

MONTGOMERY COLLEGE
Business, Science, Mathematics and Technology Division
Germantown Campus
Spring 2009

MA103 Intermediate Algebra
CRN: 33140
Credits: 3
Course ID: smith59031

Instructor: Darren Smith
Office: HT228
Phone: 240-567-1914 office
E-mail: darren.smith@montgomerycollege.edu
Office Hours: After 9:00AM M-Th or by appointment

Prerequisites: The prerequisite for MA103 is grade of C or better in MA091, MA091A, or MA091D; or appropriate score on the mathematics assessment test; or consent of department. Assessment level: RD 120

Course Description: An examination of algebraic skills and concepts intended to prepare students for MA 130, MA 160, MA 180. Algebraic, graphical, numerical, and verbal approaches are used in working with a variety of functions and their applications, including linear, polynomial, exponential, logarithmic, rational, and rational functions. Solve systems of equations.

Text information:

The optional text is the 4th **edition** of *Beginning & Intermediate Algebra* by K. Elayn Martin-Gay for MA 103. This text is also used in MA 091 and MA 103. Some of you may already have the 3rd edition. If you do, don't buy the new edition. A notebook for taking notes and keeping printouts is a great investment for the course, it will be your frame of reference when it's time to study for an exam. It will also assist in identifying areas where you have questions or need help. The homework assignments use the required software package MyMathLab, which can be found at www.coursecompass.com. The software access code can be purchased online or at one of the campus bookstores. Use of a graphing calculator will be required. You will also use www.montgomerycollege.edu/algebra2 for video learning (click on a topic).

Homework Assignments:

Students must use the computerized software, MyMathLab, to complete their homework assignments. There are no due dates on these assignments, as you can work at your own pace – but you must be finished with the class on or before May 15, 2009, and that includes taking the final exam. I will provide target dates for you just so you can pace yourself.

Audit Policy:

A student who has registered for AUDIT in this class is just like the student who registered for credit. He or she **MUST** take the quizzes, attend classes and turn in completed homework on time. The only difference between an AUDIT student and a CREDIT student in this class is what grade appears (or does not appear) on the transcript. There is no other way for either one of us to assess if you are acquiring the knowledge.

Grading:

Your grade will be based on your performance on homework assignments (worth up to 70 in total), five exams (worth up to 500 points in total), and a final exam (worth up to 130 points in total). Exams are to be taken at a Campus Assessment Center. You may take a retake any of the five regular exams for grades less than a 70%, between 5/1/2009 and 5/15/2009. Retakes will be taken at the Germantown Assessment Center – 240-567-7739.

Your grade will be calculated in the two ways listed. The highest percentage of the two will be used as your overall course grade.

- 1) The average from the mandatory final alone.
- 2) Your grade will be based on a **maximum of 700 points**. Grades will be assigned as follows:

Point Total	Grade
630-700 points	A
560-629.9 points	B
490-559.9 points	C
420-489.9 points	D
Less than 420 points	F

Withdrawal from Class:

The last day to drop the class with a refund is February 1. The last day to change to audit is February 15. The last day to drop the class without a grade is February 15. The last day to drop the class with a grade is April 19. I will NOT drop you for lack of effort...but you need to master this material to move on to MA110 or MA116.

Cancellation of Classes:

If something forces the College to suspend classes or close, public service announcements will be provided to local radio and television stations as early as possible. If you haven't heard anything you can find out more information by calling 240-567-5000 or by going on the web to <http://www.montgomerycollege.edu>.

Support Services:

There is a Math & Accounting Learning Center located in HT229 where tutoring and support materials are available. The hours for the fall 2008 semester were 8:30am – 9:00pm M – F and 8:30am – 5:00pm on Saturdays. Hours for the spring 2009 have not been established as of yet, but changes are more likely to occur on Friday night and Saturday. The telephone number is 240-567-1947. Tutoring and support are also available at Rockville and Takoma Park/Silver Spring campus.

Policy on Academic Integrity: See the Student Code of Conduct – “Academic Dishonesty and Misconduct”. (Student Handbook)

The maintenance of the highest standards of intellectual honesty is the concern of every student and faculty member at Montgomery College. The College is committed to imposing appropriate sanctions for breaches of academic honesty. Academic dishonesty or misconduct can occur in many ways. The following are a few examples: plagiarism, cheating on examinations, copying a friend's homework assignment. This IS dishonest and a form of cheating, even if you worked on the assignment together! Working together IS okay; **producing identical homework assignments is NOT okay!**

Disability Support Services:

Any student needing an accommodation due to a disability should make an appointment to see me during my office hours. A letter from Disability Support Services (DSS) authorizing your accommodations will be needed. The DSS office is located in SA201 and may be called on 240-567-7783. DSS can also assist with making this publication is available in alternative formats upon request (i.e. Braille). A 24-hour TTY phone is available at 240/567-2133. The campus's main switchboard also can receive TTY calls at 240/567-7000.

TOPIC	OBJECTIVE <i>Upon completion of this course, a student will be able:</i>
The Function Concept	<ul style="list-style-type: none"> A. Identify relations. B. Define function. <ul style="list-style-type: none"> 1. Use & interpret algebraic, verbal, numeric and graphic definitions 2. Determine whether a relation is a function numerically, graphically or algebraically C. Identify the domain and range of a function <ul style="list-style-type: none"> 1. Describe domain and range using interval notation 2. Describe domain & range using inequality symbols D. Apply and interpret function notation to include <ul style="list-style-type: none"> 1. Evaluation of functions, $f(a)$; 2. Solving $f(x) = b$ for x; and 3. Finding and interpreting x- & y-intercepts E. Find <ul style="list-style-type: none"> 1. The inverse of a function defined by a table or a graph 2. The inverse of linear & exponential formulas
Linear Functions and Equations	<ul style="list-style-type: none"> A. Solve linear systems <ul style="list-style-type: none"> 1. By using a graphing calculator 2. Algebraically by the substitution & elimination methods B. Determine if a linear system has one solution, no solution, or infinitely many solutions C. Interpret the slope as a rate of change D. Determine if a function could be linear given an equation, graph or a table of ordered pairs E. Write the equation of a line parallel or perpendicular to a given line through a given point F. Interpret the slope & intercepts in the context of applications G. Construct linear models H. Make conclusions and predictions based on a linear model
Quadratic Functions and Equations	<ul style="list-style-type: none"> A. Factor quadratics that are <ul style="list-style-type: none"> 1. The difference of squares 2. Perfect square trinomials 3. Trinomials of the form $x^2 + bx + c$ 4. Trinomials of the form $ax^2 + bx + c$, $a \neq 1$ 5. The sum or difference of two cubes B. Solve quadratic equations by <ul style="list-style-type: none"> 1. Using the zero-product rule & factoring 2. The Quadratic Formula 3. Completing the square 4. Using a graphing calculator C. Analyze the graphs of a quadratic function to include <ul style="list-style-type: none"> 1. Finding the vertex of a parabola using completing the square & $x = \frac{-b}{2a}$ 2. Finding & identifying the intercepts D. Interpret intercepts & the vertex for quadratic models in context E. Define complex numbers <ul style="list-style-type: none"> 1. Identify real, rational, irrational, & complex numbers 2. Simplify radicals leading to complex numbers

	F. Find & interpret algebraic & graphical solutions of systems of functions.
Rational Functions and Equations	<p>A. Find least common denominators and reduce, multiply, divide, add, & subtract algebraic fractions with binomial and trinomial denominators</p> <p>B. Simplify complex fractions</p> <p>C. Identify the domain of a rational function</p> <p>D. Solve equations containing rational functions with denominators that are binomials or easily factorable quadratic trinomials & identify extraneous solutions if they exist</p>
Exponential and Logarithmic Functions and Equations	<p>A. Simplify and evaluate expressions containing rational exponents</p> <ol style="list-style-type: none"> 1. Interpret rational exponents as roots 2. Convert between exponential and radical forms <p>B. Recognize functions of the form $f(x) = Ab^x$</p> <ol style="list-style-type: none"> 1. Determine if a function could be exponential given an equation, graph or a table of values 2. Graph for $b > 1$, and for $0 < b < 1$ 3. Find the equation if given two points 4. Evaluate $f(a)$ <p>C. Use and interpret the number e</p> <ol style="list-style-type: none"> 1. Recognize functions of the form $f(x) = Ae^{kx}$ 2. Evaluate $f(a)$ on the calculator <p>D. Define logarithms</p> <ol style="list-style-type: none"> 1. Use base b and base e 2. Convert between exponential and logarithmic equations 3. Solve exponential equations using logarithms 4. Solve growth and decay problems
Radical Functions and Equations	<p>A. Simplify radicals</p> <p>B. Add, subtract, and multiply numerical radical expressions</p> <p>C. Rationalize denominators</p> <p>D. Find the domain of a radical function</p> <p>E. Solve radical equations containing one or two radicals</p> <p>F. Identify extraneous solutions if they exist</p>

Course Schedule:

Text/Software	Target Dates	Topic(s)
		Introduction to the class, software, etc.
Chapter 3 Sections 4, 5 & 6		Introduction to Functions & Polynomial Graphing
Chapter 4 Sections 1, 2, 3, & 5		Solving Systems of Linear Equations
Chapter 13 Section 3		Solving Nonlinear Systems of Equations
Exam I Chapters 3, 4 & 13	2/16	Homework I due; Exam I; Makeup Available 2/23 – 2/27
Chapter 6 Sections 1, 2, & 6		Factoring Polynomials
Chapter 8 Section 1 - 3		More on Functions & Graphs
Exam II Chapters 6 & 8	3/4	Homework II due; Exam II; Makeup Available 3/9 – 3/13
Chapter 7 Sections 1 - 7		Rational Expressions with Non-monomial Denominators
No Regular Classes	3/16-3/21	Spring Break
Chapter 7 Sections 1 - 7		Rational Expressions with Non-monomial Denominators
Exam III Chapter 7	3/30	Homework III due; Exam III; Makeup Available 4/6 – 4/10
Chapter 10 Sections 1 - 7		Rational Exponents, Radicals & Complex Numbers
Exam IV Chapter 10	4/15	Homework IV due; Exam IV; Makeup Available 4/20 – 4/24
Chapter 11 Sections 1 – 3, 5 & 6		Quadratic Equations & Functions
Chapter 12 Sections 2 – 7		Exponential & Logarithmic Functions
Exam V Chapters 11 & 12	5/6	Homework V due; Exam V; Makeup Available only under special circumstances
Course Material		Review for Final Exam
No Regular Classes	5/11-5/17	Final Exams

The instructor may make amendments to this syllabus.