MAT 152 College Algebra D.I.G.

Course Outline:

Unit 1 – Chapters 1, 2, & 4
Weeks 1-5 (Course Content Items 1, 5, & 6 Learning Outcomes 1, 2, & 3)

- Functions and Models
- Graph Functions
- Linear Functions
- Equations of Lines
- Algebraic vs. Graphical Solutions
- Modeling Linear Functions
- System of Linear Equations
- Linear Inequalities
- Composition Functions
- Inverse Functions

Unit 2 – Chapter 3
Weeks 6-8 (Course Content Items 2 & 6 Learning Outcomes 1, 2, & 3)

- Quadratic Functions
- Solving Quadratic Equations
- Piecewise Functions
- Power Functions
- Modeling Quadratic Functions
- Modeling Power Functions

Unit 3 – Chapters 5 & 6
Weeks 9-13 (Course Content Items 3, 4, & 6 Learning Outcomes 1,2, & 3)

- Exponential Functions
- Logarithmic Functions
- Modeling Exponential Functions
- Modeling Logarithmic Functions
- Higher-Degree Polynomial Functions
- Cubic Functions
- Quartic Functions
- Modeling Cubic Functions
- Modeling Quartic Fuctions
- Rational Functions

Unit 4 – Chapters 7 & 8
Weeks 14-17 (Course Content Items 5 & 6 Learning Outcomes 1, 4, & 5)

- Systems of Linear Equations in Three Variables
- Matrix Solutions of Systems of Linear Equations
- Matrix Operations
- Inverse Matrices
- Matrix Equations
- Systems of Nonlinear Equations
- Systems of Inequalities
- Linear Programming
- Sequences
- Series

Final Project Weeks 18-19
Final Exam Week 19

Course Description:

This course uses applications as a major focus of the concepts that will be learned. I will try and provide you with other related issues that use the concepts taught as well. Group activities and presentations will be used frequently to help you and the rest of the class get a hands-on learning approach to the material. Some of the topics that will be covered are: Linear Modeling and Functions, Composition of Functions, Quadratic Functions and Models, Systems of Linear Functions, Matrices and Applications, Exponential and Logarithmic Modeling and Application, and Systems of Linear Inequalities and Linear Programming, and Applications in Statistics.

Course Content:

1. Linear Functions
2. Quadratic and other nonlinear functions
3. Exponential and logarithmic functions
4. Polynomial functions
5. Systems of equations and matrices
6. Technology in mathematics

Learning Outcomes:

1. Use technology to recognize trends in data. (1,2,3,4,6) (QL1-4)
2. Create suitable functions that model data using technology. (1,2,3,4,6) (QL 1-3)
3. Analyze an application using a function developed from data. (1,2,3,4,6) (QL 1-4)
4. Add, subtract and multiply matrices in the context of an application. (5,6) (QL 1,2,4)
5. Solve a system of equations using matrices and technology. (5,6) (QL 1,2)