

Linfield College Syllabus

Department: Continuing Education (DCE)

Course Number: MAT 150

Course Title: Finite Mathematics With Calculus

Credits: Five (5) Credits

Instructor: M. Malek Daaboul

Instructor Contact: Address: 17558 SW Kemmer View Ct.
Beaverton, Oregon 97007
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Term: Summer 2008

Dates/Time/Location: Friday: 6/20, 27; 7/4, 11, 18, 25. Walker 220,
6:00pm- 9:30pm.
Saturday: 6/21, 28; 7/5, 12 19, 26; 8/2. Walker 220,
9:00am- 5:00pm.

Department Approval: _____

I. Course Description:

A major objective of this course is to give the student substantial experience in modeling and solving real-world problems.

The first part of the course begins with the development of a library of elementary algebraic functions (Chapters 1 and 2), including their properties and uses. Students are expected to investigate mathematical ideas and processes graphically and numerically, as well as algebraically. This development lays a firm foundation for studying mathematics both in this course and in future endeavors. Then the course will introduce the student to the subject of Finite Mathematics which can be thought of as three units: Mathematics of Finance (Chapter 3); Linear Algebra, including matrices, linear systems, and linear programming (Chapters 4, 5, and 6).

Chapter 3 presents a thorough treatment of simple and compound interest and present and future value of ordinary annuities. Chapter 4 covers linear systems and matrices with an emphasis on using row operations and Gauss-Jordan elimination to solve systems and to find matrix inverses. This chapter will cover applications of mathematical modeling utilizing systems and matrices. Chapters 5, and 6 provide

broad and flexible coverage of linear programming. Graphing technique will be covered to solve linear programming problems.

The second part of the course consists of differential calculus (Chapters 10 - 12). Emphasis is given to the uses of calculus as a problem-solving tool. Special effort will be made to present the basic concepts in an intuitive fashion, and examples and problems have been chosen from a broad spectrum of management applications.

Chapter 10 introduces the derivative, covers the limit properties essential to understanding the definition of the derivative, develops the rules of differentiation (including the chain rule for power forms), and introduces applications of derivatives in business and economics.

Chapter 11 extends the derivative concepts discussed in chapter 10 to exponential and logarithmic functions (including the general form of the chain rule). Implicit differentiation is covered and applied to related rate problems.

Chapter 12 focuses on graphing and optimization. Continuity and first derivative and second derivative graph properties are covered while emphasizing polynomial graphing. Also Rational function graphing is covered. Optimization is covered including examples and problems involving end-point solutions.

II. Prerequisites, Helpful Knowledge and skills:

The student should have a sound knowledge of College Intermediate Algebra (MAT 115) or equivalent.

III. Learning Objectives/Outcomes:

After completing this course the student should have the knowledge of the principles, concepts and applications of finite mathematics. Many of these principles and concepts are applicable to solving problems in business and economics, life science, and social science as well as other aspects of the student's professional and personal life. Consequently, the student should expect the benefits of studying Finite Mathematics to serve him/her in those areas as well.

IV. Methodology:

The mode of delivery for learning are lectures, homework, quizzes, and four examinations. Class discussion of the subject matter concepts and interactive dialogue among students and the instructor is expected/encouraged to ensure clear understanding of finite mathematics concepts and its applications to problem-solving, decision making in business and economics, life science and social science areas.

V. Resources:

Text: College Mathematics for Business, Economics, Life Sciences, and Social Sciences.

By: Raymond Barnett, Michael Ziegler, and Karl Byleen. 11th edition.

ISBN: 0-13-157225-3, Pearson/Prentice Hall.

VI. Evaluation & Grading:

The student's learning is evaluated continuously through class interactions, assignments, quizzes, and four examinations. The course grade is based on the student performance on the quizzes and the exams.

Class Participation:	20%	
Exam 1:	20%	Chapters 1, 2, 3 & 4
Exam 2:	20%	Chapters 5 & 6
Exam 3:	20%	Chapters 10,
Exam 4	20%	Chapters 11 & 12

Grading scale:

How points and percentages equate to grades

100-95	A	76-73	C
94-90	A-	72-70	C-
89-87	B+	69-67	D+
86-83	B	66-63	D
82-80	B-	62-60	D-
79-77	C+	59 or <	F

VII. . COURSE POLICIES

Incompletes: A grade of Incomplete (I) is given only in emergency situations. The student must request an Incomplete in writing and must obtain my permission. All uncompleted work must be completed within the time limits I set. If you simply don't turn in the final assignments or the final exam, your course grade will be calculated with the missed portion counting for 0 points.

Academic honesty: Cheating and plagiarism will not be tolerated. Any student found to be engaging in either of these activities at any point in the course will receive a failing grade for the assignment and/or entire course and may be subject to further college sanctions.

Rules of Discussion: The classroom should be a safe haven within which individuals can discuss the widest possible range of topics without fearing retribution, ridicule, or attack. In order for this to happen, we must assume that we are all persons of intelligence and good will who may ultimately disagree, sometimes to a profound

degree, with one another but whose characters are not impugned or intelligence disparaged because of this disagreement. The classroom is not a forum for proselytizing, nor it is a soapbox for diatribes by either students or faculty. For the academic endeavor to succeed, we must treat each other with civility, courtesy, and respect. All perspectives and questions are welcome, as long as they are impelled by a genuine desire for knowledge, can be articulated thoughtfully, and supported by sound reasoning.

Students with disabilities: Students with documented disabilities who may need accommodations, who have any emergency medical information the instructor should know of, or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term.

VIII. Tentative Course Outline:

Weeks 01 - 02

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| 1. Elementary Functions | Chapters 1 & 2 |
| 2. Mathematics of Finance | Chapter 3 |
| 3. Systems of Linear Equations: Matrices | Chapter 4 |

Week 03:

EXAM I (50 minutes, 100 points), Chapters 1, 2, 3 & 4, 20% of grade.

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| 4. Linear Inequalities and Linear Programming | Chapter 5 |
| 5. Linear Programming: Simplex Method | Chapter 6 |

Weeks 04 - 05:

EXAM II (50 minutes, 100 points), Chapters 5 & 6 20% of grade.

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| 5. Limits and The Derivative | Chapter 10 |
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Week 06 – 07 :

Exam III (50 minutes, 100 points), Chapter 9 **20% of grade.**

6. Additional Derivatives Topics **Chapter 11**

7. Graphing and Optimization **Chapter 12**

Exam IV (50 minutes, 100 points), Chapters 10 & 11 **20% of grade.**

Biography: Malek Daaboul has a broad industrial background with a record of contribution in marketing, sales, customer support, engineering, manufacturing, information technology, and business management. Strong planning and management skills complemented with a thorough technical and analytical background. Worked at Owens Illinois in Toledo, Ohio for about nine years in different capacities: Manufacturing Engineer, Senior Operations Research Analyst, and Systems Software & Technical Supervisor. He then worked for Tektronix in Beaverton, Oregon for about Six years as Technical Services Manager before joining Sequent Inc. in Beaverton, Oregon for about four years as Computer Resources Group Manager and Later as Rightsizing Marketing Manager. Then He worked for IBM Global Services in Portland, Oregon for about four years as a Senior Business Management Consultant/Solutions Manager and for Oracle Corporation in Portland, Oregon for about two years as Consulting Services Practice Manager. Responsibilities at IBM and Oracle included business development in Oregon, marketing, and selling consulting services as well as overall management of consulting engagements and executive relationships. Malek has been teaching undergraduate and graduate (MBA) courses since 1974. Courses taught include Strategic Marketing Management, Industrial Marketing, Services Marketing, International Marketing, Management Decisions Making, Decision and Executive support Systems, Economic Decision Making, Managerial Forecasting, Operations Research, Operations Management, Information Technology and Mathematics. He has masters degrees in electrical and industrial engineering and done Ph.D. work (two years) in systems engineering.