

**Math 123C Elementary and Intermediate Algebra III 4 Units**

**MTWTh 8:00-9:05**

**Room: MSA 003**

**Section: 1446**

**Fall 2014**

**Instructor: William J. Bucher**

**Office MSB 207**

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**Office Hrs: 7:00-8:00 AM MTWTh in room MSB 207 and 2:10-4:00 MTWTh in MSB 207; or by appointment**

**Office Phone: (310) 287-4211 Note: It is better to e-mail so there is a written record.**

**Course Description:**

Third of three modules for Math 123 covering intermediate algebra topics such as functions and their operations, conic sections, series and sequences. Applications of these topics to business, science, and engineering are included.

**General Institutional SLO—Student Learning Objectives**

A.) Critical Thinking: Analyze problems by differentiating fact from opinions, using evidence, and using sound reasoning to specify multiple solutions and their consequences.

C.) Quantitative Reasoning: Identify, analyze, and solve problems that are quantitative in nature

F.) Technical Competence: Utilize the appropriate technology effectively for informational, academic, personal, and professional needs.

**Math Program SLO—Student Learning Objectives**

1.) Apply quantitative thinking processes using basic mathematical operations (addition, subtraction, multiplication, division) to solve common academic, workplace and family problems. (Theme: Mathematical Operations)

3.) Use mathematical tools essential for analyzing quantitative problems and for producing solutions. (Theme: Mathematical Tools)

5.) Select appropriate math strategies for solving and handling real life problems involving finance, economics, and family issues. (Theme: Mathematical Problem-Solving)

### **Specific Learning Objectives:**

Upon satisfactory completion of the course, a student will be able to:

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

1. List the properties of quadratic functions
2. Graph quadratic functions, including: identifying the vertex, the intercepts, the max or min, the domain and range
3. Solve applications problems involving quadratic equations
4. Solve inequalities involving polynomials and rational expressions
5. Identify when a function is 1-1 and when it is not
6. Given a 1-1 function  $f(x)$ , find its inverse function  $f^{-1}(x)$
7. Given two functions  $f(x)$  and  $g(x)$ , find  $(f \circ g)(x)$  and  $(g \circ f)(x)$  and their respective domains
8. Graph functions by translating and reflecting simpler, related functions
9. List the properties of exponential functions
10. Graph a wide variety of exponential functions, identifying the domain, range, the intercepts, and the horizontal asymptote
11. List the properties of logarithmic functions
12. Graph a wide variety of logarithmic functions, identifying the domain, range, the intercepts, and the vertical asymptote
13. Explain the inverse relationship between any exponential function and a logarithmic function
14. Solve exponential and logarithmic equations
15. Solve a wide variety of application problems involving exponential and logarithmic functions
16. Explain the basic definitions of the conic sections: parabola, circle, ellipse, and hyperbola
17. Graph and identify all the important features of the conic sections
18. Solve systems of non-linear equations
19. Solve second degree inequalities and systems of non-linear inequalities
20. Sum the first  $n$  terms of arithmetic and geometric sequences
21. Explain and use the Binomial Theorem
22. Explain and use combinations and permutations

**Textbook: Beginning and Intermediate Algebra, Lial, Hornsby, McGinnis, 5th edition, Addison-Wesley.** There is a softcover available in the bookstore. Students can also find it online at the usual places.

Schedule: See Tentative Schedule page.

**Homework,  
Quizzes,  
Tests &  
Grading:**

1.) Homework assignments from the text and in the form of supplements will be given every day. We shall discuss the assigned problems at the beginning of each class period. This homework will not be collected, but it is absolutely imperative that you do it!

**Doing exercises and solving problems outside of class is where you learn the most!**

Some effort should be made to keep this “done” homework in an organized fashion. It is very useful when studying for tests and quizzes.

2.) There will be two short quizzes every week, usually Tuesdays and Thursdays. These will really be short, i.e., 10 minute duration, at most 4 questions. The purpose of these quizzes is to guarantee that the student stays current with the class lectures and activities. The problems will be very similar to the assigned homework problems. There will be approximately 25 of these quizzes. I will throw out your 5 worst quizzes in computing your average quiz score. The remaining quizzes will make up 16% of your final course grade. **There will absolutely be no makeup quizzes!**

3.) There will be three tests. These will be of full period duration. See schedule for approximate dates. Makeup examinations will be given only to those students possessing **documented valid excuses. Advanced notice is mandatory.** Don't miss an examination and then show up. Call or write me ahead of time and make an arrangement to take the test. In order to be fair to the students who took the exam as scheduled, makeup examinations will always be substantially more difficult than the original. Each of the three examinations will be worth 17% of your final course grade, making a total of 51% for all three exams.

4.) The final examination will be a departmentally designed, comprehensive examination. This exam will be worth the remaining 33% of your final course grade. This is heavily weighted so it is extremely important that the student do well on this examination in order to do well in the course.

**Summary**

Quizzes (approx 14, throw out worst 3)	16%
Tests (3 at 17% each)	51%
Final Examination	<u>33%</u>
Total	100%

**Note about Attendance:** If you miss more than 4 meetings (a week) of the course, the instructor has the option of excluding you from the course. If you are doing failing work, I will utilize this option at the earliest possible date. Once you have been excluded, there will be no reinstatement.

**Note about Grading Scale:**

I use a straight scale:

100-90%	A
89-80%	B
79-68%	C
67-55%	D
54-00%	F

**Calculators:**

In this and future courses, the use of calculators is permitted and encouraged. I advise you to buy a scientific graphing calculator with statistical capabilities. **You may not use your cell phones as calculators during quizzes or examinations!!! Get a calculator!!**

**Cell Phones:**

Cell phone use is strictly forbidden in the classroom. If you possess a cell phone, it must be set on silent vibrate mode. If you absolutely must take an emergency call, please exit the classroom quietly and do so outside.

**Academic Dishonesty**

Cheating or plagiarism will not be tolerated. Any cases of either will be referred to the Dean of Students for disciplinary action. For more on acceptable behavior, read *Standards of Student Conduct* on page 119 of the Schedule of Classes.

Tentative Schedule for Math 123C  
Lial & Hornsby

Month	Mon.	Tues.	Wed.	Thu.	Sections Covered
Sept.	H	2	3	4	10.1-10.3
	8	9	10	11	10.4-10.6
	15	16	17	18	10.7, 11.1-11.2
	22	23	24	25	11.3-11.5
Oct.	29	30	1	2	11.6-11.8; Test: Chap 10 & 11
	6	7	8	9	7.3-7.5 Rev. of $f(x)$
	13	14	15	16	12.1-12.2
	20	21	22	23	12.3-12.4
	27	28	29	30	12.5-12.6 Test: Chap 12
Nov.	3	4	5	6	13.1-13.2
	10	H	12	13	13.3-13.4
	17	18	19	20	13.5, 14.4
	24	25	26	H	Review, Test Ch 13
Dec.	1	2	3	4	Review for 125 Final
	8	9	10	11	Review for 125 Final
		15-21			Finals

Final Examination: Dec. 17, 2014 8:00-10:00 am

Last date to drop without a fee—Friday, Sept. 12

Last day to drop without a W—Friday, Sept. 12

Last day to drop with a W—Nov. 21, 2014