



CREDIT COURSE OUTLINE

I. COVER PAGE

(1) MATH 21	(2) FINITE MATHEMATICS	(3) 3
Number	Title	Units

(4) Lecture / Lab Hours:	(8) Classification:
Course Hours	
Weekly Lec hours: 3.00	Degree applicable: X
Weekly Lab hours:	Non-degree applicable:
Total Contact hours: 54.00	Basic skills:
Lec will generate __ hour(s) outside work.	(9) RC Fulfills AS/AA degree requirement: (area)
Lab will generate __ hour(s) outside work.	General education category:
(5) Grading Basis: Grading Scale Only	Major:
Pass/No Pass option X	Certificate of:
Pass/No Pass only	Certificate in:
(6) Advisories:	(10) CSU Baccalaureate: X
(7) Pre-requisites (requires C grade or better):	(11) Repeatable: (A course may be repeated three times) 0
Corequisites:	(12) C-ID:
	Proposed Start Date: Fall 2012

(12) Catalog Description:
 An introduction to finite mathematics and quantitative methods for Behavioral Science, Social Science, and Business majors. May be taken concurrently with Mathematics 11/Statistics 7. Topics include the applications of sets, counting, probability, expected value, rates of change, functions: applications and graphing, mathematics of finance, systems of equations and matrices, and linear programming. Meets business major requirements for students transferring to California State University, Fresno.

II. COURSE OUTCOMES:

(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)

Upon completion of this course, students will be able to:

- I. Solve finite mathematical problems by utilizing algebraic concepts such as solving equations, simplifying rational expressions and factoring.
- II. Apply appropriate models (Linear or Higher Order) to give analysis of revenue-cost-profit relationship, supply and demand, or determining optimization levels.
- III. Identify and apply appropriate model (Exponential or Logarithmic) to application problems involving growth, decay, or financial applications.
- IV. Solve financial problems dealing with present and future value using both simple and compound interest.
- V. Solve system of linear equations by a variety of methods, including but not limited to Gauss-Jordan and Matrix methods.
- VI. Solve linear programming optimization problems both graphically and through application of the Simplex Method.
- VII. Construct Venn Diagrams and event trees. Apply counting techniques including combinations and permutations. Apply basic principles of probability such as conditional probability, independent events, Bayes' theorem, and Bernoulli trials.
- VIII. Use differential calculus to determine marginal change, and maximum and minimum values of functions.

III. COURSE OBJECTIVES:

(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)

In the process of completing this course, students will:

- I. Use fundamental operations and concepts of algebra.
- II. Utilize linear and higher order function models and their graphs.
- III. Solve exponential and logarithmic function models.
- IV. Implement the mathematics of finance.
- V. Apply system of linear equations.
- VI. Employ a variety of Linear Programming techniques.
- VII. Apply sets, Venn diagrams, and probability theory.
- VIII. Apply basics of differential calculus, such as derivatives and their relationship to marginal change and maxima and minimum

values.

IV. COURSE OUTLINE:

Lecture Content:

A. Fundamentals of Algebra

1. Linear equations
2. Linear inequalities
3. Absolute value
4. Integer exponents

B. Linear, Polynomial, and Rational Models

1. Functions
2. Linear Models
3. Slope and equations of a line
4. Applications
5. Quadratic models
6. Polynomial models

C. Exponential and Logarithmic Models

1. Exponential functions and their applications
2. Logarithmic functions and their applications

D. Mathematics of Finance

1. Simple interest and discount
2. Compound interest
3. Future value of an annuity
4. Present value of an annuity

E. Systems of linear equations and matrices

1. System of linear equations
2. Basic matrix operations
3. Multiplication of matrices
4. Matrix inverses
5. Applications of matrices

F. Linear programming

1. Graphing linear inequalities in two variables
2. Linear programming models
3. Solving linear programming problems graphically
4. Simplex Method
5. Maximization problems

G. Sets and Probability

1. Sets
2. Venn diagrams
3. Expected Value
4. Trees
5. Tables
6. Addition and multiplication rules
7. Permutations
8. Combinations

H. Introduction to Calculus

1. Limits
2. Average rates of change
3. Instantaneous rates of change
4. Derivatives

V. APPROPRIATE READINGS

Reading assignments may include but are not limited to the following:

I. Sample Text Title:

1. Recommended - Margaret L. Lial and Thomas W. Hungerford *Mathematics with Applications*, ed. current
Harper-Collins Publisher, 0,

II. Other Readings

- Global or international materials or concepts are appropriately included in this course
- Multicultural materials and concepts are appropriately included in this course

If either line is checked, write a paragraph indicating specifically how global/international and/or multicultural materials and concepts relate to content outline and/or readings.

VI. METHODS TO MEASURE STUDENT ACHIEVEMENT AND DETERMINE GRADES:

Students in this course will be graded in at least one of the following four categories. Please check those appropriate. A degree applicable course must have a minimum of one response in category A, B, or C.

A. Writing	
Check either 1 or 2 below	
	1. Substantial writing assignments are required. Check the appropriate boxes below and provide a written description in the space provided.
X	2. Substantial writing assignments are NOT required. If this box is checked leave this section blank. For degree applicable courses you must complete category B and/or C.
	a) essay exam(s)
	b) term or other paper(s)
	c) laboratory report(s)
	d) written homework
	e) reading reports
	f) other (specify)

Required assignments may include but are not limited to the following:

B. Problem Solving	
Computational or non-computational problem-solving demonstrations, including:	
X	a) exam(s)
X	b) quizzes
X	c) homework problems
	d) laboratory reports
	e) field work
	f) other (specify):

Required assignments may include but are not limited to the following:

1. Problems assigned from the problem sets found in each chapter of the textbook.
2. Worksheets generated by the instructor to reinforce or clarify concepts presented in the text.

C. Skill demonstrations, including:	
	a) class performance(s)
	b) field work
	c) performance exams(s)
	d) other (specify)

Required assignments may include but are not limited to the following:

D. Objective examinations including:	
X	a) multiple choice
X	b) true/false
X	c) matching items
	d) completion
	e) other (specify):

COURSE GRADE DETERMINATION:

Description/explanation: Based on the categories checked in A-D, it is the recommendation of the department that the instructor's grading methods fall within the following departmental guidelines; however, the final method of grading is still at the discretion of the individual instructor. The instructor's syllabus must reflect the criteria by which the student's grade has been determined. (A minimum of five (5) grades must be recorded on the final roster.)

If several methods to measure student achievement are used, indicate here the approximate weight or percentage each has in determining student final grades.

85% Exams/Quizzes 15% Homework problems

VII. EDUCATIONAL MATERIALS

For degree applicable courses, the adopted texts, as listed in the college bookstore, or instructor-prepared materials have been certified to contain college-level materials.

Validation Language Level (check where applicable):

- Textbook
- Reference materials
- Instructor-prepared materials
- Audio-visual materials

College-Level Criteria Met	
YES	NO
<u> X </u>	<u> </u>
<u> X </u>	<u> </u>
<u> X </u>	<u> </u>
<u> </u>	<u> X </u>

Indicate Method of evaluation:

- Used readability formulae (grade level 10 or higher)
- Text is used in a college-level course X
- Used grading provided by publisher
- Other: (please explain; relate to Skills Levels)

Computation Level (Eligible for MATH 101 level or higher where applicable)
Content

<u> X </u>	<u> </u>
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Breadth of ideas covered clearly meets college-level learning objectives of this course	<u> X </u>	<u> </u>
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	<u> X </u>	<u> </u>
Requires independent thought and study	<u> X </u>	<u> </u>
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	<u> X </u>	<u> </u>

List of Reading/Educational Materials
 Recommended - Margaret L. Lial and Thomas W. Hungerford *Mathematics with Applications*, ed. current Harper-Collins Publisher, 0,

Comments:

<u> </u>	This course requires special or additional library materials (list attached).
<u> X </u>	This course requires special facilities: Classroom with access to computers.

Attached Files:

BASIC SKILLS ADVISORIES PAGE The skills listed are those needed for eligibility for English 125, 126, and Math 201. These skills are listed as the outcomes from English 252, 262, and Math 250. In the right hand column, list at least three major basic skills needed at the beginning of the target course and check off the corresponding basic skills listed at the left.

Check the appropriate spaces.

 Eligibility for Math 201 is advisory for the target course.
 Eligibility for English 126 is advisory for the target course.
 Eligibility for English 125 is advisory for the target course.

If the reviewers determine that an advisory or advisories in Basic Skills are all that are necessary for success in the target course, stop here, provide the required signatures, and forward this form to the department chair, the appropriate associate dean, and the curriculum committee.

REQUISITES

No requisites

JUSTIFICATION OF LIMITATION ON ENROLLMENT

Enrollment in courses or blocks of courses may be limited based on performance, honors, or other performance based criteria. Be mindful of the disproportionate impact the limitation will have on specific groups of students. It is important to determine if the limitation will disproportionately keep under-represented students from enrolling in the course or block of courses.

Describe the reasons for limiting the enrollment.

Course Designator: MATH 21
Course Title(s): FINITE MATHEMATICS
Rationale for Limiting Enrollment: 0