

Saint Leo University
MAT 141
Finite Mathematics

Course Description:

Topics in mathematics that are especially applicable to business such as linear models, linear programming, mathematics of finance, and probability.

Prerequisite:

MAT 003 or mathematics placement

Textbook(s):

The custom book package information which appears on our Saint Leo bookstore order site is as follows:

1. White, J. & White, S., Finite Mathematics Combining Values & Problem Solving (2015) Amazon CreateSpace. ISBN# 9781724616364
2. Blitzer, Thinking Mathematically (0232/2048 Saint Leo -CUSTOM) (7th edition). New York: Pearson Custom. ISBN#9781323850299

(Note: This custom package contains both the eBook and MyMathLab access. As this is a Direct Digital Access package integrated within the course, no access code is required)

The custom package above was created from the following national text and resources:

Blitzer, Robert. Thinking Mathematically. (7th Ed.) Pearson Education, Incorporated. ISBN# 9780134683713

MyMathLab for Blitzer, Thinking Mathematically. (7th Ed.)

The MyMathLab Plus access code includes eBook access, so purchasing a physical textbook is optional.

Learning Outcomes:

1. Students will be able to solve problems involving Set Theory including Venn Diagrams as demonstrated on problem sets, quizzes, and tests.
2. Students will be able to solve probability problems including or, and, contingent and odds as demonstrated on problem sets, quizzes, and tests
3. Students will be able to solve problems that require algebraic thinking including constructing and solving linear programming models as demonstrated on problem sets, quizzes, and tests
4. Students will be able to use finance formulas and techniques to solve basic investment, and financing problems as demonstrated on problem sets, quizzes, and tests
5. Students use the **core value** of respect to make decisions in response to discussion questions rather than automatically choosing the mathematically "correct" response.

Core Value:

The students will be learning the mathematical skills for solving problems and then investigate how respect can be used to make effective decisions rather than mathematically correct decisions.

Respect: Animated in the spirit of Jesus Christ, we value all individuals' unique talents, respect their dignity and strive to foster their commitment to excellence in our work. Our community's strength depends on the unity and diversity of our people, on the free exchange of ideas and on learning, living, and working harmoniously.

Evaluation:

Methods of Assessment

Assignment	Total Weight
Discussions (8)	8%
Problems sets (8)	16%
Practice Quizzes (4)	16%
Tests (3)	36%
Practice Final Exam	4%
Final Exam (1)	20%

The following criteria will be used to determine a final grade in the course:

Grade Score (%)

A	94-100	(Exceptional)
A-	90-93	Superior
B+	87-89	Excellent
B	84-86	Very Good
B-	80-83	Good
C+	77-79	Above Average
C	74-76	Average
C-	70-73	Below Average
D+	67-69	Marginal
D	60-66	Poor
F	0-59	Failure

MyMathLab:

Most of your assignments for this course will be completed in MyMathLab, which is designed to help you succeed in your course. MyMathLab provides multimedia instruction, unlimited practice exercises, and online homework and testing—all correlated to the examples and exercises in your textbook. Registration instructions are provided in Module 1. You will need to register in MyMathLab as soon as possible.

Problem Sets:

The Problem Sets assigned in each module utilize MyMathLab. Students will be able to opt for additional help by selecting any of the support links. Students may work each problem as many times as they would like during the week. Problem Sets are due **no later than Sunday 11:59 PM EST/EDT** in each module.

Quizzes:

Quizzes are provided through MyMathLab in Modules 2, 4, and 6 and serve as practice for the exams. Students may take each quiz as many times as they would like during the module; however, only the highest score is recorded. Quizzes are due **no later than Sunday 11:59 PM EST/EDT** of each module.

Tests and Final Test:

Tests are given through MyMathLab in Modules 2, 4, and 6 with a comprehensive Final Test in Module 8. Students may only take each exam/Final Test once. Exams/Final Test are due **no later than Sunday 11:59 PM EST/EDT** of the assigned module.

Discussions:

Participation is critical to creating a successful online environment. Students are expected to contribute to the class discussion in a substantive way at least **two** out of **seven** days each module. Your instructor will consider both quantity and quality when evaluating student discussion posts. In addition, it is expected that all students respond to the discussion questions posted to each module. When preparing for the discussion assignments, the student should plan on, at a minimum, two separate discussion postings.

Initial posting: The first posting is due by **Thursday 11:59 EST/EDT** of each module. That first posting will reflect the student's take on the assigned material. That posting should be well thought-out and well-written and include appropriately cited online research and text references.

Response postings: Students are expected to build the discussion by posting thoughtful and substantive interactive responses to your classmates' posts. One instance of interaction is required and more are encouraged. Interaction should include constructive criticism (positive and negative) offered in a supportive, collegial spirit. If questions are posed to your initial response, you will need to address those as well. In an active learning experience such as discussion, constructive criticism can be a very powerful learning tool if offered in this manner. The deadline to post responses to classmates is **Sunday 11:59 PM EST/EDT** of each module.

Assessment of the Learning Outcomes:

Course Learning Outcome	Assessment Method
1	Problem sets, tests, practice quizzes, tests, exam
2	Problem sets, tests, practice quizzes, tests, exam
3	Problem sets, tests, practice quizzes, tests, exam

4	Problem sets, tests, practice quizzes, tests, exam
5	Problem sets, tests, practice quizzes, tests, exam

Course Schedule:

Module 1 Set Theory

Objectives

When you complete this module, you should be able to:

- Recall the basic concepts of set theory
- Use three methods to represent sets
- Classify two sets as equal, equivalent, or neither
- Apply the concept of a universal set
- Calculate the number of subsets of a set
- Perform operations with sets
- Respect will be explored as it relates to the classroom and set theory

Readings

- *Read: Finite Mathematics, Chapter 1*
- *Reference as needed: Thinking Mathematically, Chapter 2 sections 1-4*

Assignments

Items to be Completed:	Due No Later Than:
Post an introduction to the class	Thursday 11:59 PM EST/EDT
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 1	Sunday 11:59 PM EST/EDT

Module 2 Introduction to Algebra

Objectives

When you complete this module, you should be able to:

- Evaluate algebraic expressions
- Simplify algebraic expressions
- Evaluate formulas
- Solve linear equations
- Solve for a variable in an equation or formula
- Solve a “word” problem using linear equations
- Graph the solutions of an inequality on a number line
- Solve applied problems using linear inequalities

Readings

- *Read: Finite Mathematics, Chapter 2*
- *Reference as needed: Thinking Mathematically, Chapter 6 sections 1-4*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Practice quiz 1 – <i>only on Module concepts</i>	Sunday 11:59 PM EST/EDT
Complete Test 1– <i>only on Module concepts</i>	Sunday 11:59 PM EST/EDT
Complete Problems set 2	Sunday 11:59 PM EST/EDT

Module 3 Graphs & Functions

Objectives

When you complete this module, you should be able to:

- Graph equations
- Use the $f(x)$ notation
- Use intercepts to graph a linear equation
- Calculate the slope of a line
- Interpret slope and y-intercept in applied situations
- Solve linear systems by graphing, substitution, and addition
- Solve “word” problems using systems of linear equations
- Graph a system of linear inequalities

Readings

- *Read: Finite Mathematics, Chapter 3*
- *Reference as needed: Thinking Mathematically, Chapter 7 sections 1-4*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 3	Sunday 11:59 PM EST/EDT

Module 4 Linear Programming

Objectives

When you complete this module, you should be able to:

- Write an objective function describing a quantity that must be maximized for minimized
- Use inequalities to describe limitations in a situation
- Use linear programming to solve problems
- Evaluate linear programming results to determine if the mathematical solution supports the value of respect

Readings

- *Read: Finite Mathematics, Chapter 4*
- *Reference as needed: Thinking Mathematically, Chapter 7 sections 5*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 4	Sunday 11:59 PM EST/EDT
Complete Practice quiz 2	Sunday 11:59 PM EST/EDT
Complete Test 2	Sunday 11:59 PM EST/EDT

Module 5 Linear Programming

Objectives

When you complete this module, you should be able to:

- Solve applied problems involving percent
- Calculate simple interest and maturity value
- Use compound interest formulas
- Calculate present value
- Understand and compute effective annual yield
- Find the value of an annuity
- Determine the amount financed, the installment price, and the finance charge for a fixed loan
- Understand stocks, bonds, and mutual funds as investments

Readings

- *Read: Finite Mathematics, Chapter 5*
- *Reference as needed: Thinking Mathematically, Chapter 8 sections 1, 3-6*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 5	Sunday 11:59 PM EST/EDT

Module 6 Installment Loans

Objectives

When you complete this module, you should be able to:

- Find the interest, balance due, and minimum monthly payment for credit card loans
- Evaluate mortgage options
- Compute the monthly payment and interest costs for a mortgage
- Prepare a partial loan amortization schedule
- Prepare payments and interest for other kinds of installment loans

Readings

- *Read: Finite Mathematics, Chapter 6*
- *Reference as needed: Thinking Mathematically, Chapter 8 sections 7 & 8*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 6	Sunday 11:59 PM EST/EDT
Complete Practice Quiz 3	Sunday 11:59 PM EST/EDT
Complete Test 3	Sunday 11:59 PM EST/EDT

Module 7 Counting Methods and Probability Theory

Objectives

When you complete this module, you should be able to:

- Use the Fundamental Counting Principle to determine the number of possible outcomes in a given situation
- Use the permutations formula
- Use the combinations formula
- Distinguish between permutation and combination problems
- Compute theoretical and empirical probability
- Compute probabilities with permutations
- Compute probabilities with combinations

Readings

- *Read: Finite Mathematics, Chapter 7*
- *Reference as needed: Thinking Mathematically, Chapter 11 sections 1-5*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 6	Sunday 11:59 PM EST/EDT

Module 8 Probability

Objectives

When you complete this module, you should be able to:

- Calculate odds
- Compute conditional probabilities
- Use expected value to determine the average payoff or loss in a game of chance

Readings

- *Read: Finite Mathematics, Chapter 8*
- *Reference as needed: Thinking Mathematically, Chapter 11 sections 6-8*

Assignments

Items to be Completed:	Due No Later Than:
Post an initial response to the discussion question	Thursday 11:59 PM EST/EDT
Post responses to at least two classmates	Sunday 11:59 PM EST/EDT
Complete Problems set 8	Sunday 11:59 PM EST/EDT
Complete Practice Quiz 3	Sunday 11:59 PM EST/EDT
Complete Practice Final Exam	<i>Saturday</i> 11:59 PM EST/EDT
Complete Final Exam	Sunday 11:59 PM EST/EDT