

# Math 116 – College Algebra

## Summer 2016 Course Syllabus

James Jones, Professor of Mathematics  
Mathematics & Sciences Division – Richland Community College

### Course Meeting Information

Section 01 meets from 8:00 am to 9:50 am on Monday, Tuesday, Wednesday, and Thursday in room S137 on Richland's main campus. The Summer 2016 term begins June 6, 2016, and ends July 28, 2016.

This is a face-to-face course, but the Canvas learning management system will be used. There is an online student orientation to Canvas and the College that must be completed prior to obtaining access to your courses in Canvas.

We will not be using MyMathLab with this course.

### Instructor Information

James Jones, Professor of Mathematics

Phone: 217-875-7211, ext 490

Email: [james@richland.edu](mailto:james@richland.edu)

Office: C223

Web: <https://people.richland.edu/james/>

Canvas: <https://richland.instructure.com>

The best way to contact the instructor outside of class is through Canvas or by email. Please do not leave a voice mail as it will not reach the instructor in time to help you.

### Office Hours

Office hours are not required of instructors during the summer term. If you have questions, please make arrangements to see me before class or after 12:00 noon.

### Text

*College Algebra: Graphs and Models, 5<sup>th</sup> edition*. Bittinger, Beecher, Ellenbogen, Penna. Copyright 2013, Pearson Education, Inc. ISBN-13: 978-0-321-78935-0 or ISBN-10: 0-321-78395-6. (Required)

Electronic versions of the textbook are acceptable. We will not be using MyMathLab in this course.

### Student Audience

College Algebra is the first college-level algebra course and serves as a gateway course into many of the science, engineering, technology, and mathematics (STEM) courses. It is also recommended for business, sequestration, network technology, programmer/analyst, chemistry, and computer science courses.

## Prerequisite

The prerequisite for Math 116, College Algebra, is all of the following: 1) Math 098, Intermediate Algebra, with a "C" or better grade, or satisfactory score on the mathematics placement exam, 2) Math 095, Geometry, with a "C" or better grade, or one year of high school geometry, and 3) eligibility for Engl 101, Composition 1.

## Course Description

MATH 116 – College Algebra

Hours: 4 lecture - 0 lab - 4 credit

Math 116, College Algebra, is a concentrated study of the topics traditionally found in College Algebra. The topics include a quick and intense review of the topics from Intermediate Algebra, including algebraic expressions, polynomials, equations, problem solving, complex numbers, and graphing. Major topics include functions, exponential and logarithmic functions, matrices, polynomial equations, inequalities, introduction to analytic geometry, conic sections, systems of equations, mathematical induction, and the binomial expansion theorem. A graphing calculator is required.

Applicable toward graduation where program structure permits.

- Certificate or degree: All certificates, A.A.S., A.L.S., A.A, A.S.
- Group requirement: Mathematics
- Area of Concentration: Not applicable.

## Illinois Articulation Initiative (IAI)

The Illinois Articulation Initiative is a statewide transfer agreement. Their website is at <http://www.itransfer.org>.

The mathematics component of general education focuses on quantitative reasoning to provide a base for developing a quantitatively literate college graduate. Every college graduate should be able to apply simple mathematical methods to the solution of real-world problems. A quantitatively literate college graduate should be able to:

- interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them;
- represent mathematical information symbolically, visually, numerically, and verbally;
- use arithmetic, algebraic, geometric, and statistical methods to solve problems;
- estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results; and
- recognize the limitations of mathematical and statistical models.

Courses accepted in fulfilling the general education mathematics requirement emphasize the

development of the student's capability to do mathematical reasoning and problem solving in settings the college graduate may encounter in the future. General education mathematics courses should not lead simply to an appreciation of the place of mathematics in society, nor should they be merely mechanical or computational in character.

To accomplish this purpose, students should have at least one course at the lower-division level that emphasizes the foundations of quantitative literacy and, preferably, a second course that solidifies and deepens this foundation to enable the student to internalize these habits of thought.

*Math 116, College Algebra, does NOT satisfy the Illinois Articulation Initiative Definition of a General Education Mathematics Course.*

## Illinois Mathematics and Computer Science Articulation Guide

The following statement is a joint statement of the Illinois Mathematics Association of Community Colleges (IMACC) and the Illinois Section of the Mathematics Association of America (ISMAA). It is contained in the [Illinois Mathematics Computer Science Articulation Guide](#) (IMACC, 2016, p. 2)

While College Algebra and Precalculus courses are taught at post-secondary institutions where needed, these courses should not fulfill general education or quantitative literacy requirements. The content and instructional pedagogy applied in these courses should continue to be reviewed with the goal of preparing students to be successful in calculus and other courses that depend on a similar level of knowledge, rigor and maturity. Adjustments to these courses should attempt to build upon appropriate changes in the K–12 curriculum that are a part of state-wide efforts to advance achievement for all students and, in particular, to smooth the transition from school to college.

Departments are advised not to attempt to design and teach college algebra and pre-calculus courses with the dual purpose as preparation for calculus and meeting goals for quantitative literacy and general education requirements. Expectations for mastery of the objectives considered essential preparation for subsequent calculus courses must take priority and time constraints, together with cognitive demands on the student group to be served, suggest such dual purpose courses are not likely to be successful.

## Course Objectives

Upon successful completion of this course, the student should be able to

- use the Rule of Four (verbal, numeric, algebraic, and graphical representations) when required as well as choosing the best method when given a choice;
- demonstrate an understanding of the concepts related to functions and their inverses;
- identify and graph quadratic, polynomial, rational, exponential, and logarithmic functions as well as the conic sections; also, demonstrate knowledge of the properties of these functions and relations and apply this knowledge to real world situations;

- demonstrate proficiency in solving linear and non-linear systems using various algebraic, matrix, and graphical methods
- graphically represent the solutions to inequalities and system of inequalities that involve two variables.
- use appropriate theorems and techniques to locate the roots of second and higher degree polynomial equations.
- use the notation and formulae associated with arithmetic and geometric sequences and series.
- demonstrate knowledge of binomial expansion and Pascal's triangle.
- use technology appropriately in problem solving and in exploring and developing mathematical concepts.

## Topical Outline

This course will cover the topics listed below, which are tied to the textbook. The times spent on each topic are approximate as material may be reordered, intermixed, or repeated.

### Graphs, Functions, and Models – 4 hours

- A review of graphing in the Cartesian coordinate system: points, lines, intercepts, midpoints, distance formula, circles, and parabolas
- Relations vs functions, graphing a function, vertical line test, domain and range, applied problems using functions
- Linear functions, finding and interpreting slope, slope-intercept form of a line, horizontal lines, vertical lines
- Equations of lines, modeling, parallel and perpendicular lines, fitting regression lines and making estimations
- Solving linear equations, applications of linear functions, and finding roots of linear functions
- Solving linear inequalities including compound inequalities

### More on Functions – 6 hours

- Classifying intervals where a function is increasing, decreasing, and constant; finding relative extrema; graphing piecewise functions
- Combining functions using sums, differences, products, and quotients; finding the difference quotient and relating it to slope of the secant line and average rate of change.
- Composition and decomposition of functions, stressing importance in Calculus
- Symmetry with respect to the x-axis, y-axis, and origin; even and odd functions
- Transformations of functions including shifts, stretches, and reflections. Practice quick sketching by transforming the basic functions: constant, linear, quadratic, cubic, square root, cube root, and absolute value

## Quadratic Functions – 5.5 hours

- Complex numbers, their conjugates, and calculations
- Quadratic equations and solving by factoring, extracting roots, completing the square, and using the quadratic formula including hints for when each method is appropriate. Using the discriminant to identify the number and types of solutions. Substitutions to solve quadratic-like equations
- Graphing quadratic functions, finding the vertex and axis of symmetry, placing into standard form by completing the square
- Solving and graphing rational equations, solving radical equations including checking for extraneous solutions
- Solving equations and inequalities with absolute value including the piecewise definition of absolute value

## Polynomials and Rational Functions – 10 hours

- Leading-term test to determine end-point behavior, factoring polynomials to find zeros and multiplicities, graphing to find extrema, and fitting polynomials to data
- Graphing polynomials, maximum number of x-intercepts, maximum number of turns, intermediate value theorem
- Polynomial division, synthetic division, remainder theorem for evaluating a function and determining if the value is a zero
- Fundamental theorem of algebra, complex roots come in pairs for real coefficients, irrational roots come in pairs for rational coefficients, Rational root theorem for integer coefficients, Descartes' Rule of Signs.
- Rational functions: domain, range, asymptotes
- Polynomial and rational inequalities, sign charts, speed charting (sign changes based on multiplicity of factors)

## Exponential and Logarithmic Functions – 8 hours

- Inverse functions, one-to-one functions, horizontal line test, finding inverses, composition of functions with their inverses
- Exponential functions, the number  $e$ , graphs of exponential functions
- Finding common logarithms and natural logarithms with and without a calculator, contrast of logarithmic graphs with exponential graphs, converting between exponential and logarithmic equations, change of base formula
- Properties of logarithms including products, quotients, and powers. Combining multiple logarithms into a single logarithm. Expanding an individual logarithm into sums, products, and differences of multiple logarithms.
- Solving logarithmic and exponential functions

- Applications of exponential and logarithmic functions

## Systems of Equations and Matrices – 13.5 hours

- Solving systems with two variables: substitution, addition/elimination, and graphing. Definitions of consistent, inconsistent, dependent, independent
- Solving systems with three variables by elementary operations and systematic elimination to perform back-substitution
- Matrices and row-equivalent operations, Gaussian elimination and back-substitution with matrices, row-echelon form and reduced row-echelon form, Gauss-Jordan elimination without back-substitution
- Scalar multiplication; matrix addition, subtraction, multiplication, and equality; coefficient matrices and matrix equations
- Identity matrix; inverse of a  $2 \times 2$  matrix, finding inverses using augmented matrix, matrix solutions to a system of equations
- Determinant of a  $2 \times 2$  matrix, minors and cofactors, determinant of a square matrix, Cramer's rule
- Linear inequalities and systems of linear inequalities
- Partial fraction decomposition, basic equation, undetermined coefficients, cover-up method

## Conic Sections – 4 hours

- Parabolas: vertex, focus, axis of symmetry, directrix, standard form, completing the square, eccentricity, graphs, applications
- Circles: center, radius standard form. Ellipses: standard form, major axis, minor axis, vertices, foci, directrix, Pythagorean relationship, eccentricity, graphs, applications
- Hyperbola: standard form, center, transverse axis, conjugate axis, asymptotes, vertices, foci, directrix, Pythagorean relationship, eccentricity, graphs, applications
- Non-linear systems of equations and inequalities. General quadratic equation and identifying shape by inspection: circle, ellipse, hyperbola, parabola, point, no graph, intersecting lines, parallel lines, and line

## Sequences, Series, and Combinatorics – 9 hours

- Sequences, infinite sequences, series,  $n$ -th partial sum, summation notation, recursion
- Arithmetic sequences: common difference, general term, sum of first  $n$  terms
- Geometric sequences and series: common ratio, general term, sum of first  $n$  terms, sum of infinite series
- Mathematical induction
- Counting principle, factorials, permutations, combinations, binomial notation, distinguishable permutations
- Binomial expansion theorem with Pascal's Triangle and with combinations

## Method of Evaluation

Evaluation could include any of the following: problem solving exams, objective exams, essays, research papers, oral presentations, group projects, individual projects, classroom engagement, classroom activities, quizzes, and homework.

### Homework and Exams

The way you get good at something is by practicing it. Homework is normally considered to be the mathematical equivalent of practice. However, while people involved in sports don't question the need for practice if they want to be great, students don't feel the need to be great in math, most just want to get out of the course.

Complicating matters is that student solutions manuals can easily be found on the internet and there are websites that provide worked out solutions to all of the problems in the textbook.

We have a situation the students that need the practice the most are those that are most likely to look for ways to get out of doing it, so it doesn't benefit them. The students who are at the top of their game don't see the need the practice, and feel they are wasting their time when they could be doing something else. This leads to even the best students being tempted to just copy the answers from somewhere. In either case, the instructor has no idea whether the student actually did the work themselves, had someone else do it for them, or just copied the answers from somewhere (students like to pull the "it's so easy I did it in my head" line when explaining why there is no work shown). There are some students who would benefit from homework, but for the majority of the students, homework as we traditionally know it is of little use.

*There is no required homework in this course.*

Instructors have long realized the diminishing role of homework, but continue to assign it because students need the practice and there's not an easy alternative. Some have moved from using homework as practice to do well on the exams to using homework as a buffer against poor exam scores.

The major problem there is that it is all about the exam. End-of-unit exams encourage poor study habits in students. Students put off learning the material until right before the exam and then they promptly forget the material after taking the exam. This is not an effective way of learning material and is not conducive for long term comprehension and understanding.

Remember that College Algebra is a skills course. Most of you will be taking another course that needs the material in the course and so we expect that you will take the concepts with you when you leave, not that you forgot them once the exam was over.

Also consider that more and more students are becoming test adverse. They know the material, they can demonstrate it in class, but for some reason freeze when you put an exam in front of them.

*There will be no traditional end-of-chapter exams in this course.*

There will be a comprehensive final, but there will be no traditional, sit down in the classroom, stress over a test, end of chapter exams. There may be take home exams that hit some of the more challenging problems, but most of the assessment will be done through short quizzes every day or two rather than a major exam every two weeks.

## Mastery of Learning Outcomes

Since traditional exams and homework are out, what does that leave us with? The primary method of assessment will be by demonstrating mastery of learning outcomes.

There will be a list of learning outcomes for the course that will align with the goals for the course and major concepts from the textbook. Most class periods will contain some combination of activities, assignments, or short quizzes that will be aligned to specific outcomes and be used to measure your mastery of those outcomes.

Outcomes will be assessed multiple times throughout the course and you may see outcomes revisited at a later point (not just immediately following the coverage of the material).

You may choose to take additional assessments if you wish to raise your grade. To retake an assessment, you will need to explain and show what you have done to learn the material better. This may include doing homework from the book, watching videos online, taking notes, etc.

## Assessment of Outcomes

Each learning outcome will be diagnosed at one of three levels.

- **Exceeds Expectations: (5 points)** To earn this level of mastery, the student needs to demonstrate a deeper level of understanding of the concept by correctly working more challenging problems. Work is organized and can be followed. Students at this level are expected to do more than just come up with the correct answer, but be able to explain what they are doing.
- **Meets Expectations: (3 points)** The student can consistently obtain the correct answer using the indicated or appropriate approach but fails to demonstrate a deeper understanding. The mechanics of how to work the problem may be there, but the understanding of the mathematics is missing. Work may be missing or difficult to read and follow. There may be some gaps in understanding, but the basic level is there.
- **Does Not Meet Expectations: (0 points)** The student does not demonstrate a mastery of the outcome. Obtaining the correct answer is not sufficient to guarantee that you've met expectations. For example, if the instructions are to find the roots of a polynomial algebraically and the student uses the graphing calculator to graph and find them, then they have failed to meet the expectations of the outcome.

Remember that each item may include more than one outcome and you may show mastery of one outcome while failing to meet expectations on another outcome.

Showing mastery is about examining the path you took on your journey and not just the fact that you arrived at the destination.

### Repeated Mastery

The purpose of College Algebra is primarily to develop the skills needed to be successful in future courses and is not generally considered a terminal math course. This means that you need to be retain what you have learned, not just demonstrate that you knew it at one point. What often happens in a traditional course is that students cram for an exam and then promptly forget the material once they have left the exam. This is not a good way of learning material.

*To demonstrate mastery of any outcome, you must meet expectations at least twice.*

In this course, successful mastery of any outcome will require meeting or exceeding expectations on that outcome at least twice. The final score for each outcome will be the average score for that outcome from all of the related assessments where you have at least met expectations.

Example Outcome: Calculator Usage.

Let's say the outcome is to demonstrate the ability to use the graphing calculator. Throughout the course, there were six items (assignments or quizzes) used to measure this outcome: basic, lists, tables, roots, graph 1, and graph 2. For each item, the student gets either 0 (does not meet expectations), 3 (meets expectations), or 5 (exceeds expectation) points.

Here are some scenarios to show how scores will be calculated.

| Item   | basic | lists | tables | roots | graph1 | graph2 | average |
|--------|-------|-------|--------|-------|--------|--------|---------|
| Abby   | 5     | 0     | 0      | 3     | 5      | 3      | 4.00    |
| Betty  | 3     | 3     | 5      | 3     | –      | 3      | 3.60    |
| Cassie | 0     | –     | 3      | 0     | –      | –      | 0.00    |

The – indicates the student did not complete that assessment item. Since only scores that show mastery (3 or higher) are included in the final scoring, missing an assessment and obtaining a 0 on it are the functionally equivalent.

Since Cassie did not meet mastery twice, she obtained a 0 for the graphing calculator outcome.

*Once you've shown mastery, you can skip future quiz questions aligned to that outcome.*

If you have shown mastery for all of the outcomes aligned with a quiz question, you don't have to answer that question. If you do answer the question, you will not lose your mastery as the only grades that are used for scoring are those where you've at least met the expectations. If you do

choose to complete the quiz and you have some exceeded expectations, then you may end up lowering your score, but hopefully the more times you see something, the better you'll do on them and this won't happen.

### Retake an Outcome Assessment

You can request a redo on an assessment of an outcome. It's not the entire quiz that you're redoing, it's specific outcomes.

There are some things that you will need to do before you can have a reassessment, however. You must demonstrate to the instructor that you have done something to help learn the material. This could be showing the instructor the homework you've done, the notes from videos you've watched, etc. It should be substantial enough to warrant a redo. A cursory attempt will not be sufficient to get you an additional attempt.

The instructor must be notified ahead of time so that he can prepare a new attempt. Additional attempts must be completed outside of the normal class time or while the rest of the class is completing a quiz if you have finished yours and have remaining time.

Absolutely no late work or make up will be allowed after the final exam.

## Grading Policy

Letter grades will be assigned to final adjusted scores as follows:

A: 90–100%      B: 80–89%      C: 70–79%      D: 60–69%      F: below 60%

Normal rounding will occur, so a 79.5% will round up to 80% and be considered a "B".

The overall score will be a weighted average of the following areas.

- 40% comes from mastery of learning outcomes as measured through quizzes and assignments
- 30% comes from application projects and take home exams
- 20% comes from a comprehensive final exam
- 10% comes from graphical explorations

### Holistic Grading Rubric

Grades in a math course are typically assigned based on the percentage of the questions that you answer correctly. This works fairly well for objective exams where each question is assigned a point value and you are awarded points based on how well you answer each question. It does not work quite as well on subjective material worth a few points.

The instructor has tried rubrics where points are assigned for each little item. Students like it because they know exactly what needs to be done, but there's little lee-way or discretion on the instructor's part to reward excellent work. Students end up with low scores for leaving out part of

the assignment that happened to be on the rubric, but don't benefit when they do something that was left off the rubric. Rubrics are typically set up so that you can get a maximum of 100% and you lose points for every little thing you do wrong, rather than rewarding you for doing things well. Canvas doesn't allow you to automatically deduct points for being late, so if you want to grade on timeliness, you need to have a rubric category for that, which reduces the points that you can give for the quality of the assignment.

To help counter some of the problems, the instructor has come up with a holistic rubric that looks at the complete product rather than assigning points for each individual question within it. Doing exceptionally well in one area may make up for doing poorly in another. If you do an exceptional job, then you can actually score some bonus points.

The holistic rubric will be used on the graphical explorations, the application projects, and the take home exams.

| Rating  | Score | Description                                       |
|---------|-------|---|
| Awesome | 105%  | Exceptional job that really impresses the teacher |
| Good    | 90%   | Beyond what was required                          |
| Okay    | 75%   | Satisfactory completion of requirements           |
| Fair    | 60%   | Almost there, but needs some development          |
| Poor    | 45%   | Minimal attempt                                   |
| None    | 0%    | Did not participate                               |

There are just six levels and you are guaranteed a minimum of 45% if you turn even the slightest attempt at answering the problems. However, to get an A, you will need to consistently do good and occasionally do awesome.

## Mastery of Learning Outcomes – 40%

See the section on [Mastery of Learning Outcomes](#) in the Method of Evaluation section for more information.

The primary method of measuring learning outcomes will be through short quizzes that will occur a few times a week. In general, you should expect one every day, but there will be times when one is not given. When the student is finished with the quiz, they will bring their quiz to a station where there will be an answer key available. The student should look through the answer key and feel free to use one of the available pens, which are in a different color, to make notes or corrections on their quiz to help them learn and understand the material and what they missed. Quizzes will not be gone through in class.

*Quizzes cannot be made up if you are absent.*

Because the answers will be available as soon as the quiz is over, quizzes cannot be made up if you are absent when it is given. That sounds overly harsh until you realize that any score that you get on the quiz itself is irrelevant. Each question on the quiz will be aligned to one or more learning outcomes and it's the mastery level demonstrated on each of the outcomes that will be recorded in the grade book.

Each outcome will have multiple items that assess it, so if you miss something one time, you have opportunities to demonstrate mastery at other times. Although you cannot make up a missed quiz, you can ask for a redo on specific outcomes (this way you don't have to work problems that you've already mastered).

Canvas has a Learning Mastery Gradebook that you can use to track your progress. At this point, there are some issues with it and you might want to track your work on a separate sheet that the instructor will provide. Also, the results from the learning mastery gradebook do not integrate into the regular gradebook, so the instructor will need to manually update the gradebook to reflect the actual score. You should consider the results of the Learning Mastery Gradebook advisory rather than final.

### Application Projects and Take Home Exams – 30%

There will be some projects or take home exams during this course. They will typically involve applications of the material we're learning, although some of the take home exams may involve problems that are just too long to be done during a short quiz.

The application projects and take home exams will be graded holistically using the awesome, good, okay, fair, poor, or none scale.

Most of the projects will be available for at least a weekend and a class period. For example, given on Wednesday and due on Monday or given on Thursday and due on Tuesday.

You are encouraged to help each other out, but not to do the work for them. These problems are individual assignments unless otherwise noted.

These assessments may be accepted late, provided that the instructor has not passed back the other students' projects or take home exams and the answers are available. That may happen as soon as the next class period, so if you are late, try really hard to have it ready to turn in before the next class starts. Also realize that being late will probably affect the overall impression of the product (a good project that is turned in late will likely become an okay project).

Absolutely no late work or make up will be accepted after the final exam.

### Comprehensive Final Exam – 20%

There will be a comprehensive final exam focusing on the major concepts of the course. A study guide will be made available to the students prior to the exam.

The final exam will be graded objectively based on the percentage of questions answered correctly.

The final exam occurs on the last day of class.

## Graphical Explorations – 10%

Being able to use technology appropriately is important in this class. These graphical explorations are a series of documents that will have you using graphing technology to answer questions or emphasize important concepts from the course.

In some cases, they may be as simple as creating graphs and pasting them into a document. In other cases, you will need to come up with your own graphs and explanations.

The graphical explorations will be graded holistically using the awesome, good, okay, fair, poor, or none scale.

## Gradebook

All grades will be entered into and maintained within the Canvas learning management system.

When you look at your grades in Canvas, there may be a + or - after the letter grade (example, B+ or C-). The plus or minus after the letter grade is informational and intended to be used as an encouragement or a warning that you might be able to move up or that you are in danger of slipping down. However, the final grades in the course will not contain a + or a -, just the letter grade, and an 80.1% is as much of a B as an 88.7% is.

Canvas has a What-If feature that allows you to play around with your grades. If you are concerned about your grades, see the instructor.

## Grade Changes

Scoring is subject to revision if mistakes are found in the grading. Your grade may increase or decrease when this happens. For this reason, you should strive to do better than the minimum needed.

It is anticipated that there will be some issues with the Learning Mastery Gradebook in Canvas as it grades things weirdly. For example, encountered a case where a student had mastered a grade twice for 3 points each and Canvas showed their average as being 6.25 out of 3.

The potential for some extra credit is already built into the system as the holistic approach used for the graphical explorations, application projects, and take home exams has an *Awesome* category that awards 105% of the possible points.

Do not expect that there will be other extra credit opportunities. If you desire a good grade, then you need to stay focused and perform consistently throughout the semester.

## Attendance Policy

If you miss the first day of class or any two consecutive days after that without communicating with the instructor, you may be dropped.

Regular attendance is essential for satisfactory completion of this course. Mathematics is a cumulative subject and each day builds on the previous day's material. If you have excessive absences, you cannot develop to your fullest potential in the course.

Students who, because of excessive absences, cannot complete the course successfully, are required to be administratively dropped from the class at midterm. If a student stops attending after midterm, it is the student's responsibility to withdraw to avoid an "F". Do not stop attending and assume that you will be withdrawn from the class by the instructor.

Although dropping students for non-attendance at midterm is required, students who have missed many classes or whose attendance is occasional or sporadic may be dropped from the class at any point during the semester at the instructor's discretion. The safest way to make sure you're not dropped for non-attendance is to continue to attend classes.

The student is responsible for all assignments, changes in assignments, or other verbal information given in the class, whether in attendance or not.

If a student must miss class, send an email or Canvas message to the instructor. Please do not call and leave a voice message unless you are unable to send an electronic message, and then follow up with an electronic message when you are able or talk to the instructor during the next class session. When a test is going to be missed, the student should contact the instructor ahead of time if at all possible. Under certain circumstances, arrangements can be made to take the test before the scheduled time. If circumstances arise where arrangements cannot be made ahead of time, the instructor should be notified and a brief explanation of why given by either voice or email. This notification must occur before the next class period begins.

## Technology

The use of technology in this course is consistent with the Technology Statement in the [Illinois Mathematics & Computer Science Articulation Guide](#) (IMACC, 2013, p. 4). Technology is used to enhance the learning of College Algebra, but it is not the focus of the instruction. There will be instances when we will use the calculator or computer to aid in our understanding or remove some of the tediousness of the calculations (especially in the area of numerical approximations).

Here are some of the technology tools that we may use.

### Graphing Calculator

This class is a mathematics class and a graphing calculator is required. A scientific calculator is not sufficient. The calculator should be capable of graphing functions, finding roots, maximums, and

minimums from a graph, displaying tables of values, and finding the definite integral numerically. A Texas Instruments TI-84 or TI-83 is the recommended calculator. That said, a TI-92, TI-89, or TI Nspire CAS calculator is recommended for this course if you plan on taking additional calculus or engineering courses.

Calculators may be used to do homework and may be used on exams and/or quizzes in class unless otherwise announced.

## Maxima

Maxima is an open-source computer algebra system that is free for you to download and use at home. It is available from <http://maxima.sourceforge.net/>

## WinPlot

WinPlot is a free graphing software package for Windows written by the late Rick Parris at Phillips Exeter Academy in Exeter, New Hampshire. The software is useful for creating graphs and it is easy to copy/paste the graphs into other applications. You may download the software by right-clicking your mouse on the word "WinPlot" at the top of the page <http://math.exeter.edu/rparris/winplot.html> and choosing save.

## Additional Supplies

The student should bring a pencil, paper, and calculator to class each day. You may occasionally want a ruler or graph paper. There will be a paper punch and stapler in the classroom.

## Additional Help

The student is encouraged to seek additional help when the material is not comprehended. Mathematics is a cumulative subject; therefore, getting behind is a very difficult situation for the student. There are several places where you can seek additional help in your classes.

You may use a recording device to record the lectures. Feel free to use a camera or cell phone to take pictures of the boards if you have trouble getting all of the information into your notes.

## Instructor

I try to make myself as available to the students as I can. My office hours are listed at the beginning of this syllabus, but those are just the times I'm scheduled to be in my office. Grab me and ask me questions if you see me in the hallway. Ask questions before or after class. If I'm in my office and it's not my scheduled office hours, go ahead and stop in.

The instructor should be considered the authoritative source for material related to this class. If a tutor or other student says something that disagrees with the instructor, believe the instructor.

## Study Groups

Probably the best thing you can do for outside help is to form a study group with other students in your class. Work with those students and hold them accountable. You will understand things much better if you explain it to someone else and study groups will also keep you focused, involved, and current in the course.

## Mathematics Enrichment Center

The Mathematics Enrichment Center, located in W117, provides free walk-in tutoring for mathematics courses. There are additional locations available at the Clinton and Fairview extension centers.

## Academic Success Center

The Academic Success Center consolidates several student services into one area. It is located in the south wing of the first floor next to the Kitty Lindsay Learning Resources Center (library).

## Testing

The testing center is located in room S116. You must provide a photo identification and know the name of your instructor to use this service.

## Tutoring

The tutoring center provides tutoring on a walk-in or appointment basis in room S118. Students seeking mathematics tutoring should visit the Mathematics Enrichment Center.

## Accommodations

There are accommodations available for students who need extended time on tests, note takers, readers, adaptive computer equipment, braille, enlarged print, accessible seating, sign language interpreters, books on tape, taped classroom lectures, writers, or tutoring. If you need one of these services, then you should see Learning Accommodation Services in room C148. If you request an accommodation, you will be required to provide documentation that you need that accommodation.

## Online Learning

Despite the title, Online Learning provides help with much more than just your online courses. They provide technical support for students including answering questions about Canvas, myRichland, e-mail, cell phones, tablets, and laptops. They can also help troubleshoot your computer issues and make sure your computer is ready for course work.

They are located in room W143, but the best way to contact them is through the "Help" link in the upper-right corner of Canvas or at <http://www.richland.edu/online/helpdesk>.

## Open Computer Labs

Students often wish to know where, besides the classroom, they can go to use the software. There are computers located in the Learning Resources Center and in the Academic Success Center that you may use.

## College & Division Policies

### Academic Dishonesty Policy

Each student is expected to be honest in his/her class work or in the submission of information to the College. Richland regards dishonesty in classroom and laboratories, on assignments and examinations, and the submission of false and misleading information to the College as a serious offense.

A student who cheats, plagiarizes, or furnishes false, misleading information to the College is subject to disciplinary action up to and including failure of a class or suspension/expulsion from the College.

### Non-Discrimination Policy

Richland Community College policy prohibits discrimination on the basis of race, color, religion, sex, marital or parental status, national origin or ancestry, age, mental or physical disability (except where it is a bonafide occupational qualification), sexual orientation, military status, status as a disabled or Vietnam-era veteran.

### Electronic Communication Devices Policy

The Mathematics and Sciences Division prohibits the use of cell phones, pagers, and other non-learning electronic communication equipment within the classroom. All equipment must be turned off to avoid disturbances to the learning environment. If a student uses these devices during an examination, quiz, or any graded activity, the instructor reserves the right to issue no credit for these assignments. The instructor needs to approve any exceptions to this policy.

## Other College Services

There are some additional services that Richland provides to its students. While they may not directly pertain to this class, you may benefit from them.

### Learning Feedback System

At the end of each semester, students are invited to provide feedback to their instructors about the

course. This includes things that went well and opportunities for improvement. This online feedback is anonymous and the instructor won't see it until grades have been turned in.

The Learning Feedback System (LFS) is primarily intended to provide feedback to the instructor. However, if you have a issues or concerns, you should not wait until the end of the semester to talk to your instructor. Please come to me at any time. The feedback system is available at <https://people.richland.edu/feedback>.

## myRichland

myRichland is the student information system portal and is located at <https://my.richland.edu>.

You may use it to find the course schedule, register for classes, check your grades, obtain unofficial transcripts, review financial aid, and other student services.

## Library

The Learning Resources Center (LRC) has print and electronic resources available. They offer research assistance and information literacy sessions; they also have individual and group study areas.

## Student Success Center

Temporarily located in the Workforce Development Institute (WDI) building, the Student Success Center is designed to be a one-stop shop for most student services. These include advising and registration, career services, counseling services, financial aid, veteran affairs, student records, and the transfer center.

There are a few other student services that are still in the main building. These include Campus Life, which supports new student orientation, clubs, organizations, and student leadership, and the TRiO program that offers academic and personal support to first-generation, low-income, and students with disabilities.

## Directory of Student Services

The main phone number for Richland Community College is 217-875-7211. This is an automated system available 24 hours a day. If you would like to speak to an operator, then call 217-875-7200 during normal business hours.

| Student Service                       | Location | Extension |
|---------------------------------------|----------|-----------|
| Accommodations                        | C148     | 379       |
| Advising and Registration             | WDI      | 267       |
| Campus Life                           | C131     | 243       |
| Career Services                       | WDI      | 305, 243  |
| Counseling Services                   | WDI      | 252       |
| Financial Aid and Veteran Affairs     | WDI      | 274       |
| Library                               | C152     | 303       |
| Online Learning Support               | W143     | 376       |
| Mathematics Enrichment Center         | W117     | 383       |
| Student Employment                    | WDI      | 205       |
| Student Records                       | WDI      | 257       |
| Student Support Services/TRiO Program | C143     | 440       |
| Testing                               | S116     | 238       |
| Transfer Center                       | WDI      | 222       |
| Tutoring                              | S118     | 419       |
| Veteran Services                      | WDI      | 307, 205  |

## Richland Cross-Disciplinary Outcomes

The course objectives listed in this document make reference to these items.

1. The degree-seeking student will be able to communicate effectively (read, write, speak and listen).
2. The degree-seeking student will think critically and creatively.
3. The degree-seeking student will act professionally and responsibly.
4. The degree-seeking student will manage technology and evaluate information in various research and applied contexts.