnesota Transfer Curriculum (MnTC):** If this course fulfills an MnTC goal area, state the goal area and list the goals and outcomes below:

See www.mntransfer.org

Goal Area(s):_____
Goal and Outcomes: