Fond du Lac Tribal and Community College
COURSE OUTLINE FORM

Updated 01/21/16

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: 03/09/07   Date revised 03/24/16, 5/5/16, 01/31/2020

4. Department/discipline: Mathematics

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

6. Course Title: Introduction to Contemporary Mathematics

Abbreviated course title (25 characters or less):

7. Course Designator: MATH   8. Course Level: 1025

9. Number of Credits: Lecture 3   Lab

10. Control Number (on site) 30   Control Number (online)

11. Catalog/Course description:

This course is designed for students not pursuing a math or science major. The emphasis is on developing quantitative skills that can analyze a variety of practical applications. The main topics include counting methods, probability and statistics, exponential growth and network analysis. Optional topics could include logic, linear programming, set, voting theory, optimization, polygons, and polyhedral and game theory. (Meets MnTC goal area 4). (Prerequisite: C grade in MATH 0020 or appropriate Accuplacer score).

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

Prerequisite(s): C grade in MATH 0020 Beginning Algebra or appropriate Accuplacer score

Co-requisite:

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

Miller C., Heeren V., and Hornsby J., Heeren C., (2014). *Mathematical ideas, 11th edition*.

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

The Art of Problem Solving
Basic Concepts of Set Theory: Venn diagrams
Introduction to logic
Basic concepts of algebra
Graph, functions and systems of equations and inequalities
Geometry and
Counting methods
Personal financial management

Probability and
Statistics

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, the student will be able to:

1. Identify and apply various problems solving strategies, including both inductive and deductive reasoning. (C)
2. Apply set operations on sets and Venn diagrams, area, perimeter, surface area and volume formulas to 2-D and 3-D figures. (C)
3. Solve applications, such as survey analysis, using set theory, linear equations, including percent. (C)
4. Practice logic and the operations used on statements, including building truth tables, and optimization with parabolas and linear programming. (C)
5. Analyze arguments using Euler diagrams and truth tables. (C)
6. Graph points, lines and circles on the Cartesian coordinate system. (C)
7. Practice trigonometric function to solve right triangle problems. (C)
8. Find measures of central tendency, variation and position on a data set. (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

Goal Area(s): _4_____
Goal Area 4: Mathematical/Logic & Reasoning

- Illustrate historical and contemporary applications of mathematics/logical systems.
- Clearly express mathematical/logical ideas in writing.
- Explain what constitutes a valid mathematical/logical argument (proof).
- Apply higher-order problem-solving and/or modeling strategies

Does this course require additional material for specific program requirements?
If yes, please provide.

Attachment A:

Minnesota Board of Teaching Learning Standards: 8710.3200 Subject Matter standards:

- **H1: Concepts of mathematical patterns, relations, and functions, including the importance of number and geometric patterns in mathematics and the importance of the educational link between primary school activities with patterns and the later conceptual development of important ideas related to functions and be able to:**
    - **H1a:** identify and justify observed patterns;
    - **H1b:** generate patterns to demonstrate a variety of relationships;
    - **H1c:** relate patterns in one strand of mathematics to patterns across the discipline.
  - **H2: Relate patterns in one strand of mathematics to patterns across the discipline**
    - **H2a:** concepts and techniques of discrete mathematics and how to use them to solve problems from areas including graph theory, combinatorics, and recursion and know how to
    - **H2b:** help students investigate situations that involve counting finite sets, calculating probabilities, tracing paths in network graphs, and analyzing iterative procedures
  - **H4: Understand the relationships of integers and their properties that can be explored and generalized to other mathematical domains;**
    - **H4a:** concepts of space and shape:
    - **H4b:** understand the properties and relationships of geometric figures
  - **H7: The role of randomness and sampling in experimental studies;**
    - **H7a:** mathematical processes
    - **H7b:** know how to reason mathematically, solve problems, and communicate mathematics effectively at different levels of formality
    - **H7c:** understand the connections among mathematical concepts and procedures, as well as their application to the real world
    - **H7d:** understand the relationship between mathematics and other fields