

SYLLABUS MAT 190

INSTRUCTOR: John P. Kane
QUARTER BEGINNING: 07/01/08
FINAL EXAM: 09/09/08
LAST DAY FOR 100% REFUND: 07/03/08
WITHDRAWAL WITH "WP" OR "WF" DATE: TBP
CREDIT HOURS: 5 hours

QUARTER: SUMMER 2008
LAST REGULAR CLASS: 09/04/08
HOLIDAYS: None
WITHDRAWAL WITH "W" DATE: TBP
CRN: 10077

CLASS MEETING DAYS AND TIMES: Tuesdays and Thursdays, 6:00 – 8:05 PM, see attached meeting schedule.

OFFICE HOURS: By appointment (O) 770-794-5723, (H) 770-345-9724, (e-mail) jkane@marietta.edu

PREREQUISITES: MAT 099, MAT 152 or placement by diagnostic testing.

COURSE DESCRIPTION: This course is designed as an alternative to college algebra for those students who will not take pre-calculus, or calculus. It is an applications-driven course that introduces functions using real-world phenomena as models. The major topics include: fundamental concepts of algebra; linear, quadratic, polynomial, exponential, and logarithmic functions and models of real-world phenomena; systems of equation, and additional topics in algebra.

TEXTBOOK: Instead of using a standard college textbook, this course will be taught from a series of handouts prepared by Professor Barbara Thompson of the Mathematics Department. These handouts consist of 20 days of instruction notes. Handouts will be distributed in four-day increments (e. g., Day 1 through Day 4) throughout the quarter. Students are encouraged to purchase a three ring binder to organize these handouts. Students are also encouraged to purchase a supply of graph paper to use throughout the quarter.

COURSE OBJECTIVES: After successful completion of MAT 190, the student should be able to do the following:

- A. Demonstrate the concept of sets and set notation.
- B. Find complements, unions, and intersections of sets.
- C. Compute the value of expressions using the laws of exponents.
- D. Simplify radicals and use them in arithmetic operations.
- E. Perform arithmetic operations on polynomials.
- F. Identify all factors of algebraic expressions.
- G. Perform arithmetic operations on rational expressions.
- H. Graph first- and second-degree equations.
- I. Define and graph functions.
- J. Find sum, difference, product, and quotient of functions.
- K. Find the composition of two functions.
- L. Find and/or graph the inverse of a function.
- M. Solve linear equations.
- N. Solve rational equations with ratio and proportion when applicable.
- O. Solve linear inequalities.
- P. Construct linear models that describe real-world phenomena.
- Q. Solve and analyze linear models.
- R. Solve quadratic equations.
- S. Construct quadratic models that describe real-world phenomena.
- T. Solve and analyze quadratic models.
- U. Construct polynomial models that describe real-world phenomena.
- V. Solve and analyze polynomial models.
- W. Construct exponential models that describe real-world phenomena.
- X. Solve and analyze exponential models.
- Y. Construct logarithmic models that describe real-world phenomena.

- Z. Solve and analyze logarithmic models.
- AA. Solve systems of linear equations with two unknowns.
- BB. Solve application problems involving linear systems.
- CC. Solve systems of linear equations with matrices.
- DD. Solve simple linear programming problems.
- EE. Recognize and interpret piecewise-defined models of real-world phenomena.

PLAGIARISM: Plagiarism is the misrepresentation of another's work as your own and will not be tolerated. Cheating of any kind will result in the student's dismissal with a grade of F for the course.

SCHEDULE OF TESTS AND ASSIGNMENTS: See attached schedule.

EVALUATION PROCEDURES: Grading will be based on quizzes, tests, class participation, completion of homework assignments and the final exam. Weighting of these components is:

Quizzes	10%
Homework	10%
3 Tests	60%
<u>Final</u>	<u>20%</u>
Total	100%

COURSE GRADE: The student will receive one of the following grades:

- A – Excellent (90 - 100)
- B – Good (80 - 89)
- C – Satisfactory (70 - 79)
- D – Poor (60 - 69)
- F – Failing (0 - 59)

ATTENDANCE: Attendance is mandatory. Students are expected to be in class on time. Students are aware of all requirements for the course from the first day of class, therefore, it is expected that all requirements for the course will be met in a timely manner. Students will not be given extra time or instruction for assignments missed due to habitual absences.

STOPPED ATTENDING POLICY:

The definition of "stopped attending" for this class is a student who has missed three consecutive class sessions.

It is the student's responsibility to contact the instructor if he/she is to be absent from the class or has missed class. It is the instructor's decision as to whether to allow the student to return to class or to submit the student as "stopped attending" if the student misses the above defined number of classes.

If the student has not notified the instructor prior to the third consecutive absence, then the student will be automatically reported as "stopped attending".

Students submitted as "stopped attending" are not eligible to be reinstated in the course; they will receive a grade of F for this course, unless the student withdraws from the course using the appropriate withdrawal procedure.

OFFENSIVE STATEMENTS: Offensive statements regarding one's race, sex, creed, national origin, physical disability or mental disability are not appropriate and will not be tolerated. These statements may be considered a violation of the standards of conduct as stated in the current catalog.

WORK ETHICS: A work ethics grade of 0, 1, 2 or 3 will be assigned to students in all courses. The work ethics grade will be displayed on the student's official transcript but will not affect the student's grade point average. The work ethics grade is designed to evaluate and encourage good work ethics.

WARRANTY: Any graduate of Chattahoochee Technical College who is deficient in a competency identified in the state program standard shall be retrained at the request of the employer at no cost to the

employer or employee for tuition or instructional fees. This warranty is valid for two (2) consecutive years following the student's date of graduation.

CALCULATORS: A graphing calculator will be required for this course. Although any brand of calculator may be used, the Texas Instruments TI-83 or TI-84 is strongly recommended since many of the handouts contain operations performed by the TI-83/TI-84. Student who use a calculator other the TI-83 or TI-84 will be responsible for learning how to use those calculators and whether they contain all of the features needed for this course.

AMERICANS WITH DISABILITY ACT (ADA) STATEMENT: An individual with a disability who may require assistance or accommodation in order to participate in or receive the benefit of a service, program or activity, or who desires more information may contact Ms. Mary Frances Bernard at 770-528-4529.

CLASSROOM DECORUM:

FOOD/DRINK: Eating and drinking are not permitted in any of the classrooms or computer rooms. Students who bring food or drink to class will be asked to leave.

TELEPHONE/PAGERS: Students are asked to turn off the sound to their telephones or pagers. Students who do not adhere to these requirements will be asked to leave.

PROMPT EXIT OF CLASS: When the class has been dismissed, students are asked to gather their personal materials and exit the room promptly.

MAT 190 (CRN 10077) Class Meeting Schedule

Class	Week	Day	Day	Date	Class Assignment	Homework Assignment
1		Tue		7/1	Orientation Solving linear equations Rectangular Coordinate System Introduction to Relations and Functions Independent and dependent variables Vertical line test Define domain and range Function Notation	None
2		Thurs		7/3	Introduction to Relations and Functions (Continued) Algebra of Functions: Find sum, difference, product, and quotient of functions Composite Functions Introduction to the TI-83/84 Graphing Calculator Order of operations (review)	Per Day 1 Handout
3		Tue		7/8	Introduction to Graphing Calculator (Continued) Polynomial Functions and Their Graphs <ul style="list-style-type: none"> ▪ Form & Special Types <ul style="list-style-type: none"> • Linear • Quadratic • Cubic • Quartic ▪ Domain ▪ Range ▪ Intercepts ▪ Zero ▪ Vertex & Extreme Values ▪ Relative/Local and Absolute Min. and Max. ▪ Concavity/Direction ▪ Recognizing 	Per Day 2 Handout
4		Thurs		7/10	Quiz 1 (Day 01 - 03) Systems of Linear Equations in Two Unknowns <ul style="list-style-type: none"> ▪ 3 possible cases ▪ Graphical Method of Solving Systems Matrices and Their Applications <ul style="list-style-type: none"> ▪ Properties and Operations ▪ Solution of Systems of Linear Equations by the Matrix Inverse Method 	Per Day 3 Handout
5		Tue		7/15	Application Problems Involving Linear Systems Characteristics of Graphs of Linear Functions <ul style="list-style-type: none"> ▪ Slope; ▪ X and Y-intercepts; ▪ Slope-Intercept form of a line; ▪ Comprehensive Graph; ▪ Graphing 	Per Day 4 Handout
6		Thurs		7/17	Test 1 (Days 01 - 05)	Per Day 5 Handout

Working with Data

- Initializing data
- Changing units of measurement
- Calendar data

7	Tue	7/22	Plotting Data Points <ul style="list-style-type: none">• Lists• Scatter Plot Polynomial Modeling <ul style="list-style-type: none">• Forms• Review• Matching type of function to scatter plot Modeling <ul style="list-style-type: none">• What• Why• How Linear Modeling	Per Day 6 Handout
8	Thurs	7/24	Modeling <ul style="list-style-type: none">• Good and bad model• Errors• Graphical• Analytical Polynomial Modeling <ul style="list-style-type: none">• Curve Fitting: Linear, Quadratic, Cubic, and Quartic Models• Determining Error• Using Models	Per Day 7 Handout
9	Tue	7/29	Quiz 2 (Days 06 - 08) Polynomial Modeling <ul style="list-style-type: none">• Determining the regression equation• Using regression equation to model situations	Per Day 8 Handout
10	Thurs	7/31	Operations with Polynomials <ul style="list-style-type: none">• Addition, Subtraction, Multiplication• Special Products• Product of the Sum and Difference of Two Terms• Square of a Binomial Factoring Solving Quadratic Equations in One Unknown <ul style="list-style-type: none">• Zero Product Property Method	Per Day 9 Handout
11	Tue	8/5	Quiz 3 (Days 09 - 10) Radicals <ul style="list-style-type: none">▪ Simplify square roots of any real number.▪ Simplify radicals and use them in arithmetic operations. Solving Quadratic Equations in One Unknown <ul style="list-style-type: none">▪ Quadratic Formula: by hand▪ Quadratic Formula: using the program	Per Day 10 Handout
12	Thurs	8/7	Piecewise Defined Functions and Models	Per Day 11 Handout

- 13 **Tue 8/12 Test 2 (Days 06 - 12)**
 Integral and Rational Exponents
 ▪ Definition
 ▪ Laws
 The number e
 Per Day 12 Handout
- 14 **Thurs 8/14 Exponential Functions and Their Graphs**
 ▪ Definition of an Exponential Function
 ▪ Domain and Range
 ▪ Graph of exponential functions
 Exponential Models
 Applications
 Per Day 13 Handout
- 15 **Tue 8/19 Logarithmic Functions and Their Graphs**
 ▪ Definition of a Logarithmic Function
 ▪ Domain and Range
 ▪ Common logarithm
 ▪ Natural logarithm
 ▪ Properties of Logarithms
 ▪ Graph logarithmic functions
 Logarithmic Models
 Per Day 14 Handout
- 16 **Thurs 8/21 Quiz 4 (Days 13 – 15)**
 Solving Exponential and Logarithmic Equations
 Applications
 Per Day 15 Handout
- 17 **Tue 8/26 Operations with Rational Expressions**
 Review of ratio and proportion.
 Solve rational equations using proportion approach.
 Per Day 16 Handout
- 18 **Thurs 8/28 Test 3 (Days 13 – 17)**
 Sets and Set Operations:
 ▪ Demonstrate the concept of sets and set notation
 ▪ Find complements, unions, and intersections of sets.
 Per Day 17 Handout
- 19 **Tue 9/2 Linear Inequalities in Two Variables**
 Systems of Linear Inequalities
 Linear Programming
 Per Day 18 Handout
- 20 **Thurs 9/4 Linear Programming**
Review for Final Exam
- 21 **Tue 9/9 Final Exam**
- Thurs 9/11 Final grades due to the Registrar's Office.**