

# Syllabus: Course Policies and Procedures

## Contact Information

**Instructor:**

**Email:**

**Phone:**

**Office Hours:**

## Course Information

**Course Titles:** College Algebra with Integrated Support and Integrated Support for College Algebra

**Course Numbers:** MATH203S and MATH065

**Semester:**

**Class Meetings:**

**Classroom:**

## Course Descriptions and Prerequisites

- *MATH203S College Algebra with Integrated Support:* This course covers the algebra necessary for successful completion of the Precalculus/Calculus sequence while introducing functions, graphing, and graphing utilities. Topics include the operation and use of graphing utilities, polynomial operations and functions, absolute value equations and functions, radical and rational exponent functions, piecewise functions, composite functions, and complex numbers. Corequisite: MATH065 Integrated Support for College Algebra.
- *MATH065 Integrated Support for College Algebra:* This course is designed to be paired with College Algebra to support underprepared students. Students review the skills necessary for success in College Algebra in an ongoing as-needed just-in-time fashion. Topics may include: operations on natural numbers, integers, rational numbers, and real numbers, ratio, proportions, and percentages, perimeter, area, and volume of geometric figures, solving linear equations, graphing linear equations, polynomial arithmetic, factoring polynomials, radical expressions and equations, rational expressions and equations, and solving quadratic equations. Note: credits earned in this course cannot be applied toward graduation. Corequisite: College Algebra with Integrated Support (MATH203S).

## Required Materials

- For these courses we will use two open source textbooks which are freely available online and may be downloaded and printed as needed:
  - Stitz and Zeager *Precalculus*, 3<sup>rd</sup> Corrected Edition: [e-text](#).
  - Redden *Elementary Algebra*: [e-text](#).
- A Texas Instruments TI-83/84 graphing calculator is required for these courses and can be rented from the college for a small fee.

## Instructional Objectives/Student Learning Outcomes

*MATH203S College Algebra with Integrated Support:*

| COURSE OUTCOMES                                                                                                                                                                                                    | OUTCOMES ACTIVITIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upon successful completion of this course students should:                                                                                                                                                         | To achieve these outcomes students may engage in the following activities:                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Use the built-in graphing capabilities of a graphing calculator in order to graph and analyze functions introduced in this course and in other mathematics and related courses.                                    | <ol style="list-style-type: none"> <li>1. Graph functions. (CT,TS)</li> <li>2. Adjust the graphing window to obtain a complete graph. (TS,CT)</li> <li>3. Use ZOOM and TRACE appropriately. (TS,CT)</li> <li>4. Use TABLE and TBLSET appropriately. (TS,CT)</li> <li>5. Use other features such as 'zero', 'minimum', 'maximum', and 'intersect' appropriately. (TS,CT)</li> <li>6. Use SOLVE appropriately. (TS,CT)</li> </ol>                                                                                                             |
| Perform operations on polynomials in order to have the skills necessary to analyze and solve problems involving polynomials and polynomial functions.                                                              | <ol style="list-style-type: none"> <li>1. Review addition, subtraction, and multiplication of polynomials. (CT,QS)</li> <li>2. Divide polynomials, including polynomial long division. (CT,QS)</li> <li>3. OPTIONAL: Divide polynomials using synthetic division. (CT,QS)</li> <li>4. Solve polynomial equations and inequalities. (CT,QS)</li> <li>5. Convert between interval notation, inequalities, and number line graphs. (CT,QS)</li> <li>6. OPTIONAL: Apply the Remainder Theorem and the Rational Root Theorem. (CT,QS)</li> </ol> |
| Apply formulas from analytic geometry and solve various types of equations in order to use these skills to solve related problems as they are introduced in this course and other mathematics and related courses. | <ol style="list-style-type: none"> <li>1. Solve absolute value equations and inequalities. (CT,QS)</li> <li>2. Solve radical equations and rational exponent equations. (CT,QS)</li> <li>3. Apply the distance formula. (CT,QS)</li> <li>4. Apply the midpoint formula. (CT,QS)</li> </ol>                                                                                                                                                                                                                                                  |
| Solve problems involving circles in order to apply the technique of completing the square and to demonstrate facility in transferring knowledge back and forth between graphical and analytical.                   | <ol style="list-style-type: none"> <li>1. Find an equation of a circle. (CT,QS)</li> <li>2. Graph circles by hand and by using a graphing utility. (CT,QS, TS)</li> <li>3. Find the center and radius of a circle given the equation in standard form. (CT,QS)</li> <li>4. Find the center and radius of a circle given the equation in general form by completing the square. (CT,QS)</li> </ol>                                                                                                                                           |
| Demonstrate knowledge of the basic properties of functions in order to apply this knowledge to analyze and graph different types of functions as                                                                   | <ol style="list-style-type: none"> <li>1. Determine if a relation is a function. (CT,QS)</li> <li>2. Find the domain and range of a function. (CT,QS)</li> </ol>                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| they are introduced in this course and other mathematics and related courses.                                                                                                                                                                                                   | <ol style="list-style-type: none"> <li>Find the intercepts of a function algebraically. (CT, QS)</li> <li>Determine if the graph of a function is symmetric with respect to the y-axis or the origin. (CT, QS)</li> <li>Determine if the graph of an equation is symmetric with respect to the x-axis. (CT, QS)</li> <li>Add, subtract, multiply, and divide functions and determine the domain of the resulting functions. (CT, QS)</li> <li>Evaluate the difference quotient for polynomial and radical functions. (CT, QS)</li> <li>Evaluate the composition of functions. (CT, QS)</li> <li>Use the graph of a function to identify domain and range, intervals of increase and decrease, relative extrema, and intercepts. (CT, QS, TS)</li> </ol>                                                                             |
| Analyze and graph polynomial functions (including linear and quadratic functions), absolute value functions, and radical and rational exponent functions in order to apply and expand upon these skills and knowledge in this course and other mathematics and related courses. | <ol style="list-style-type: none"> <li>Graph and identify the graphs of a basic library of functions including <ol style="list-style-type: none"> <li><math>y = K</math>,</li> <li><math>y = x^n</math>,</li> <li><math>y = \sqrt{x}</math>,</li> <li><math>y =  x </math>,</li> <li><math>y = \lfloor x \rfloor</math></li> <li><math>y = \sqrt{r^2 - x^2}</math>. (CT, QS, TS)</li> </ol> </li> <li>Use vertical and horizontal shifts, vertical and horizontal reflections, and vertical stretching and shrinking to graph functions. (CT, QS)</li> <li>Graph piecewise functions. (CT, QS)</li> <li>Graph and analyze the graphs of polynomial functions, absolute value functions, and radical and rational exponent functions. (CT, QS)</li> <li>Solve applied problems involving quadratic functions. (CT, QS, R)</li> </ol> |
| Solve problems involving complex numbers in order to apply these skills in this course and other mathematics and related courses.                                                                                                                                               | <ol style="list-style-type: none"> <li>Add, subtract, multiply, and divide complex numbers. (CT, QS)</li> <li>Calculate powers of <math>i</math>. (CT, QS)</li> <li>Solve quadratic equations whose solutions are complex numbers. (CT, QS)</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| To strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.                                                                                                                                                                  | Referenced above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

*MATH065 Integrated Support for College Algebra:*

| COURSE OUTCOMES                                                                                                                                                        | OUTCOMES ACTIVITIES                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upon successful completion of this course students should:                                                                                                             | To achieve these outcomes students may engage in the following activities:                                                                                                                                                                                                               |
| Successfully complete MATH203S College Algebra with Integrated Support.                                                                                                | 7. Review prerequisite knowledge in an as needed, just-in-time fashion.                                                                                                                                                                                                                  |
| Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)                                                                 | 7. Interpret the graph of a linear function.<br>8. Solve appropriate real-world application problems.                                                                                                                                                                                    |
| Convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)                                                        | 5. Translate English statements into algebraic expressions and equations.<br>6. Connect the table-of-values, graph, and equation representations of linear equations.<br>7. Model real-world problems using equations and graphs.                                                        |
| Perform arithmetic and algebraic calculations (e.g., adding fractions, factoring quadratic expressions, solving quadratic equations).                                  | 5. Review arithmetic and prealgebra calculations such as adding fractions.<br>6. Review introductory algebra concepts such as solving and graphing linear equations.<br>7. Review intermediate algebra concepts such as factoring quadratic expressions and solving quadratic equations. |
| Make judgements and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis.                            | 10. Solve real world applications problems.                                                                                                                                                                                                                                              |
| Make and evaluate important assumptions in estimation, modeling, and data analysis                                                                                     | 6. Solve real world applications problems.                                                                                                                                                                                                                                               |
| Express quantitative evidence in support of the argument or purpose of work (in terms of what evidence is used and how it is formatted, presented, and contextualized) | 4. Solve real world applications problems.                                                                                                                                                                                                                                               |
| To strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.                                                         | Referenced above                                                                                                                                                                                                                                                                         |

## 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.

## Course Topics, Assignments, and Readings

| Topics                                                        | Reading                              |
|---------------------------------------------------------------|--------------------------------------|
| 1.1 Formulas and Variable Expressions                         | Elementary Algebra 2.1 - 2.2         |
| 1.2 Linear Equations                                          | Elementary Algebra 2.3 - 2.6         |
| 1.3 The Coordinate Plane                                      | Elementary Algebra 3.1 - 3.2         |
| 1.4 Functions                                                 | Precalculus 1.3, 1.4                 |
| 1.5 Linear Functions                                          | Precalculus 2.1                      |
| 1.6 Systems of Linear Equations                               | Elementary Algebra 4.5               |
| 1.7 Linear Inequalities                                       | Elementary Algebra 3.8               |
| Exam 1                                                        |                                      |
| 2.1 Adding and Subtracting Polynomials                        | Elementary Algebra 5.3               |
| 2.2 Monomial Multiplication                                   | Elementary Algebra 5.1               |
| 2.3 Polynomial Multiplication                                 | Elementary Algebra 5.4               |
| 2.4 Factoring Basics                                          | Elementary Algebra 6.1, 6.2, and 6.4 |
| 2.5 Factoring Completely                                      | Elementary Algebra 6.3 and 6.5       |
| 2.6 Quadratic Functions                                       | Precalculus 2.3                      |
| 2.7 The Vertex of a Quadratic Function                        | Precalculus 2.3                      |
| 2.8 Intercepts of Quadratic Functions                         | Elementary Algebra 6.6 and 9.1 - 9.4 |
| Exam 2                                                        |                                      |
| 3.1 Radical Expressions                                       | Elementary Algebra 8.1 - 8.5         |
| 3.2 Complex Numbers                                           | Elementary Algebra 9.6               |
| 3.3 Distance, Midpoint, and Circles                           | Precalculus 1.1.2, 7.2               |
| 3.4 Radical Functions                                         | Precalculus 5.3                      |
| 3.5 Zeros of Radical Functions                                | Elementary Algebra 8.6               |
| 3.6 Absolute Value Functions                                  | Precalculus 2.2                      |
| 3.7 Zeros of Absolute Value Functions                         | Precalculus 2.2                      |
| Exam 3                                                        |                                      |
| 4.1 The Domain of a Function in General                       | Precalculus 1.3, 1.4                 |
| 4.2 Transformations                                           | Precalculus 1.7                      |
| 4.3 Symmetry                                                  | Precalculus 1.6                      |
| 4.4 The Algebra of Functions                                  | Precalculus 1.5, 5.1                 |
| 4.5 Piecewise-Defined Functions                               | Precalculus 1.4                      |
| Exam 4                                                        |                                      |
| 5.1 Polynomial Functions                                      | Precalculus 3.1                      |
| 5.2 Zeros of Polynomial Functions and Polynomial Inequalities | Precalculus 3.3.1                    |
| 5.3 Long Division of Polynomials                              | Elementary Algebra 5.5               |
| 5.4 The Rational Zeros Theorem                                | Precalculus 3.2, 3.3, 3.4            |
| 5.5 Rational Expressions                                      | Elementary Algebra 7.1 - 7.3         |

|                        |                        |
|------------------------|------------------------|
| 5.6 Rational Equations | Elementary Algebra 7.5 |
| Final Exam             |                        |

## Tentative Test Schedule

- Exam 1:
- Exam 2:
- Exam 3:
- Exam 4:
- Final Exam:

## Basis for Student Grading

Grades for these courses will be assigned as follows based on the percentages. You will be assigned the same grade for both courses.

|    |            |
|----|------------|
| A  | 93% - 100% |
| A- | 90% - 92%  |
| B+ | 87% - 89%  |
| B  | 83% - 86%  |
| B- | 80% - 82%  |
| C+ | 77% - 79%  |
| C  | 73% - 76%  |
| C- | 70% - 72%  |

|    |           |
|----|-----------|
| D+ | 67% - 69% |
| D  | 63% - 66% |
| D- | 60% - 62% |
| F  | 0% - 59%  |

## Basis for Evaluating Student Performance

The grade for this course will be determined by the percentage of points earned to total points available, based on the following categories:

- Exams (80%): There will be four in-class exams given during the semester. Each exam will account for 20% of your final grade.
- Final Exam (20%): There will be a cumulative final exam given at the end of the course worth 20% of your final grade.

## Attendance Policy

Attendance for this course is mandatory and students are expected to attend all class meetings.

## Access & Disability Resources

The Office of Access & Disability Resources (ADR) is committed to ensuring that students with disabilities have equal, effective, and meaningful access to all academic programs, community events, goods, and services provided by the College in compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Students with disabilities interested in establishing eligibility for services and/or academic accommodations will need to voluntarily disclose their disability to ADR, submit qualifying documentation and complete an ADR Intake meeting. During the meeting reasonable and

appropriate academic accommodations will be determined. Visit the [Office of Access and Disability Services website](#) for more information and to begin the process to establish eligibility.

ADR uses a platform called Accommodate to manage the accommodation process. To make an initial accommodation request, please [submit a request through Accommodate to ADR](#).

Returning students with accommodations previously approved can request updated Accommodation Letters by accessing the ADR card in the MyMassasoit student portal. Log into Accommodate and click on Semester Request.

Students are expected to check in with faculty regarding approved accommodations. Communication between students, faculty, and ADR is key to successful accommodation implementation.

Students can contact ADR at 508-588-9100 x1807 or by email at [adr@massasoit.mass.edu](mailto:adr@massasoit.mass.edu).