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: 9/1/1997 Date revised: 10/14/2014

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: 2002

9. Number of Credits: Lecture: 5 Lab: 0

10. Control Number (on site): 35
    Control Number (online): 0

11. Catalog/Course description:

   Continuation of topics from calculus I: integration techniques, infinite series, conic sections, parametrized curves, multi-variable functions & partial derivatives.

12. Course prerequisite(s) or co-requisite(s):
   Prerequisite(s): MATH 2001 Calculus I OR instructor permission
   Co-requisite: None

13. 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
14. **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

15. **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)

16. 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](http://www.mntransfer.org)

Goal Area(s): N/A

Goal and Outcomes:
  Goal: N/A
  Outcome:
Complete the following only if you are proposing a new course:

1. Planned pattern of offering:
2. Rationale for course: If this course is an ADDITION or replacement to current offerings, add a detailed explanation of the necessity for the change.
3. Does this course overlap with any course(s) offered at FDLTCC? If so, justify such duplication or indicate other adjustments to be made. Obtain signatures from affected departments.
4. What is the apparent or expressed student need for this course?
5. If this course includes a Native American or specifically Anishinaabe component list campus resource person/s—i.e., campus cultural/spiritual resource person/s and, if necessary, elder/s—consulted and include specific comments and written responses as appropriate.
6. Are there any additional licensing/certification requirements involved?
   a. Provide a copy of the required licensing/certification standards to the AASC chair and to the vice president of academic affairs.
   b. Attach the required documentation to show course meets required licensing/certification standards.
7. What types of tutoring will be made available through the CAA to students taking this course?
8. How will the course be evaluated?
9. Special resources—e.g. faculty, space, equipment, library, etc
10. Special course fees:
11. Relationship of course to the college mission statement and goals.
12. Relationship of course to the department’s mission statement and goals.
13. Relationship of course to colleges/university offerings (include tribal colleges).

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