EASTERN ARIZONA COLLEGE
Finite Mathematics

Course Design
2015-2016

Course Information

Division	Mathematics
Course Number	MAT 171
Title	Finite Mathematics
Credits	4
Developed by	Jay Clarke/Revised by Ray Orr
Lecture/Lab Ratio	4 Lecture/0 Lab

Transfer Status

ASU	NAU	UA
MAT 119 (3) & Elective Credit (1) , Mathematics (MA)	MAT 119	MATH Departmental Elective

Activity Course	No
CIP Code	27.0101
Assessment Mode	Pre/Post Test (20 Questions/100 Points)
Semester Taught	Spring
GE Category	Mathematics
Separate Lab	No
Awareness Course	No
Intensive Writing Course	No

Prerequisites

MAT 154 or higher with a grade of "C" or higher or math placement test score as established by District policy and ENG 091 with a grade of "C" or higher or reading placement test score as established by District policy

Educational Value

This class is recommended for business administration major or computer information systems transfer students.

Description

Math for social, life, and management sciences. Topics covered will be applicable to certain business majors (please consult your advisor). Includes systems of equations, set theory, matrices, probability, logic, and other subjects.

Supplies

Scientific calculator; TI-83 or TI-84 recommended.

Competencies and Performance Standards

1. Graph linear functions and write their equations.

Learning objectives

What you will learn as you master the competency:

a. Graph a line.

b. Translate word problems into linear equations.

c. Find the intercepts of a given linear equation.

Performance Standards

Competence will be demonstrated:

o on assigned activities

o on written exam

o on a two hour cumulative final exam

Criteria - Performance will be satisfactory when:

o learner can graph a line.

o learner can translate word problems into linear equations.

o learner find the intercepts of a given linear equation.

2. Solve linear equations in 2 or 3 variables.

Learning objectives

What you will learn as you master the competency:

a. Solve systems of linear equations (2 or 3 variables) algebraically.

b. Solve systems of linear equations (2 variables) graphically.

c. Solve systems of equations using Gauss-Jordan method (2 or 3 variables).

d. Perform the following operations with matrices: addition, subtraction, and multiplication.

e. Calculate the inverse of a matrix.

f. Solve systems of equation by using the inverse matrix.

Performance Standards

Competence will be demonstrated:

o on assigned activities

o on written exam

o on a two hour cumulative final exam

Criteria - Performance will be satisfactory when:

o learner can solve systems of linear equations (2 or 3 variables) algebraically.

o learner can solve systems of linear equations (2 variables) graphically.

o learner can solve systems of equations using Gauss-Jordan method (2 or 3 variables).

o learner can perform the following operations with matrices: addition, subtraction, and multiplication.

o learner can calculate the inverse of a matrix.

o learner can solve systems of equations by using the inverse matrix.

3. **Solve linear programming problems graphically.**

   Learning objectives

   What you will learn as you master the competency:

   a.   Graph systems of inequalities in two variables.

   b.   Determine the feasible region and its vertices.

   c.   Solve linear programs graphically by using the vertices of the feasible region.

   Performance Standards

   Competence will be demonstrated:

   o   on assigned activities

   o   on written exam

   o   on a two hour cumulative final exam

   Criteria - Performance will be satisfactory when:

   o   learner can graph systems of inequalities in two variables.

   o   learner can determine the feasible region and its vertices.

   o   learner can solve linear programs graphically by using the vertices of the feasible region.

4. **Solve linear programming problems algebraically.**

   Learning objectives

   What you will learn as you master the competency:

   a.   Maximize a linear program with the use of the Simplex method.

   b.   Minimize a linear program with the use of the Simplex method.

   c.   Maximize or minimize non standard linear program using the Simplex method.

   Performance Standards

   Competence will be demonstrated:

   o   on assigned activities

   o   on written exam

   o   on a two hour cumulative final exam

   Criteria - Performance will be satisfactory when:

   o   learner can maximize a linear program with the use of the Simplex method.

   o   learner can minimize a linear program with the use of the Simplex method.

   o   learner can maximize or minimize non standard linear program using the Simplex method.

5. **Calculate the mathematics of finance.**

   Learning objectives

   What you will learn as you master the competency:

   a.   Calculate compound interest.

   b.   Calculate annuities.

   c.   Produce an amortization table.

   d.   Produce a sinking fund chart.

Performance Standards

Competence will be demonstrated:

o   on assigned activities

o   on written exam

o   on a two hour cumulative final exam

Criteria - Performance will be satisfactory when:

o   learner can calculate compound interest.

o   learner can calculate annuities.

o   learner can produce an amortization table.

o   learner can produce a sinking fund chart.

6.   **Understand sets and set operations.**

Learning objectives

What you will learn as you master the competency:

a.   Demonstrate the correct use of set notation and terminology within given sets.

b.   Draw venn diagrams of given sets.

c.   Determine the union, intersection, and/or complement of given sets.

d.   Determine the number of elements in a finite set.

e.   Use the multiplication principle to determine the number of ways of performing several tasks in succession.

f.   Calculate the number of combinations of n distinct objects taken r at a time in a given set.

g.   Calculate the number of permutations of n distinct objects taken r at a time in a given set.

Performance Standards

Competence will be demonstrated:

o   on assigned activities

o   on written exam

o   on a two hour cumulative final exam

Criteria - Performance will be satisfactory when:

o   learner can demonstrate the correct use of set notation and terminology within given sets.

o   learner can draw venn diagrams of given sets.

o   learner can determine the union, intersection, and/or complement of given sets.

o   learner can determine the number of elements in a finite set.

o   learner can use the multiplication principle to determine the number of ways of performing several tasks in succession.

o   learner can calculate the number of combinations of n distinct objects taken r at a time in a given set.

o   learner can calculate the number of permutations of n distinct objects taken r at a time in a given set.

7. Calculate probabilities.

Learning objectives

What you will learn as you master the competency:

a. Define experiment, event, sample space, and probability.

b. Compute the probability of an event.

c. Recognize mutually exclusive events and independent events.

d. Compute the probability of combined events.

e. Use the rules of probability to solve more advanced probability problems.

Performance Standards

Competence will be demonstrated:

o on assigned activities

o on written exam

o on a two hour cumulative final exam

Criteria - Performance will be satisfactory when:

o learner can define experiment, event, sample space, and probability.

o learner can compute the probability of an event.

o learner can recognize mutually exclusive events and independent events.

o learner can compute the probability of combined events.

o learner can use the rules of probability to solve more advanced probability problems.

Types of Instruction

Classroom Presentation

Grading Information

Grading Rationale

Each instructor has the flexibility to develop evaluative procedures within the following parameters.

1. Written exams must represent at least 60% of the final course grade

2. Final exam must represent at least 20 % of the final course grade.

3. The Post Test is to be embedded in the final exam and must represent at least 10% of the final course grade.

4. Other activities may represent at most 20 % of the final course grade.

Grading Scale

A   90%-100%

B   80%-89%

C   70%-79%

D   60%-69%

F   Below 60%