

MATH 0998
Support for Mathematical Modeling (2 hrs.)
Mathematics Department
Valdosta State University

Pre-requisites: Placement into course by University guidelines.

Co-requisite: MATH 1101.

REQUIRED TEXT: No additional text is required other than that which is required by MATH 1101 College Algebra: In Context: with applications for the managerial, life & social sciences (6th Edition) by Harshbarger and Yocco. Access to MyMathLab is also required. Currently Math 1101 is a Day1 course and all needed electronic materials will be available on the first day of class. A code for this support course will be available from the instructor.

CALCULATOR: TI-83, TI-83+, TI-84, or TI-84+ (**REQUIRED Same as Math 1101**)

COURSE DESCRIPTION: Corequisite support to provide essential quantitative skills needed to be successful in Math 1101. (This course will be taught by the same Math 1101 instructor.)

*****NOTE:** Learning outcomes, education outcomes, and course outline are the same as for MATH 1101. MATH 0998 by itself does not cover these topics per se but serves as support for students who are taking MATH 1101.

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

- (1) represent quantitative relationships from a variety of applications, appropriate mathematical models, and use such models to solve real-world problems;
- (2) extract, express, manipulate, and evaluate quantitative information in algebraic, graphical, numeric, and verbal form; and
- (3) use appropriate technology to manipulate and evaluate quantitative information.

VSU GENERAL EDUCATION OUTCOMES:

(Area A2)

Students will demonstrate mathematical proficiency by analyzing a variety of functions and solving various equations.

(Critical Thinking)

Students will identify, evaluate, and apply appropriate models, concepts, or principles to issues, and they will produce viable solutions or make relevant inferences.

COURSE OUTLINE: (Based on 45 sessions, 3 days per week)

Chapter/Section	Topics	Suggested Days
Calculator* arithmetic, 1.1, 1.2, 1.3, 1.4 * Each instructor will prepare a handout for introduction for basic calculator arithmetic (evaluating expressions with a calculator).	Calculator* arithmetic Functions and models Graphs of functions Linear functions Equations of lines	10 - 12
2.1, 2.2, 2.3, 2.4	Algebraic and graphical solution of linear equations Fitting lines to data points System of linear equations in two variables Solutions of linear inequalities	7 - 8
3.1, 3.2, 3.3, 3.4, 3.5	Quadratic functions; parabolas Solving quadratic equations w/ formula & graphing Power and root functions Piece-wise defined functions and absolute value functions Quadratic and power models	6 - 7
4.4	Additional equations and Inequalities	1 - 2
5.1, 5.2, 5.3, 5.4, 5.5, 5.7	Exponential functions Logarithmic functions Exponential and logarithmic equations Exponential and logarithmic models Exponential functions and investing Logistic and Gompertz functions	5-7
6.1, 6.2, 6.3, 6.5 6.6 (using technology)	Higher-degree polynomial functions Modeling with cubic and quartic functions Solutions of polynomial equations Rational functions and rational equations Polynomial and rational inequalities	4 – 5