

## Massasoit Community College

**Instructor:**

**Office:**

**Email:**

**Phone:**

**Office Hours:**

**Course:** Technical Mathematics I

**Course Number:** MATH125-XX

**Semester:**

**Classroom:**

**Day and Time:**

**Course Description:** This course provides the mathematics skills necessary for success in the technology programs. A review of introductory and intermediate algebra concepts and the geometry of area and volume are included. Other topics include algebraic operations with units, the arithmetic of approximate numbers, interpolation, systems of three or more linear equations, determinants and Cramer's Rule, variation, and trigonometry of the right triangle. Applications drawn from various technical areas are stressed. The hand-held calculator is used throughout. Prerequisite: C- or higher in MATH002 Preparation for College Math II or MATH011 Introductory Algebra; waiver by placement testing results; or departmental approval.

**Required Text and Materials:** Allyn J. Washington, *Basic Technical Mathematics*, 10th edition, Pearson Education. ISBN: 0133083500.

### Course Topics:

Chapter 1: Basic Algebraic Operations

Chapter 2: Geometry

Chapter 3: Functions and Graphs

Chapter 4: The Trigonometric Functions

Chapter 5: Systems of Linear Equations; Determinants

Chapter 6: Factoring and Fractions

Chapter 7: Quadratic Equations

**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:	
Demonstrate an understanding of the fundamental concepts of algebra in order to use them to solve applied problems in this and other courses.	<ol style="list-style-type: none"> <li>1. Add, subtract, multiply, and divide signed numbers (including fractions and decimals) by hand using the order of operation, and by using technology. (CT,QS,TS,R)</li> <li>2. Evaluate roots and radicals by hand and technology. (CT,QS,TS,R)</li> <li>3. Simplify exponential expressions by using rules of exponents. (CT,QS,R)</li> <li>4. Add, subtract, multiply and divide algebraic expressions. (CT,QS,R)</li> <li>5. Solve equations and applied word problems. (CT,QS,TS,R)</li> <li>6. Solve for the indicated literal equation (CT,QS,R)</li> </ol>
Demonstrate an understanding of basic terms, properties, and formulas, of geometry in order to solve application problems that included angles, lines, polygons, circles and solids.	<ol style="list-style-type: none"> <li>1. Determine whether a certain angle is acute, right, obtuse, or straight. (CT,R)</li> <li>2. Determine if a triangle is scalene right, obtuse or straight(CT, R)</li> <li>3. Determine if a triangle is acute, right, or obtuse. (CT,R)</li> <li>4. Determine if a quadrilateral is square, rhombus, trapezoid, or rectangle. (CT,R)</li> <li>5. Solve problems involving similar triangles. (CT,R,QS,TS)</li> <li>6. Solve problems using the Pythagorean Theorem. (CT,R,QS, TS)</li> <li>7. Find the area and perimeter of polygons. (CT,QS,R,TS)</li> <li>8. Identify parts of a circle: chord, arc, segment, sector, radius, diameter, central angle. (CT,R)</li> <li>9. Find the area and the circumference of a circle. (CT,R,QS,TS)</li> </ol>
Demonstrate knowledge of the basic properties or functions and their graphs in order to apply this knowledge to solve applications problems and related graphing problems found in this course and other courses.	<ol style="list-style-type: none"> <li>1. Determine if a relation is a function. (CT,QS,R)</li> <li>2. Find the domain and range of a function. (CT,QS,R)</li> <li>3. Evaluate functions. (CT,QS,TS,R)</li> <li>4. Graph a given function by plotting points and by using a calculator. (CT,QS,TS,R)</li> <li>5. Find the intercepts of a function algebraically and graphing. (CT,QS,TS,R)</li> <li>6. Add, subtract, multiply, and divide functions. (CT,QS,R)</li> </ol>

	<ol style="list-style-type: none"> <li>7. Evaluate the composition of functions. (CT,QS,R)</li> <li>8. Use graphs to identify domain, range, and intercept. (CT,QS,TS,R)</li> <li>9. Determine algebraic models for data by linear and quadratic functions. (CT,QS,TS, )</li> </ol>
Solve problems involving right triangles trigonometry in order to solve related application problems and in order to build the foundation for the study of trigonometry functions and vectors.	<ol style="list-style-type: none"> <li>1. Evaluate trigonometry functions of any acute angle by using technology. (CT,QS,TS,R)</li> <li>2. Evaluate inverse trigonometry functions using technology. (CT,QS,TS,R)</li> <li>3. Solve right triangles. (CT,QS,TS)</li> <li>4. Solve related application problems. (CT,QS,R,TS)</li> </ol>
Solve problems involving lines in order to apply these skills to solve related problems in this course.	<ol style="list-style-type: none"> <li>1. Correctly identify the part of the rectangular coordinate system: axes, quadrants, origin. (CT)</li> <li>2. Plot points whose coordinates are given. (CT,TS)</li> <li>3. Find the slope and intercepts of a line. (CT,QS,R)</li> <li>4. Graph oblique, vertical and horizontal lines. (CT,QS,R)</li> <li>5. Find the equation of a line. (CT,QS)</li> <li>6. Solve problems involving parallel and perpendicular lines. (CT,QS,R)</li> <li>7. Use distance formula. (CT,QS,R)</li> </ol>
Factor polynomials in order to use these skills to solve related problems as they are introduced in this course.	<ol style="list-style-type: none"> <li>1. Factor out GCF. (CT,QS,R)</li> <li>2. Factor by grouping. (CT,QS,R)</li> <li>3. Factor trinomials. (CT,QS,R)</li> <li>4. Factor the three special products. (CT,QS,R)</li> </ol>
Solve problems involving rational expressions in order to use these skills to solve related problems as they occur in this course and other math related courses.	<ol style="list-style-type: none"> <li>1. Add, subtract, multiply, and divide rational expressions. (CT,QS,R)</li> <li>2. Simplify complex fractions. (CT,R,QS)</li> <li>3. Solve equations containing rational expressions. (CT,QS)</li> <li>4. Solve related application problems. (CT,R,TS)</li> </ol>
Solve linear and quadratic equations in order to be able to use these skills to solve related problems in this course and other related courses.	<ol style="list-style-type: none"> <li>1. Solve linear equations. (CT,QS,R)</li> <li>2. Solve quadratic equations by factoring and quadratic formula. (CT,QS,R,TS)</li> <li>3. Solve quadratic equations using a calculator. (CT,QS,TS)</li> <li>4. Solve literal equations. (CT,QS,R)</li> <li>5. Solve related application problems. (CT,QS,R,TS)</li> <li>6. Solve quadratic equations by completing the square. (CT,QS,R,TS)</li> </ol>
Strengthen core competencies** in order to increase success in this and other courses in the workforce.	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:

- *Exams (70%):* 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 70% 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](mailto: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](mailto: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](http://www.massasoit.edu/title-ix) and [www.massasoit.edu/eo](http://www.massasoit.edu/eo). 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>