Massasoit Community College
Preparing for College Math II
MATH002- XX
Spring 2018

INSTRUCTOR:

PHONE: **EMAIL**:

OFFICE: **OFFICE HOURS**:

CLASS TIME & LOCATION:

REQUIRED MATERIALS: Aleks access code
headphones (to be used every day as you work on the computer)
3 ring binder and dividers *or* notebook
Pencil or pen
Scientific calculator   *If you need to buy one, a couple of good (and reasonably priced)*
calculators are CASIO fx-300MS Plus and Texas Instrument TI-30X IIS

COURSE DESCRIPTION:
This is a continuation of MATH001 for students who need to complete additional modules. This is a computer-based learning course designed to provide the fundamental concepts of arithmetic and algebra and examine some application of these concepts, i.e. word problems. Students are required to complete a minimum of 5 modules, but are encouraged to complete as many of the 15 modules as possible. Students who begin at module 12 or higher are required to finish through module 15. The modules cover whole numbers, signed numbers, fractions, decimals, ratios and proportions, percentages, descriptive statistics, algebraic expressions, linear equations and inequalities, graphing lines and inequalities, systems of equations, exponents, polynomials, factoring, rational expressions, quadratic equations, and related applications. Credits earned in this course cannot be applied towards graduation. Prerequisite: C- or higher in Preparation for College Math I (MATH001) or Fundamentals of Math (MATH010) or waiver by placement testing results or departmental approval.

ACCOMODATIONS STATEMENT:
Massasoit's Disability Services office provides accommodations to students who qualify for services based on a documented disability. Students interested in accessing classroom or testing accommodations must contact Disability Services directly. In an effort to avoid any lapse in services, new and returning students are encouraged to contact Disability Services at the beginning of each semester to receive an Accommodation Letter for the current semester. Students on all campuses can contact Disability Services at 508-588-9100 X 2132 or by e-mail at DisabilityServices@massasoit.edu for further information or questions.

TITLE IX STATEMENT:
Massasoit Community College is committed to providing a safe learning and work environment for all. If you believe you have experienced discrimination, sexual harassment, sexual assault, domestic/dating violence, stalking, or retaliation, we encourage you to report it to *Yolanda Dennis, Chief Diversity Officer and Title IX Coordinator, Office of Diversity and Inclusion, at 508-588-9100, x1309 or* ODI@massasoit.edu. While you may talk to a faculty member, understand that as a "responsible employee" of the College, the faculty member must report what you share to the College's Title IX Coordinator. On and off campus resources and interim measures are available to assist you. Information about both of these policies can be found at www.massasoit.edu/title-ix and www.massasoit.edu/eeo. We are here to support you.

ATTENDANCE:
Attendance will be taken each class. Regular class attendance is absolutely essential.
- **You will be allowed to miss the equivalent of one week of class without penalty to your grade**
- **You will be required to make up all other absences as arranged with your instructor. Failure to do so will decrease your semester average by six percentage points for each equivalent of a week that you miss.**

TESTING POLICY:
Academic dishonesty will not be tolerated. Please see the Statement on Academic Honesty for more information on the college's policies on academic integrity:
http://www.massasoit.edu/academics/policies/academic-honesty/index.
- Students are required to justify their answers in the blue book.
- Students should complete the test in one session.
- Students are expected to complete all tests without the use of cell phones, notes, websites, or other external resources.

Any violation of this will lead to a minimum loss of one letter grade from the final course grade. Further violations will result in a grade of F for the course.

GRADING POLICY
You are expected to complete at least FIVE modules in this course. To complete a module, you must:
- master all topics in the module
- pass the test with a grade of 70% or higher.

A course percentage will be calculated where:
1. The average of your test grades (at least 5) will account for 80%
2. Your work on Aleks and your notebook will account for 20%

The final grade you earn in this class is dependent on two factors: the number of modules you successfully complete, and your course percentage, outlined above. Grades will be earned under the following conditions*

Number of Modules Completed	Grade Earned
5 or more	A, B or C range based on your course percentage
4	D range, based on course percentage
3	D range if significant progress is made towards completion of a fourth module and based on your course percentage F if significant progress is not made towards completion of a fourth module and based on your course percentage
less than 3	F

*Successful completion of Module 10 should result in at least a minimum grade of C-

Your semester grade will be based on the following:

	A = 94 – 100%	A- = 90 – 93%
B+ = 87 – 89%	B = 84 – 86%	B- = 80 – 83%
C+ = 77 – 79%	C = 74 – 76%	C- = 70 – 73%
D+ = 67 – 69%	D = 64 – 66%	D- = 60 – 63%
F = below 60%		

ASSIGNMENTS:
Homework assignments will be to continue your work to complete your ALEKS pie in order to meet all deadlines.

TEACHING PROCEDURE:
During each class, students will work on ALEKS at their own pace. I will work individually with students on math skills and study skills. When a student has a question he/she should ask for help. Periodically some students who are approaching a difficult topic may be taken in small groups for a mini-lecture.

RECOMMENDED STUDY APPROACH:
- ❖ Attend all classes on time and work independently on your ALEKS pie. Spend at least 5 hours per week working in ALEKS.
- ❖ Notes should be kept in a <u>notebook</u>.
- ❖ Your <u>notebook</u> can be used for all ALEKS work **with the exception of TESTS.**
- ❖ Do all problems from ALEKS neatly on paper so when you ask for help, the professor can see where you made the error.
- ❖ Check the pacing guide to make sure you are on track (or ahead of schedule).
- ❖ If you are behind schedule or need extra help, work extra time using the computers in the ARC.

Course Outline

This schedule allows you approximately 3 weeks for each unit. Some units take longer than others so you should try to always stay ahead of this schedule so you will not run into problems at the end of the semester.

SUGGESTED DUE DATE	TOPIC	TEST GRADE
February 8	First Test	
March 2	Second Test	
March 29	Third Test	
April 19	Fourth Test	
May 9	Fifth Test	

<u>**Required Course Topics**</u>

<u>**Module 6**</u>
- Evaluating expressions
- Combining like terms
- Distributive property
- Solving proportions
- Additive property of equality
- Multiplicative property of equality
- Identifying solutions to a linear equation
- Solving linear equations

<u>**Module 7**</u>
- Applying the percent equation
- Constructing a bar graph
- Constructing a histogram
- Interpreting a bar graph
- Interpreting a pictograph
- Interpreting a line graph
- Interpreting a circle graph or pie chart
- Mode of a data set
- Median of a data set

- Mean of a data set
- Solving for a variable in terms of other variables
- Writing an expression for a real world situation
- Translating a phrase into a mathematical expression
- Translating a sentence into an equation
- Solving an application problem using linear equations

Module 8
- Translating a sentence into an inequality
- Writing an inequality for a real world situation
- Graphing an inequality on a number line
- Writing an inequality given the graph on a number line
- Set builder and interval notation
- Identifying solutions to a linear inequality
- Additive property of inequality
- Multiplicative property of inequality
- Solving a linear inequality in one variable
- Solving an application problem using linear inequalities

Module 9
- Reading a point in the coordinate plane
- Plotting a point in the coordinate plane
- Making a table of values for a linear equation in two variable
- Identifying solutions to a linear equation in two variables
- Finding solutions to a linear equation in two variables
- Graphing a line given its equation in slope - intercept form
- Graphing a line given its equation in standard form
- Graphing a vertical or horizontal line
- Finding x- and y- intercepts of a line given the graph of a line
- Finding x- and y- intercepts of a line given the equation of a line
- Finding the slope given the graph of a line
- Finding the slope given the equation of a line
- Finding the slope given two points on the line
- Finding the slope of a vertical and horizontal line
- Finding the slope and y-intercept of a line given its equation
- Writing an equation of a line
- Finding slopes of lines parallel and perpendicular to a given line
- Identifying parallel and perpendicular lines from equations
- Writing equations of lines parallel and perpendicular to a given line

Module 10
- Identifying solutions to a system of linear equations
- Solving a system of linear equations graphically
- Solving a system of linear equations using substitution
- Solving a system of linear equations using elimination
- Solving a system of linear equations that is inconsistent or dependent
- Solving an application problem using a system of linear equations
- Graphing a linear inequality in two variables

Modules 6 – 10

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Apply the rules of signed numbers, the order of operations agreement, and the rules for simplifying algebraic expressions in order to have the basic skills necessary for successful completion of the other topics in this course and related topics in other courses.	1. Add, subtract, multiply and divide signed rational numbers. (W,R,CT,QS) 2. Simplify numeric expressions according to the order of operations. (emphasis on integers) (W,R,CT,QS) 3. Evaluate variable expressions. (W,R,CT,QS) 4. Simplify algebraic expressions using the distributive law. (W,R,CT,QS) 5. Combine like terms. (W,R,CT,QS)
Solve first degree equations and inequalities in one variable in order to solve problems that can be modeled by these types of relationships.	1. Determine whether a given number is a solution of an equation/inequality. (W,R,CT,QS) 2. Solve equations/inequalities of the form $ax = b, x + a = b, ax + b = c, ax + b = cx + d.$ (W,R,CT,QS) 3. Solve equations/inequalities containing fractions and parentheses. (W,R,CT,QS) 4. Solve literal equations. (W,R,CT,QS) 5. Solve proportions. (W,R,CT,QS) 6. Translate and solve number problems, percent problems, ratio and proportion problems. (W,R,CT,QS)
Plot points and graph linear equations and inequalities on the Cartesian coordinate system in order to use these skills to solve related problems in this and related courses.	1. Plot points and find the coordinates of a given point. (W,R,CT,QS) 2. Graph an equation/inequality by plotting points, by finding the x-, and y-intercepts, and by using the slope-intercept method. (W,R,CT,QS) 3. Graph an equation/inequality of the form $y = mx + b, Ax + By = C, y = b, x = a.$ (W,R,CT,QS)
Determine an equation of a given line in order to solve application problems in this and related courses.	1. Find the slope of a line given two points or given an equation of the line. (W,R,CT,QS) 2. Write an equation of a line given a point and the slope, two points, or information about parallel and perpendicular lines. (W,R,CT,QS) 3. Determine when two lines are parallel, perpendicular or neither.(W,R,CT,QS)
Solve systems of linear equations in order to solve applications problems in this and related courses.	1. Solve a system of linear equations in two variables by graphing, the substitution method, and the addition method. (W,R,CT,QS) 2. Determine if a system of linear equations is inconsistent or dependent. (CT,QS,W,R) 3. OPTIONAL: Solve a system of linear equations using Cramer's Rule. (W,R,CT,QS) 4. Solve mixture, current, distance, and number word problems. (W,R,CT,QS)
Solve simple descriptive statistics problems in order to analyze and interpret data in real word situations.	1. Read and interpret bar graphs, pie graphs, and line graphs. (W,R,CT,QS) 2. Calculate the mean, the median, and the mode for a given set of data. (W,R,CT,QT)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Reference above

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	

Apply the properties of rational exponents in order to facilitate the use of these properties in further topics and problems in mathematics.	1. Simplify exponential expressions using:
	  a. $b^n \cdot b^m = b^{n+m}$
	  b. $\left(b^n\right)^m = b^{nm}$
	  c. $(ab)^n = a^n b^n$
	  d. $\dfrac{b^n}{b^m} = b^{n-m}$ when $b \neq 0$
	  e. $\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$ when $b \neq 0$
	  f. $b^0 = 1$ when $b \neq 0$
	  g. $b^{-n} = \dfrac{1}{b^n}$ when $b \neq 0$ (CT,QS)
	
	2. Translate between exponential and radical forms using:
	  a. $b^{\frac{1}{n}} = \sqrt[n]{b}$ when n is a positive integer greater than 1
	  b. $b^{\frac{m}{n}} = \sqrt[n]{b^m} = \left(\sqrt[n]{b}\right)^m$ when n is a positive integer greater than 1 and m is any integer. (CT,QS)
	
	3. Scientific Notation (CT, QS)

Perform the operations of addition, subtraction, multiplication, and division on polynomials in order to apply these skills to factoring, solving equations, and problem solving.	1. Find sums and differences of polynomial expressions. (W,R,CT,QS) 2. Multiply polynomial expressions including: monomial by monomial, monomial by polynomial, and polynomial by polynomial. (W,R,CT,QS) 3. Find special products including: square of a binomial and binomial times conjugate. (W,R,CT,QS) 4. Divide a polynomial by a monomial. (W,R,CT,QS) 5. Solve applied problems using operations on polynomials. (W,R,CT,QS)
Solve various types of factoring problems in order to apply these skills to further topics and problems in mathematics.	1. Factor a monomial from a polynomial. (W,R,CT,QS) 2. Factor by grouping. (W,R,CT,QS) 3. Factor a trinomial of the form $x^2 + bx + c$. (W,R,CT,QS) 4. Factor a trinomial of the form $ax^2 + bx + c$. (W,R,CT,QS)

	5. Factor the difference of two perfect squares. (W,R,CT,QS) 6. Factor a perfect square trinomial. (W,R,CT,QS) 7. OPTIONAL: Factor the sum or difference of two cubes. (W,R,CT,QS) 8. Use multiple factoring techniques to factor completely any expression. (W,R,CT,QS) 9. Solve equations by factoring. (W,R,CT,QS) 10. Solve applied problems using factoring. (W,R,CT,QS)
Simplify and perform operations on rational expressions in order to apply these skills to further topics and problems in mathematics.	1. Simplify rational expressions (reduce to lowest terms). (CT,QS,R) 2. Multiply and divide rational expressions. (CT,QS R) 3. Add and subtract rational expressions with like denominators and with unlike denominators. (CT,QS R) 4. Solve rational equations. (CT,QS,R) 5. Simplify complex fractions. (CT,QS,R) 6. Solve applied problems. (CT,QS,R)
Demonstrate the ability to simplify and perform operations with radicals in order to apply these skills to further topics and problems in mathematics.	1. Simplify radical expressions. (CT,QS,R) 2. Add, subtract, and multiply radical expressions. (CT,QS,R) 3. Rationalize denominators (monomial square root denominators and binomial square root denominators). (W,R,CT,QS) 4. Solve radical equations. (W,R,CT,QS) 5. Solve applied problems. (W,R,CT,QS)
Solve quadratic equations in order to apply these skills to further topics and problems in mathematics.	1. Solve by factoring. (CT,QS) 2. Solve by the square root method. (CT,QS) 3. Solve by the quadratic formula. (CT,QS) 4. OPTIONAL: Solve by completing the square. (CT,QS) 5. Solve applied problems. (CT,QS,W,R)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W)