COURSE INFORMATION

COURSE NUMBER: MATH 1314

COURSE TITLE: College Algebra

CREDIT HOURS: 3 **LECTURE HOURS:** 3 **LAB HOURS:** 1

ASSESSMENTS: Prior to enrolling in this course, the student must meet TSI college-readiness standard for Mathematics or equivalent.

PREREQUISITE: TSI placement or equivalent.

COREQUISITE: None

COURSE DESCRIPTION: In-depth study and applications of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included. Lab required. Note: Students may take either MATH 1314 or MATH 1414 but not both.

COLLEGE REPEAT POLICY: A student may repeat this course only once after receiving a grade, including "W".

STUDENT LEARNING OUTCOMES:
Upon completion of this course the students should be able to do the following:

1. Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses. (Critical Thinking and Communication Skills)
2. Recognize and apply polynomial, rational, radical, exponential and logarithmic functions and solve related equations. (Empirical/Quantitative, Critical Thinking and Communication Skills)
3. Apply graphing techniques.
4. Evaluate all roots of higher degree polynomial and rational functions. (Empirical/Quantitative)
5. Recognize, solve and apply systems of linear equations using matrices. (Empirical/Quantitative, Critical Thinking and Communication Skills)

WITHDRAWAL POLICY: See the current *Collin Registration Guide* for last day to withdraw.

COLLIN COLLEGE ACADEMIC POLICIES: See the current *Collin Student Handbook.*

AMERICANS WITH DISABILITIES ACT STATEMENT: It is the policy of Collin County Community College to provide reasonable and appropriate accommodations for individuals with documented disabilities. This College will adhere to all applicable federal and state laws, regulations and guidelines with respect to providing reasonable accommodations as

required to afford equal educational opportunity. It is the student's responsibility to contact the ACCESS Office, SCC-D140 or 972.881.5898, (V/TDD 972.881.5950) in a timely manner to arrange for appropriate accommodations.

INSTRUCTOR INFORMATION

Instructor's Name: Dr. Collins
Office Number: J 157 @ PRC
Office Hours: Monday, Wednesday, Friday 08:00 AM - 09:00 AM
Tuesday / Thursday 11:30 AM – 01:00 PM
Phone Number: (972)-377-1034
Email: rlcollins@collin.edu
Website: http://iws.collin.edu/rlcollins/

Always include your name and course number when writing e-mails. Please allow 24 hours for the instructor's response.

You must use your CougarMail when emailing your instructor. Emails from different accounts may not be answered.

Please check your CourgarMail daily.

CLASS INFORMATION:

Section Number: P01
Meeting Times: MWF 9:00am – 9:50pm
Meeting Location: PRC LH237
Netiquette Expectations: All students will be expected to check e-mail correspondence prior to each class meeting.

IMPORTANT DATES TO UNDERSTAND:

Census Date (**February 01, 2016**) - If you drop before the census date, you **will not** receive a "W". The course will not appear on your transcript.

Last Withdrawal Date (**March 18, 2016**) - If you drop after the Census Date but before the **Last Withdrawal Date**, you **will** receive a "W".
After the **Last Withdrawal Date**, you **CANNOT** drop the class. You will receive the grade you earn in the class (A,B,C,D,or F).

TEXTBOOK: The College Algebra textbook is *College Algebra* 1e Custom Edition by Julie Miller from McGraw-Hill. The course management system for McGraw-Hill is Connect Math hosted by ALEKS, www.connectmath.com. You must purchase an access code for online assignments. The Connect Math course ID will be given out during the first class meeting.

SUPPLIES: A graphing calculator is required and the TI Nspire, TI Nspire CX, TI 83, TI 83 Plus, TI 84, or TI 84 Plus is preferred. Calculators with a computer algebra system

(CAS) will **not** be **permitted**. Students will be expected to bring textbook, calculator, pencil and paper to class and take notes accordingly. Connect Math hosted by ALEKS is required.

COLLEGE RESOURCES: All students are expected to study daily for this course. The material you learn in one class period will be used in the next. If you find that you need extra help:

- Come by my office during office hours with your questions and I will help you. If your schedule will not allow you to come during office hours, email me and we can schedule an appointment.

- Take advantage of the Math Lab. This is a free tutoring center for Collin math students. There are math labs on all three campuses.

Math Lab Locations:

Preston Ridge Campus	**Math Lab F148**	**972-377-1639**
Spring Creek Campus	**Math Lab D203**	**972-881-5921**
Central Park Campus	**Math Lab C220**	**972-548-6896**

- Fill out a tutor request form at the ACCESS office in F118 (PRC). All students are eligible for free group tutoring through ACCESS.
- Form a study group with classmates.

ATTENDANCE POLICY: Attendance is expected. Students are responsible for all material and assignments for a missed class. BE PRESENT on the class days that TEST/EXAMS are given. **There will be no Make-Up Tests unless the missed test is due to an extreme situation that is documented.** If a student is unable to attend, it is his/her responsibility to contact the professor to obtain assignments. You are expected to come to class prepared with your book, calculator, and completed homework assignments. If you arrive to class late, please be discreet. **Note: disruptive behavior, including repeated late arrive to class, can result in disciplinary action through the Dean of Students office.**

RELIGIOUS HOLY DAYS: In accordance with section 51.911 of the Texas Education Code, the college will allow a student who is absent from class for the observance of a religious holy day to take an examination or complete an assignment scheduled for that day within a reasonable time. A copy of the state rules and procedures regarding holy days and the form for notification of absence from each class under this provision are available from the Admissions and Records Office. Please refer to the current *Collin Student Handbook*.

COURSE REQUIREMENTS: Students are expected to attend class as scheduled and complete the required labs, homework, tests, final examination, and any other assignments required by the instructor. Participation in classroom discussions is strongly encouraged. Be engaged, ask questions and be courteous to your classmates. Be prepared for class each day by reading ahead the sections to be covered that day.

METHOD OF EVALUATION:

Tests are worth 55% of the final grade (4 per term).
Online Homework are worth 10% of the final grade
Labs are worth 10% of the final grade (5 labs per term).
In-class quizzes, activities, and participation are worth 10% of the final grade.
Final Exam is worth 15% of the final grade. A comprehensive final exam is REQUIRED for all students at the end of the course **(NO EXCEPTIONS).**

A = 89.5 – 100
B = 79.5 – 89.4
C = 69.5 – 79.4
D = 59.5 – 69.4
F = Below 59.5

GRADING POLICIES:

Tests: All tests are closed book, no notes. **Make-up tests will not be given unless the missed test is due to an extreme situation that is documented.** The grade on the final exam may be used to replace one (1) major test grade if the student has taken all tests. All examinations will be given as outlined in the tentative calendar. **If you arrive late to the test and another student has already turned in their test you will not be given a test. A student must wait 24 hours from receiving test scores to discuss any issues the student has with his/her grade.** See the Testing Guidelines for information on how to complete tests.

Labs: There are 5 written lab quizzes required for this class. Each will be posted on Blackboard. Four of the labs are based on course content. **You are required to show your work on the lab sheet to receive full credit for these labs.** Late labs will not be taken. See the Lab Guidelines for information on how to complete the labs. The 5th lab will be due after your first test. It is a post-test analysis lab.

In-Class Quizzes: Periodic in-class quizzes are given during the semester. There are no make-up quizzes. All quizzes are closed book, no notes. Quizzes will normally be administered at the beginning of class, so arriving late will affect your ability to take the quiz and/or finish. Quizzes may or may not be announced ahead of time.

Homework: Homework is very important and is absolutely necessary for the successful completion of this course. Homework is automatically assigned after the corresponding section is covered in class. The student is expected to complete the work before the next class. **All homework is to be done using Connected Math.** Students can rework all homework problems multiple times to receive a better homework grade. **All home must be completed by 11:59 pm on the day they are due.** Due dates are listed in ConnectMath. You will not be turning in the handwritten work.

TESTING GUIDELINES: The expectation for Tests are as follows:

- You must place all bags/notebooks/etc along the wall in the front of the room. This includes the cover to your calculator.
- You must turn off your cell phone and put it away**. If you are seen with your cell phone out your test will be collected and you will not be able to finish it at another time.**
- You cannot leave the room until you have turned in your test. Go to the restroom before the exam.
- All hats must be worn backwards.
- No drinks/food allowed on your desk.
- If you arrive to take the test after a classmate has turned in their test you will not be allowed to take your test. Arrive to class on time.
- Any talking during the test is not allowed.

LAB GUIDELINES: The expectation for Lab Quizzes are as follows:

The instructor reserves the right not to accept or deduct points (up to 10 points) from assignments that do not follow these guidelines.

1. Write **first and last name** and **section number** **on the front of the lab sheet**.
2. Use **pencil** on all papers.
3. All work must be completed on the lab sheet. Notebook paper will not be taken.
4. **Circle** answers for clarity, **Show all your Work** and that work must support the answer.
5. An **illegible answer** is a **wrong** answer.
6. If making graphs you must use graph paper.
6. All sheet must be stapled together.

ACADEMIC ETHICS: Every member of the Collin College community is expected to maintain the highest standards of academic integrity. Collin College may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission of one's own work material that is not one's own. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, use of information about exams posted on the Internet or electronic medium, and/or falsifying academic records. While specific examples are listed below, this is not an exhaustive list and scholastic dishonesty may encompass other conduct, including any conduct through electronic or computerized means:

Plagiarism is the use of an author's words or ideas as if they were one's own without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation.

Cheating is the willful giving or receiving of information in an unauthorized manner during an examination; collaborating with another student during an examination without authority; using, buying, selling, soliciting, stealing, or otherwise obtaining course assignments and/or examination questions in advance, copying computer or Internet files, using someone else's work for assignments as if it were one's own; or any other dishonest means of attempting to

fulfill the requirements of a course.

Collusion is intentionally or unintentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, failing to secure academic work; providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate about an examination or any other course assignment; removing tests or answer sheets from a test site, and allowing a classmate to copy answers. **See the current Collin Student Handbook for additional information.**

Contact the Dean of Students at 972.881.5771 for the student disciplinary process and procedures or consult the *Collin Student Handbook*.

STUDENT RESPONSIBILITIES:

- Participation in class discussions is strongly encouraged. Be engaged and ask questions to ensure understanding of the material.
- Be courteous to your fellow classmates.
- Attend class and be aware of announcements made in class or via email.
- Inform instructor of late arrival at the conclusion of class and be sure it is noted.
- Understand the syllabus, especially attendance, grading, test, and cell phone policies.
- Take care of personal needs before or after class.

TECHNOLOGY USE IN THE CLASSROOM:

The use of a cell phone, Bluetooth, and/or laptop is **PROHIBITED** during class. Cell phones must be turned off or put on silent (not vibrate) during class. If your cell phone continually rings during class, it will be considered disruptive behavior resulting in disciplinary action through the Dean of Students office. Other electronic devices are prohibited without prior approval of the instructor.

Course Calendar: **Tentative Course Calendar/Spring 2016 Schedule:**

Week	Date	Math 1314 (Algebra) Spring 2016 Schedule
1	January 20 & 22	Introductions PASS TEST 2.3 Functions and Relations
2	January 25, 27, & 29	2.3 Functions and Relations 1.6 More Equations and Applications (Radical Equations) 2.6 Transformations of Graphs
3	February 1, 3, & 5	2.7 Analyzing Graphs of Functions and Piecewise-Defined Functions 2.8 Algebra of Functions and Function Composition
4	February 8, 10, 12	**Test 1 – Monday, February 8, 9:00 AM – 9:50 AM** **LAB 1 – Wednesday, February 10, 9:00 AM** 3.1 Quadratic Functions and Applications
5	February 15, 17, & 19	3.2 Introduction to Polynomial Functions 3.3 Division of Polynomials and the Remainder and Factor Theorem
6	February 22, 24, & 26	3.3 Division of Polynomials and the Remainder and Factor Theorem 3.4 Zeros of Polynomials 3.5 Rational Functions
7	February 29, March 2 & 4	3.5 Rational Functions Review for Test 2 **Test 2 –Friday, March 4, 09:00AM – 09:50 AM** **LAB 2 – Friday, March 4, 09:00 AM**
	March 7 - 10	**Spring Break – no classes**
8	March 14, 16, & 18	4.1 Inverse Functions 4.2 Exponential Functions

9	March 21 & 23	4.3 Logarithmic Functions 4.4 Properties of Logarithm **No Class on March 25th – Spring Holiday Campus Closed**
10	March 28 & 30, April 1	4.4 Properties of Logarithm 4.5 Exponential and Logarithmic Functions
11	April 4, 6, & 8	4.5 Exponential and Logarithmic Functions 4.6 Modeling with Exponential and Logarithmic Functions Review for Test 3
12	April 11, 13, & 15	**Test 3 – Monday, April 11, 09:00 AM – 09:0 AM** **LAB 3 – Wednesday, April 13th, 09:00 AM** 6.1 Solving Systems of Linear Equations Using Matrices
13	April 18, 20, & 22	6.2 Inconsistent Systems and Dependent Systems 8.1 Sequences and Series 8.2 Arithmetic Sequences and Series
14	April 25, 27, & 29	8.3 Geometric Sequences and Series Review for Test 4 **Test 4 – Friday, April 29, 09:00 AM – 09:50 AM** **(LAB 4 Due)**
15	May 2, 4, & 6	**LAB 4 – Monday, May 2, 09:00 AM** FINAL EXAM Review
16		**FINAL EXAM –Friday, May 13, 09:00 AM – 11:00 AM**

Note: The instructor reserves the right to make changes to this syllabus during the semester. Changes will be provided in writing during class hours.

Homework due dates listed in ConnectMath.

COURSE CONTENT: Proofs and derivations will be assigned at the discretion of the instructor. The student will be responsible for knowing all definition and statements of theorems for each section outlined in the following modules.

Module 1

The student will be able to:

1. Evaluate functions including the Difference Quotient and Piecewise-Defined Functions.
2. Determine the domain and range of functions.
3. Determine intervals over which functions are increasing, decreasing, or constant.
4. Find relative maxima or minima of functions from graphs.
5. Determine if functions are even, odd or neither from equations and graphs.
6. Graph common functions including linear, quadratic, cubic, square root, cube root, reciprocal, absolute value, and piecewise-defined functions.
7. Interpret transformations on common functions including shifts, reflections, stretches and shrinks (compressions).
8. Form the Sum, Difference, Product, Quotient, and Composition of functions.
9. Use the Horizontal Line Test to test for one-to-one functions.
10. Verify or find inverses of functions algebraically and graphically.

Module 2

The student will be able to:

11. Sketch quadratic functions.
12. Solve application problems using parabolas and solve related equations.
13. Identify zeros of polynomials and their multiplicity.
14. Sketch graphs of polynomial functions.
15. Use synthetic division to find zeros and factors of polynomial functions.
16. Evaluate polynomial functions for given values using the Remainder Theorem.
17. Find complex zeros of polynomial functions.
18. Apply the Rational Zero Theorem.
19. Know that complex zeros occur in conjugate pairs.
20. Know the implications of the Fundamental Theorem of Algebra.
21. Know the implications of the Linear Factorization Theorem.
22. Determine the domain of rational functions.
23. Determine the vertical, horizontal, and oblique (slant) asymptotes of rational functions.
24. Apply rational and radical functions and solve related equations.

Module 3

The student will be able to:

25. Graph exponential and logarithmic functions including transformations.
26. State the domain, range and asymptotes of exponential and logarithmic functions.
27. Evaluate logarithms.
28. Use properties of logarithms.

29. Solve exponential and logarithmic equations.
30. Apply solution techniques to solve application problems relating to growth and decay.

Module 4

The student will be able to:

31. Convert systems of linear equations to augmented matrix form.
32. Use Gauss-Jordan Elimination to solve systems of linear equations with two and three variables and equations using elementary row operations.
33. Use matrices to solve real life applications.
34. Write the terms of a sequence.
35. Use sigma notation for sums.
36. Determine the common difference of arithmetic sequences.
37. Determine the common ratio of geometric sequences.
38. Find the formula for the *n*th term of arithmetic and geometric sequences.
39. Find the sum of the first *n* terms of arithmetic and geometric sequences.
40. Find the sum of an infinite geometric series.