1. **COURSE TITLE\*:** Finite Math
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** MATH 1124
3. **PREREQUISITE(S)\*:**

A student must meet one of the following criteria to register for this course:

* Math 1118
* Math 1116 with a grade of A or B.
* Three High school STEM or Core Math courses with grades of B or higher
* Appropriate score on the College Placement Test
* ACT Math score of 22 or higher
* SAT Math score of 530 or higher
* Accuplacer EA with a score of 90 or higher

**COREQUISITE(S)\*: None**

1. **COURSE TIME/LOCATION/MODALITY:**

**(*Course Syllabus – Individual Instructor Specific*)**

1. **CREDIT HOURS\*:** 3 **LECTURE HOURS\*:**  3

 **LABORATORY HOURS\*: 0 OBSERVATION HOURS\*: 0**

1. **FACULTY CONTACT INFORMATION:**

***(Course Syllabus – Individual Instructor Specific)***

1. **COURSE DESCRIPTION\*:**

This course is designed for social science, business, computer and other general education majors. Topics will include mathematical modeling, linear programming, matrices, logic and introduction to probability and statistics. A special emphasis is placed on mathematical applications and program-solving.

1. **LEARNING OUTCOMES\*:**

At the completion of this course the student will be able to:

1. Formulate and solve mathematical models and applications with linear functions.
2. Set up applied systems of equations and solve.
3. Apply systems to break-even points and equilibrium points.
4. Represent data in matrix form.
5. Interpret data that is in matrix form.
6. Perform operations with matrices and interpret the results.
7. Graph a linear inequality.
8. Graph a system of linear inequalities.
9. Formulate linear programming problems.
10. Solve linear programming using graphing.
11. Find the optimum value of an applied program when given a set of constraints.
12. Use set notations and terminology.
13. Perform operations on sets.
14. Use Venn diagrams to represent sets.
15. Use Venn diagrams to solve survey problems.
16. Solve counting problems using the fundamental counting principle, permutations, and combinations.
17. Identify the sample space of an event.
18. Find the probability of equally likely events.
19. Find the probability of compounds events using sets.
20. Calculate conditional probability.
21. Prepare a frequency distribution.
22. Find the mean, median, and mode of a set of data.
23. Find the range, variance, and standard deviation of a set of data.
24. Interpret a normal curve and represent it as a graph.
25. Solve applied problems using the binomial distribution.
26. Solve applied problems using the normal distribution.
27. Represent statements and implications as symbols.
28. Construct truth tables for and test validity of logic statements.

**9. ADOPTED TEXT(S)\*:**

A Finite Mathematics,

8th edition e-Textbook Only, available through Cengage Unlimited eBooks, $69.99

Howard L. Rolf.

 Cengage, 2014

 ISBN: 9780357693933

You will purchase your e-textbook from the bookstore where you will be giving a code and instructions for accessing the e-Textbook.

Note: the 8th Edition textbook has gone out of hardback print but the e-textbook is still available. For those wishing to use a hardback you may want to check the Bookstore to see if they have any 8th edition textbooks available. It may also be possible to find used 8th edition hardback copies at online sources.

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

**10. OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

A scientific calculator is required; one that is also statistics capable is recommended. Supplemental materials are available in the Learning Resource Center.

**11. GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

 B: 80 – 89

 C: 70 – 79

 D: 60 – 69

 F: 0 – 59

**12. GRADING PROCEDURES OR ASSESSMENTS:**

**(*Course Syllabus – Individual Instructor Specific)***

|  |
| --- |
| *Example 1 - By Percent* |
|  Homework 10% Quizzes/Tests 90% Total 100% |

|  |
| --- |
| *Example 2*  |
| *Category* | *By Total Points* | *% of Grade* |
| Homework (20x10) | 200 | 10% |
| Quizzes/Tests(5x360) | 1800 | 90% |
| Total | 2000 | 100% |

|  |
| --- |
| *Example 3* |
| *Category* | *By Total Points* | *% of Grade* |
| Online Quizzes | 400 | 10% |
| Online Tests(6x100) | 600 | 15% |
| Notebook(2x500) | 1000 | 25% |
| Midterm | 1000 | 25% |
| Final | 1000 | 25% |
| Total | 4000 | 100% |

**13. COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

The course design provides instruction and materials to support the course objectives. Classes may consist of a variety of means to accomplish this including but not limiting to: lectures, class discussions, small group projects, supplemental materials, and outside assignments. Practice is an important part of the learning process. For every one hour of class time, two additional hours of study time should be expected.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

 **Chapter 1 - Functions and Lines** **– LO1**

 1-1 Functions (Applications. Other material is review)

 1-2 Graphs and Lines (Applications. Other material is review)

 1-3 Mathematical Models and Applications of Linear Functions

**Chapter 2 - Linear Systems – LO2, LO3, LO4, LO5, LO6**

2-1 Systems of Two Equations (Review)

2-2 Systems of Three Equations (Review)

2-3 \* Gauss-Jordan Method for General Systems of Equations

2-4 Matrix Operations

2-5 Multiplication of Matrices

**Chapter 3 - Linear Programming – LO7, LO8, LO9, LO10, LO11**

3-1 Linear Inequalities on Two Variables

3-2 Solutions of Systems of Inequalities: A Geometric Picture

3-3 Linear Programming: A Geometrical Approach

**Chapter 6 - Sets and Counting - LO12, LO13, LO14, LO15, LO16**

6-1 Sets

6-2 Counting Elements in a Subset Using a Venn diagram

6-3 Basic Counting Principles

6-4 Permutations

6-5 Combinations

6-6 A Mixture of Counting Problems

6-7 \* Partitions

**Chapter 7 – Probability – LO17, LO18, LO19, LO20**

7-1 Introduction to Probability

7-2 Equally Likely Events

7-3 Compound Events: Union, Intersection, and Complement

7-4 Conditional Probability

7-5 \* Independent Events

**Chapter 8 – Statistics – LO21, LO22, LO23, LO24, LO25, LO26**

8-1 Frequency Distributions

8-2 Measures of Central Tendency

8-3 Measures of Dispersion: Range, Variance, and Standard Deviation

8-4 \* Random Variables and Probability Distributions of Discrete Random Variables

8-5 \* Expected Value of a Random Variable

8-6 Bernoulli Experiments and Binomial Distribution

8-7 Normal Distribution

**Chapter 10 – Logic – LO27, LO28**

10-1 Statements

10-2 Conditional Statements

10-3 Equivalent Statements

10-4 \* Valid Arguments

**\* Optional topics to be covered only if the other material is completed.**

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

Week 1: Chapter 1

Week 2: Chapter 2

 Week 3: Chapter 2, 3

 Week 4: Chapter 3

 Week 5: Chapter 3

 Week 6: Chapter 6

 Week 7: Chapter 6

 Week 8: Chapter 6

 Week 9: Chapter 7

 Week 10: Chapter 7

 Week 11: Chapter 8

 Week 12: Chapter 8

 Week 13: Chapter 8

 Week 14: Chapter 10

 Week 15: Chapter 10

 Week 16: Finals

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students with disabilities may contact the Disability Services Office, Central Campus, at 800-628-7722 or 937-393-3431.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.