Massasoit Community College

Instructor:
Office:
Email:
Phone:
Office Hours:

Course: Precalculus
Course Number: MATH217-XX
Semester:
Classroom:
Day and Time:

Course Description: This course continues the mathematics preparation for successful completion of calculus. Topics include the operation and use of graphing utilities, the properties and graphs of rational functions, one-to-one and inverse functions, exponential and logarithmic functions, and trigonometric functions. Prerequisite: C- or higher in MATH203 College Algebra; waiver by placement testing results; or departmental approval.

Required Text and Materials:

1. Bittinger, Beecher, Ellenbogen, and Penna, *Precalculus: Graphs and Models, A Right Triangle Approach*, 6th edition, Pearson Education, plus MyMathLab Student Access Kit. ISBN 9780134379968. Note: this textbook comes packaged with MyMathLab, which is a requirement for this course. Homework for this course will be assigned through MyMathLab. If you do not purchase your textbook through the bookstore, please make sure that it comes with a MyMathLab access code.
2. A TI-83/84 graphing calculator is required for this course. All assessments will assume that you have a graphing calculator. A TI-83/84 can be rented through the library for a small fee. You may not use any other technologies, such as cell phones, iPods, tablets, laptops, etc. on in-class assessments. You also may not borrow/share calculators, or borrow mine. Also, any calculator with a computer algebra system, such as a TI-89, TI-89 Titanium, TI-92, TINSpire, or others may NOT be used on in-class assessments!

Course Topics:

- 4.5 Rational Functions
- 4.6 Rational Inequalities
- 5.1 Inverse Functions
- 5.2 Exponential Functions and Graphs
- 5.3 Logarithmic Functions and Graphs
- 5.4 Properties of Logarithmic Functions
- 5.5 Solving Exponential Equations and Logarithmic Equations

- 5.6 Applications and Models: Growth and Decay; Compound Interest
- 6.1 Trigonometric Functions of Acute Angles
- 6.2 Applications of Right Triangles
- 6.3 Trigonometric Functions of Any Angle
- 6.4 Radians, Arc Length, and Angular Speed
- 6.5 Circular Functions: Graphs and Properties
- 6.6 Graphs of Transformed Sine Functions and Cosine Functions
- 7.1 Identities: Pythagorean and Sum and Difference
- 7.2 Identities: Cofunction, Double-Angle, and Half-Angle
- 7.3 Proving Trigonometric Identities
- 7.4 Inverses of the Trigonometric Functions
- 7.5 Solving Trigonometric Identities
- 8.1 The Law of Sines
- 8.2 The Law of Cosines

Teaching Procedures: This course will be taught in a lecture/discussion format with ample opportunity for student questions. Generally, class will begin with a question and answer session on the most recent homework assignment. New material will then be presented in a lecture format and homework be assigned to reinforce the topics covered in class.

Instructional Objectives:

COURSE OUTCOMES	**OUTCOMES ACTIVITIES**
At the end of this course, students will be able to	
Use a graphing utility in order to apply these skills to further topics and problems in mathematics and related courses.	1. Use the graphing function of a graphing utility. (CT,TS) 2. Use the table function of a graphing utility. (CT,TS)
Graph rational functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Graph a rational function. (CT,QS,R,TS) a) Find the domain b) Find horizontal, vertical, and/or slant asymptotes c) Identify any symmetry d) Find x & y intercepts 2. Solve rational inequalities. (CT,QS,R,TS) 3. Evaluate the difference quotient for rational function. CT,QS,R)
Demonstrate knowledge of one-to-one and inverse functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Determine whether a function is one-to-one. (CT,QS,R) 2. Find the inverse of a function algebraically and graphically. (CT,QS,R,TS) 3. Verify that two functions are inverses of each other algebraically and graphically. (CT,QS,TS) 4. Find the domain and range of a function and its inverse. (CT,QS,TS) 5. Sketch the graph of a function and its inverse. (CT,TS)
Demonstrate knowledge of logarithmic and exponential functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Evaluate and graph exponential and logarithmic functions manually and on the calculator. (CT,QS,R,TS) 2. Convert between logarithmic and exponential forms. (CT,QS,R) 3. Use the change-of-base formula to rewrite and evaluate logarithmic functions with different bases. (CT,QS,R,TS) 4. Use properties of logarithms to evaluate, rewrite, expand or condense logarithmic expressions. (CT,QS,R) 5. Solve exponential and logarithmic equations. (CT,QS,R,TS) 6. Solve applied problems using exponential and logarithmic functions. (CT,QS,R,TS,W)
Demonstrate knowledge of the trigonometric functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Convert between degree and radian measure. (CT,QS,R,TS) 2. Evaluate trigonometric functions of any angle. (CT,QS,R,TS)

	3. Determine the domain, range, and period of a trigonometric function. (CT,QS,R) 4. Sketch the graphs of the six trigonometric functions. Such as $y = a \sin(bx + c)$ (CT,QS,R,TS) 5. Determine the period, amplitude, phase shift, and graph of a sinusoidal function. (CT,QS,R) 6. Solve problems/equations using the trigonometric identities, formulas, and properties, including the fundamental identities, even-odd properties, double-angle formulas, and half-angle formulas. (CT,QS,R) 7. Evaluate basic inverse trigonometric functions with and without a calculator. (Ct,QS,R,TS) 8. Graph basic inverse trigonometric functions. (CT,QS,TS) 9. Solve trigonometric equations with and without a calculator. (CT,QS,R,TS) 10. Use trigonometric functions to model and solve applications. (CT,QS,R,TS) 11. Use the Law of Sines and the Law of Cosines. (CT,QS,R,TS)
OPTIONAL: Demonstrate knowledge of polar equations in order to apply these skills to further topics and problems in mathematics and related courses	1. Plot points using polar coordinates. (CT,QS,TS) 2. Convert back and forth between polar and rectangular coordinates. (CT,QS) 3. Graph polar equations by hand and by using a graphing utility. (CT,QS,TS)
To 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).

Basis for Student Grading: Grades for this course will be assigned as follows:

Grade	Average
A	93%-100%
A-	90%-92%
B+	87%-89%
B	83%-86%
B-	80%-82%
C+	77%-79%

Grade	Average
C	73%-76%
C-	70%-72%
D+	67%-69%
D	63%-66%
D-	60%-62%
F	0-59%

The grade you earn is the grade you will receive in this course. Grades are not negotiable. You will not be allowed to make up work, substitute alternative assignments, or submit extra assignments in order to improve your grade during the semester or after the semester ends.

Grades of incomplete are given only in situations when extenuating circumstances prevent a student from taking the final exam or fulfilling a specific requirement in the course. The grade of "I" cannot be used to give students additional time to complete course assignments in order to raise their grade.

Basis for Evaluating Student Performance: The grade for this course will be weighted based on the following categories:

- *Homework (10%)*: Homework will be assigned in MyStatLab at the end of each section. It is due by the next class period, and loses 10% of its available credit each day that it is late.
- *Exams (60%)*: There will be four in-class exams given throughout the semester, approximately every 3 weeks. Exams must be taken during the regular class time and no make-up exams will be given. The lowest exam grade will be dropped. Your exam average will account for 60% of your final grade.
- *Final Exam (30%)*: The course will culminate in a cumulative final exam. It will be worth 30% of your final grade.

There is no extra credit available for this course.

Tentative Test Schedule/Assignment(s) Schedule:

Assignment:	Tentative Date:
Test 1	
Test 2	
Test 3	
Test 4	
Final Exam	

Attendance: Attendance for this course is mandatory. After the third absence, students will lose two points per absence thereafter from their final average. I will take attendance at the beginning of every class, and students not present at that time will be marked absent for the class, even if they show up late. If you must miss a regular class, you are still responsible for the material that was presented in class. The average student needs to attend all class meetings in order to be successful in this course.

Accommodations 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.

Academic Integrity: Academic dishonesty will not be tolerated. Please see the following URL for more information on the college's policies on academic integrity:

http://www.massasoit.edu/academics/policies/academic-honesty/index