**CCBC, Spring 2017 School of Math and Science, Math Department**

**Finite Mathematics and Modeling, MATH 125 Section E8A**

**Description:** *Finite Mathematics and Modeling*explores applications of mathematics to business, management, science, health, and social sciences. The course covers linear functions, linear systems, matrices, probability, linear programming, mathematical models, simple and compound interest, annuities, amortization, descriptive statistics, and other selected topics.

**Pre-requisites:** (RDNG 052 and ENGL 052) or ACLT 052; MATH 073 or MATH 083

1. Basic Course Information
2. Instructor’s Name: Anthony Calise
3. Instructor’s Office Number: MASH 310

Instructor’s Email Address: acalise2@bcps.org or acalise@ccbcmd.edu

1. Instructor's Office Hours: Saturday (11:20-12:20)
2. Class Website: [www.mrcalise.weebly.com](http://www.mrcalise.weebly.com)
3. Class Meeting Day(s), Time(s) and Location(s): Saturday ADMN 208 (12:30pm – 3:35pm)
4. Statement of Student Out of Class Work Expectations: This is a three-credit/billable hour course offered over 14 weeks. You are expected to complete at least six hours of work per week outside of class including reading, course preparation, homework, studying, etc.
5. Required Materials
6. Textbook – Finite Mathematics & Modeling, 2016 edition, edited by The Community College of Baltimore County
7. Calculator – A scientific calculator is required for this course. A recommended model is *Casio fx-115ES PLUS*.
8. Course Goals Overall
9. Course Objectives – Upon completion of this course students will be able to:
10. calculate the slope of a line; derive and graph the equation of a line;
11. construct linear mathematical models to evaluate real world problems, ethical considerations, and interpret the meaning of the slope and intercepts;
12. perform operations on matrices, including multiplication and inversion;
13. construct a system of equations from a verbal description;
14. solve systems of equations using matrices;
15. graph the solution set for two or more linear inequalities in two variables;
16. construct the constraints and objective function for a linear programming problem from everyday life, optimize using the graphical and simplex methods, and interpret the solution;
17. construct mathematical models for real world financial mathematics, including compound interest, annuities, and amortization, and use this information to make informed decisions;
18. apply technology to the solution of mathematical problems;
19. determine the number of possible outcomes for a given application using the fundamental counting principle, permutations, and combinations;
20. apply the definitions of dependent and independent events, mutually exclusive events, sample space, and probability to solve problems involving chance;
21. calculate expected values and probabilities using the addition rule, product rule, and complement rule;
22. describe, numerically and graphically, various forms and presentations of statistical data;
23. examine the mathematical contributions made by people from diverse cultures throughout history, and their social, and cultural significance;
24. evaluate cultural and social applications and approaches to statistical analysis, and
25. find, evaluate, use, and cite academic resources for conducting research in mathematics.
26. Major Topics
27. Linear Equations
28. Slope and interpretation of slope
29. Forms of linear equations
30. Modeling with linear equations
31. Matrices
32. Terminology and basic operations
33. Inverse matrices
34. Gauss-Jordan method
35. Gaussian elimination method
36. Linear Programming
37. Graphs of systems of linear inequalities
38. Corner point theorem
39. Solving linear programming problems using the graphical method
40. Solving linear programming problems using the simplex method
41. Linear programming models
42. Mathematics of Finance
43. Simple and compound interest
44. Annuities
45. Amortization
46. Exploration of global and ethical topics through applications of financial equations
47. Sets, Counting, and Probability
48. Combinations and permutations
49. Terminology and basic concepts of probability
50. Dependent, independent, and mutually exclusive events
51. Applications of counting methods and probability theory
52. Elementary Statistics
53. Frequency distributions
54. Descriptive statistics
55. Statistical displays of data
56. Analyzing and interpreting statistics in a global community
57. Rationale – This is an applied course. Students learn how mathematics is used to solve a wide variety of applications in business and management, finance, science, health, and the social sciences. The course is called "finite" because it does not deal with the infinite processes found in calculus. The term "modeling" in the course title means we will be developing mathematical models (often equations or systems of equations or inequalities) for applications which can then be used to answer questions about the problem. Online technologies are used to help with solutions. We concentrate on setting up problems, using our knowledge of mathematics or technology to help us get a solution, and interpreting the solution. This is consistent with how mathematics is applied in the real world.
58. Evaluation
59. Requirements – There will be three Unit Exams, One Project, 4 Quizzes/Homeworks and a Cumulative Final Exam
60. Instructor’s Grading Policy – Unit Exams 50% (Highest Score is worth 20%), Project 10%, Quizzes/HW (10%), Final Exam 30%
A final course grade will be assigned using the following criteria:

|  |  |
| --- | --- |
| Final Average | Final Grade |
| At least 90% | A |
| At least 80% and less than 90% | B |
| At least 70% and less than 80% | C |
| At least 60% and less than 70% | D |
| Less than 60% | F |

1. Attendance Policy
2. You are expected to attend all scheduled classes.
3. Attendance is critical to student success in college.
4. Satisfactory attendance is defined to be at most six hours of unexcused absences.
5. Documentation of the reason for your absence(s) may be required.
6. The instructor may count each unexcused tardy arrival as an absence and each unexcused early departure as an absence.
7. Math Department Audit Policy – Students may change from credit to audit only during the published 50% refund period, as indicated in the CCBC academic calendar. Students who audit are required to attend class, participate in course activities, and complete assignments (except for tests and the final exam) in accordance with instructor guidelines and due dates. For students who do not meet these requirements, the instructor may change their grade from AU to W.
8. Course Procedures
9. Course Related Policies and Procedures – www.mrcalise.weebly.com
10. College-Wide Syllabus Policies – For college wide syllabus policies such as the Code of Conduct related to Academic Integrity and Classroom Behavior or the Audit/ Withdrawal policy, please go to the Syllabus Tab on the [MyCCBC](https://myccbc.ccbcmd.edu/Pages/Default.aspx) page.
11. Contact Information for Course-Related Concerns – Students should first attempt to take concerns to the faculty member. If students are unable to resolve course-related concerns with the faculty member, they should contact the Mathematics Department Coordinator at the Dundalk campus, Bob Brown, at 443-840-3744 or rbrown2@ccbcmd.edu.
12. Calendars and Schedule
13. [Academic Calendar and Final Exam Schedule](http://www.ccbcmd.edu/Resources-for-Students/Registering-for-Classes/Academic-Calendar.aspx)

This syllabus may be changed with notification to the class.