DAKOTA COLLEGE AT BOTTINEAU

COURSE SYLLABUS

Course Prefix/Number/Title: MATH 104 Finite Mathematics

Number of Credits: 3

Course Description: This course addresses areas that have application in the economic, behavioral, social, and life sciences. Topics include linear modeling, systems of linear equations and inequalities; matrix operations; linear programming; mathematics of finance; combinatorics, probability, and expected value; and descriptive statistics. Appropriate use of mathematical technology will be integrated throughout the course.

Prerequisite: ASC 93 or MATH 98 or qualifying placement score.

Course Objectives: The student will be able to complete the following as evidenced by classroom activities and objective tests:

1. Creating linear models to make predictions.
2. Solving systems of linear equations algebraically, graphically, and through matrix operations.
3. Solving systems of linear inequalities as they relate to mathematical models.
4. Using linear programming to solve optimization problems.
5. Solving financial application problems related to personal and consumer economics.
6. Computing basic combinatorics to count items in a set.
7. Computing the probability of an event.
8. Computing expected value for long-term analysis.
9. Computing descriptive statistics to summarize the characteristics of a data set.
10. Creating statistical graphs to visualize data in an organized manner.

Instructor: Harmony Richman, M.Ed.

Office: McFarland 427C on the Valley City State University campus

Office Hours: See instructor's calendar to set up an appointment.

Phone: 701-200-3897 (cell)

Email: Harmony.Richman@vcsu.edu

Lecture/Lab Schedule: Online

Textbook(s): Business Precalc (2016) Edition 0.1; Lippman and Rasmussen for Units 1 through 6. Full free PDF version. Unit 7 will use portions of Contemporary Mathematics via Open Stax, Unit 8 will use portions of Introductory Statistics via Open Stax and other readings as assigned.

Technology tools required: Internet access which is regular and dependable. Internet browser (Firefox or Google Chrome preference), Office 365, Adobe Acrobat Reading, Adobe Flash Player, ability to record audio and/or video, additional free web-based software such as Desmos graphing calculator and MyOpenMath.

Course Requirements: Students who are in the college classroom either face-to-face or online have made the conscious choice to be a part of the course. In this course, you are viewed as a participant in the learning; hence there are expectations that come with the choice you made to take this course.

1. This course does not have standard class meeting time; students are expected to dedicate at least 450 minutes of total time on tasks per week that may include activities such as: reading, reviewing class lessons with notes, assignments, additional readings with ungraded practice, and discussion boards. *Course tasks and time are estimated based on time and effort needed by the typical student to successfully complete each of the learning activities in the course.* Occasionally a reading or homework assignment may take longer.
2. Actively participate regularly in class discussions through consistent, punctual, prepared and interested participation.
3. Utilize MyOpenMath to support academic assessment work.
4. Submit graded assignments by dates posted on the course schedule below It is unfair to selectively grant extensions to some students and not others. Therefore, late assignments are not accepted. Addendums to this rule may be taken into consideration with prior approval requesting a modified due date from the instructor before the due date of an assignment.
    a. A zero will be given for any assignment not turned in by the deadline.
    b. During the course of the semester, if you are experiencing any problems (family difficulties, sick relatives, etc.) that are affecting your academic performance, you must inform me of such problems ASAP if you want me to take them into consideration. The sooner I know about a problem, the more understanding I will be. If you come to me during the last week of the semester, before grades are about to be posted to discuss difficulties which have affected you throughout the term, you will find that I am not nearly as understanding, and I can do very little to help you with your grade.
    c. If you are personally experiencing health or family difficulties that are short or long term (medication changes, health concerns, etc) which are affecting your ability to turn assignments in on time, it is highly recommended to reach out to Student Academic Services who can help with outreach services (temporary or otherwise).
    d. If you are currently serving or have served in our military, your instructor appreciates the important contributions you have made. If you are called to serve or attend training you must let your instructor know immediately such that reasonable accommodations for instruction and assignments can be agreed upon ahead of your leave.
5. Read assigned textbook chapters.
6. Do ungraded, independent practice exercises.
7. Submit some assigned problems with the Show Your Work Discussions as pdf or jpeg files.
    a. On each Show Your Work Discussion, you must show ALL YOUR WORK for full credit. If you do not show work, but simply state your answer, you will receive NO credit for the assignment.
8. Complete graded quizzes/tests throughout and after each chapter within MyOpenMath.

Tentative Course Outline: See Table 1 Course Schedule below.

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s):
Competency/Goal 3: Demonstrates the ability to solve a variety of mathematical problems
Learning Outcome 1: Utilizes mathematical skills to solve problems
Learning Outcome 2: Employs critical thinking skills to solve problems
Relationship to Campus Focus:
Students will explore real-world applications of mathematics in nature, economics, statistics, behavioral, social and life sciences.

Classroom Policies:

1. Our class "week" runs Saturday starting at 12:00AM through Friday at 11:59 PM.
2. Due dates for all assignments will be given throughout the duration of this course. Sufficient notice of due dates for assignments will be given, there is no reason why the assignments cannot be completed on time.
3. Your final grade is determined by dividing the total points earned by the total points possible. Points will be awarded for thoughtful posts of show your work discussion boards, selected practice using MyOpenMath and unit quizzes using MyOpenMath.
4. Grades will be calculated using the following criteria:

A 90% - 100%
B 80% - 89%
C 70% - 79%
D 60% - 69%
F $\leq$ 59%

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

- According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.
- All work submitted in this course must be your own. When including information obtained from any external source, including Artificial Intelligence sources, you are expected to quote and cite that source accurately. Failure to cite sources accordingly will constitute academic dishonesty. For any use of artificial intelligence tools, the citation must include the "conversation" between student and tool in its entirety

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.

AI Student Policy:
All work submitted in this course must be your own. When including information obtained from any external source, including Artificial Intelligence sources, you are expected to quote and cite that source accurately. Failure to cite sources accordingly will constitute academic dishonesty as outlined within the Dakota College Code of Student Life.

Responsibilities of AI
Students

- Responsible for following the syllabus and assignment instructions regarding use of generative AI for all academic work.
- Obtain permission of the instructor prior to the use of generative AI that is outside of the syllabus or assignment instructions. Provide appropriate rationale for how the use of generative AI will enhance the learning experience for the assignment.
- In instances where generative AI is permissible, appropriately cite the generative AI program used and indicate where in the assignment it was used, in a brief submission statement.

Faculty

- Determine if the use of generative AI could enhance student learning in any assignment or project.
- Clearly indicate in all course syllabi if generative AI is allowable for any academic work.
- If allowable, give specific parameters for how and when generative AI may be used.
- If a violation of generative AI for the individual course/syllabus is suspected, discuss the concern with the student. If violation is still suspected, inform the appropriate semester coordinator/program director.

Table 1 Course Schedule
The Topics and Readings with Assignments are subject to change based on learners, and other components that are unable to be identified before the semester begins. Refer to Blackboard for official due dates.

Week	Content	Due Date

Week 1 January 13th - January 17th	Welcome MyOpenMath Registration Unit 1 Functions and Lines ● 1.1 Functions and Function Notation ● 1.2 Domain and Range ● Show Your Work Discussion	Due date for all items bulleted this week is January 17th at 11:59 PM
Week 2 January 18th - January 24th	● 1.3 Rates of Change and Behavior of Graphs ● 1.4 Linear Functions ● 1.5 Graphs of Linear Functions ● Show Your Work Discussion	Due date for all items bulleted this week is January 24th at 11:59 PM
Week 3 January 25th - January 31st	Unit 1 Functions and Lines ● 1.6 Modeling with Linear Functions ● 1.7 Fitting Linear Models to Data ● Show Your Work Discussion ● Unit 1 Quiz	Due date for all items bulleted this week is January 31st at 11:59 PM
Week 4 February 1st - February 7th	Unit 2: Systems of Equations and Matrices ● 2.1 Systems of Equations ● 2.2 Solving Systems of Matrices ● Show Your Work Discussion	Due date for all items bulleted this week is February 7th at 11:59 PM
Week 5 February 8th - February 14th	Unit 2: Systems of Equations and Matrices ● 2.3 Matrix Operations ● 2.4 Solving Systems with Inverses ● Show Your Work Discussion ● Unit 2 Quiz	Due date for all items bulleted this week is February 14th at 11:59 PM
Week 6 February 15th - February 21st	Unit 3: Linear Programming ● 3.1 Inequalities in One Variable ● 3.2 Linear Inequalities ● 3.3 Graphical Solutions ● Show Your Work Discussion	Due date for all items bulleted this week is February 21st at 11:59 PM
Week 7 February 22nd - February 28th	Unit 3: Linear Programming ● 3.5 Applications of Linear Programming ● Show Your Work Discussion ● Unit 3 Quiz	Due date for all items bulleted this week is February 28th at 11:59 PM
Week 8 March 1st - March 7th	Unit 4: Finances ● 6.1 Simple and Compound Interest ● 6.2 Annuities ● 6.3 Payout Annuities ● Show Your Work Discussion	Due date for all items bulleted this week is March 7th at 11:59 PM
March 8th - March 14th	Spring Break - No Class	

Week 9 March 15th - March 21st	Unit 4: Finances ● 6.4 Loans ● 6.5 Multistage Finance Problems ● Show Your Work Discussion ● Unit 6 Quiz	Due date for all items bulleted this week is March 21st at 11:59 PM
Week 10 March 22nd - March 28th	Unit 5: Sets ● 7.1 Sets ● 7.2 Venn Diagrams and Cardinality ● Show Your Work Discussion ● Unit 7 Quiz	Due date for all items bulleted this week is March 28th at 11:59 PM
Week 11 March 29th - April 4th	Unit 6: Probability ● 8.1 Concepts of Probability ● 8.2 Conditional Probability and Bayes Theorem ● Show Your Work Discussion	Due date for all items bulleted this week is April 4th at 11:59 PM
Week 12 April 5th - April 11th	Unit 6: Probability ● 8.4 Expected Value ● Show Your Work Discussion ● Unit 6 Quiz	Due date for all items bulleted this week is April 11th at 11:59 PM
Week 13 April 12th - April 18th	Unit 7: Combinatorics ● 9.1 Basic Counting and Permutations ● 9.2 Combinations ● Show Your Work Discussion ● Unit 7 Quiz	Due date for all items bulleted this week is April 18th at 11:59 PM
Week 14 April 19th - April 25th	Unit 8: Statistics ● 10.1 Basic Statistical Terminology ● 10.2 Data Types ● 10.3 Frequency Distributions and Graphs ● Show Your Work Discussion	Due date for all items bulleted this week is April 25th at 11:59 PM
Week 15 April 26th - May 2nd	Unit 8: Statistics ● 10.4 Measures of Center ● 10.5 Measures of Variance ● 10.6 Empirical Rule ● Show Your Work Discussion	Due date for all items bulleted this week is May 2nd at 11:59 PM
Week 16 May 3rd - May 9th	Unit 8: Statistics ● 10.7 Percentiles, Quartiles, and Boxplots ● 10.8 Scatterplots, Correlation and Regression ● Show Your Work Discussion ● Unit 8 Quiz	Due date for all items bulleted this week is May 9th at 11:59 PM