**Math 172**

**College Algebra**

**Fall 2019**

**Instructor:** Rob Farinelli

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 Office Hours: By appointment

**Text:** Precalculus

 Coburn and Herdlick, 1st edition

A graphing calculator (TI-83 or TI-84) is also required.

Any calculator with a computer algebra system (TI-89, TI-Nspire, etc.) is NOT permitted for use on quizzes or exams.

**Course Format:** Tuesday and Thursday, 6:30-7:45PM

 (CRN 32504)

**Prerequisites:** MAT 137 or MAT 137S with a “C” grade or better or

 appropriate placement through multiple-measures

 assessment process.

**Course Description:**

This course is a thorough and rigorous algebra course that strengthens the proficiency

with algebraic skills and the conceptual understanding needed to be successful in the Calculus sequence. The topics include: sets, polynomial, exponential, logarithmic and rational func­tions, rational exponents, conic sections, right triangle trigonometry, matrices, polynomial, exponential, logarithmic and radical equations, linear and quadratic inequalities, absolute value equations and inequalities, linear systems.

**Learning Outcomes:**

Upon successful completion of the course, the student will:

1. Define absolute value, find distances on the number line and the coordinate plane.

2. Simplify expressions with rational exponents, write them in radical form, simplify, combine and rationalize radical expressions.

3.Solve linear and quadratic inequalities, absolute value equations and inequalities, express answers in interval form.

4.Perform operations on complex numbers, conjugates, represent complex numbers graphically.

5.Perform operations on radical expressions, rational exponents, solve radical equations.

6**.** Find the domain and range of functions, combine functions, identify even and odd functions, graph piece-wise functions, find composition of functions, inverse and transforms of functions.

7. Find the characteristics of polynomial functions, solve polynomial equations, find zeros (roots) and x-intercepts of polynomials, apply the Fundamental Theorem of Algebra, The Remainder Theorem, The Factor Theorem, analyze end behavior.

8.Graph rational functions, find vertical, horizontal and slant asymptotes.

9.Graph exponential and logarithmic functions, use properties of exponents and logarithms, solve exponential and logarithmic equations.

10.Solve systems of linear equations in several variables

**ATTENDANCE**

An integral part of this course will involve information and insights developed through the interactions of students with each other and with the instructor. Clearly, students must be present in class to participate, contribute, and profit from these activities. Since group work and collaborative exercises are essential to the course, attendance is extremely critical to your success in the class – group activities completed in class are not able to be made up. In addition, students in this class are preparing for a profession requiring a high degree of responsibility and organization. Therefore, students are expected to attend class, be on time, and stay the entire period. Attendance will be taken each day. Students arriving more than 15 minutes late to class or leaving early will be counted as absent for that class. If there are unusual circumstances beyond the control of the student, then the student should talk to the instructor immediately after class. *Chronic absences or lateness will reduce your overall grade by 4 percentage points for each absence beyond 3. Absence does not excuse you from assignments and exams!*

**HOMEWORK**

Homework is a necessary and integral part of this course! It should be done in a neat and orderly manner as it may be collected and graded. It is strongly recommended that you do these assignments on loose-leaf notebook paper. You may wish to copy specific pages (with charts or tables) from your text, but I will not accept pages that have been torn out of your text or notebook. When submitting multiple page assignments, you must have these papers either stapled or held together with paper clips. Dog-eared pages are not acceptable. *Late assignments will NOT be accepted.*

**QUIZZES**

Ten quizzes will be given throughout the semester, as indicated on the syllabus. There are ***NO*** make-up quizzes given – any quiz missed will count as a zero. However, the lowest 3 quiz grades will be dropped at the end of the semester.

**EVALUATION**

 Exam #1 25%

 Exam #2 25%

 Quizzes 10%

 Graded Homework 10%

 Final Exam 30%

Final averages will be assigned letter grades according to the following

scale:

 90-100% A, 80-89% B, 70-79% C

60-69% D, 0-59% F

**MAKE UP POLICY**

If a student is unable to take any of the in-class exams, the student ***may*** request a make-up exam. Only students with valid reasons (illness, family emergency, etc.) will be permitted to schedule a make-up exam. Documentation must be provided. Make-up exams that are given will be considerably more difficult than the scheduled exam and will be given the last week of class. Please note that this policy only applies to exams – no other in-class work may be made up.

**ACADEMIC INTEGRITY**

Provisions of the Student Code of Conduct included in the Student Handbook will be followed. During quizzes and exams, each student is expected to do his/her own work. Cheating will not be tolerated. Violators of this policy may receive a zero. In serious cases, your instructor can seek more severe penalties.

**Some** of the behaviors that will be considered cheating are:

* Communicating with another student during a quiz or exam
* Copying material from another student during a quiz or exam or from any assignment being graded
* Allowing another student to copy from your quiz, exam, or any assignment being graded
* Use of unauthorized assistance on any assignment being graded
* Use of unauthorized notes or books during a quiz or exam
* Providing or receiving a copy of a quiz or exam used in the course
* Use of a cell phone or pager to transmit information during a quiz or exam

**CLASSROOM POLICIES**

1. As a student, you need to take responsibility for your own learning. This includes, but is not limited to:
* Arriving on time for each class
* Staying for the entire class and not leaving class early
* Actively participating in class and not sleeping or putting your head down
* Not engaging in other activities that detract from the classroom learning experience
* Bringing the required materials to class. These might include textbooks, notebooks, binders, pencils, pens, and calculators.
* Taking care of all business (phone calls, bathroom breaks, getting food, drinks, things from cars, etc.) before class starts.
1. You are expected to be an *active* learner in the classroom as well as out: to participate in group discussion, ask and answer questions, and work problems at the board.
2. You are expected to study your textbook, not merely work problems from it. The best way to do this is to read the section to be covered before the lecture is given, listen to the lecture and take notes, and then study the text again before tackling the practice problems. If this seems like a lot of work, remember that you need to allot ***2 hours outside of class*** for each hour in class. This time commitment increases for online, web-hybrid, and computer-assisted classes.
3. There is no substitute for continued and ongoing studying and doing homework problems. The best way to learn mathematics is to do mathematics.
4. It is your responsibility to keep your homework up-to-date. If you are having difficulty with the course material, then you need to take action right away – do not wait until you have lost all hope! There are several options to get assistance:
	* Talk to your instructor during office hours.
	* Visit the student success center on campus.
5. Realize that college level mathematics can be hard and is not always fun.
6. You are given the means to keep track of your grade and are expected to take responsibility for knowing your grade status throughout the semester.
7. Learning mathematics is different from learning other subjects. In a mathematics course, you must be able to do four things:
	* 1. *Understand* the material.
		2. *Process* the material.
		3. *Apply* what you have learned to solve a problem correctly, and
		4. *Remember* what you have learned in order to learn new material.
8. Another reason that learning mathematics is different from learning other subjects is that it follows a sequential learning pattern, which simply means that the material learned on one day is used the next day and the next day, and so forth. This building block approach to learning mathematics is the reason it is difficult to catch up when you fall behind.
9. Mathematics is a speed subject. College mathematics courses cover twice the material in the same time frame as do high school mathematics courses. Faculty has a certain amount of material to be covered each semester. They have to finish certain chapters because the next course is based on the information taught in this course. Improve your study skills so you can keep up!
10. Another way mathematics is a speed subject is that most of the exams and quizzes are timed and many students think that they will run out of time. Students not only must understand how to do the mathematics problems but also must learn the mathematics well enough to complete the problems with enough speed to finish the test.
11. During the first few days of class, do not take the attitude that “I already know this material” and start to slack off by not taking notes or not completing homework assignments. Good study habits start from the first day of class. Start practicing good study habits now while the material is familiar to you. In that way, those habits will already be a part of your routine when the material becomes more challenging.
12. Take pride in your work and never let yourself fall into the trap of believing that you cannot do mathematics. Virtually everybody can, if he or she is willing to work hard enough. Be persistent and determined in your work.

14. I expect all students to be respectful of each other as well as of me while we are in the

 classroom. Repeatedly disruptive students will be asked to leave the room and, if need

 be, the course. **Use** **of cell phones in the room is prohibited** – if you need to answer

 a text or call, please leave the room and take the call in the hallway. I don’t send text

 messages during class and I expect you to act in the same way.

**MAT 172 Course Schedule (Subject to change)**

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| --- | --- | --- |
| **Date** | **Topic** | **Assignment** |
| August 27 | Introduction1-1 Rectangular Coordinate System; Circles | #1-83 EOO |
| August 29 | 1-2 Linear Equations & Rates of Change1-3 Functions | #1-53 odd#1-103 EOO |
| September 3 | 1-4 Linear Functions**Quiz #1** | #1-93 EOO |
| September 5 | 1-5 Solving Equations & Inequalities Graphically1-6 Models and Real Data | #1-79 EOO#7, 11, 13, 15, 21 |
| September 10 | 2-1 Graphs of Functions**Quiz #2** | #1-41 odd |
| September 12 | 2-2 Library of Functions | #7-93 odd |
| September 17 | 2-3 Absolute Value Equations & Functions**Quiz #3** | #7-53 EOO |
| September 19 | 2-4 Basic Power & Rational FunctionsZeros of Functions | #1-47 oddSupplement |
| September 24 | 2-5 Piecewise Defined Functions2-6 Variation | #7-23 odd#1-31 odd |
| September 26 | 3-1 Complex Numbers**Quiz #4** | #1-67 odd |
| October 1 | **EXAM #1****(Chapters 1 and 2)** |  |
| October 3 | 3-2 Quadratic Equations & Inequalities | #1-131 EOO |
| October 8 | 3-3 Quadratic Functions & Applications3-4 Quadratic Models | #1-37 odd#7-37 odd |
| October 10 | 3-5 Algebra of Functions3-6 Composition of Functions & Difference Quotient**Quiz #5** | #7-45 odd#7-47 odd |
| October 15 | 4-1 Synthetic Division; Factor & Remainder Theorems | #1-77 odd |
| October 17 | 4-2 Zeros of Polynomial Functions**Quiz #6** | #7-81 odd |
| October 24 | 4-3 Graphing Polynomial Functions | #7-73 odd |
| October 29 | 4-4 Rational Functions I**Quiz #7** | #1-51 odd |
| October 31 | 4-5 Rational Functions IIA-6 Radical Equations | #1-39 odd#49-59 odd |
| November 5 | **EXAM #2****(Chapters 3 and 4)** |  |
| November 7 | 5-1 One to One & Inverse Functions | #1-73 EOO |
| November 12 | 5-2 Exponential Functions**Quiz #8** | #1-65 odd |
| November 14 | 5-3 Logarithmic Functions | #1-77 odd |
| November 19 | 5-4 Properties of Logarithms |  |
| November 21 | 5-5 Exponential & Logarithmic Equations | #7-39 odd |
| November 26 | 5-6 Applications**Quiz #9** | #1-33 odd |
| December 3 | 9-1 Linear Systems in Two Variables | #1-59 EOO |
| December 5 | 9-2 Linear Systems in Three Variables**Quiz #10** | #1-43 odd |
| December 10 | Review for Final Exam |  |
| December 12 | **FINAL EXAM****(Comprehensive)** |  |