

**Fayetteville State University
College of Arts and Sciences
Department of Mathematics and Computer Science
MATH 123 – College Algebra
Spring Semester – 2012**

“In case FSU must close for an emergency during the semester, instruction will continue using Blackboard.”

I. LOCATOR INFORMATION:

Instructor: _____	MATHXL Course ID: _____
Course # and Name: Math 123-College Algebra	Office Location: _____
Semester Credit Hours: _____	Office Hours: _____
Day and Time Class Meets: _____	Office Phone: _____
Total Contact Hours for Class: _____	Email Address: _____

<p>FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (studentid@broncos.uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.</p> <p>Rules and regulations governing the use of FSU email may be found at http://www.uncfsu.edu/policy/general/FSUE-mailFINAL.</p>

II. COURSE DESCRIPTION:

Math 123 is a college level algebra course containing the following topics: sets, the real number system, exponents, radicals, polynomials, equations, inequalities, relations and functions, graphing, exponential and logarithmic functions, systems of equations, complex numbers, mathematical induction, and the binomial theorem. A graphing calculator is required.

Prerequisites: *Math 120 or High School Algebra I, II, and Plane Geometry or equivalent, and satisfactory placement score.*

TI-83, TI-83Plus, or TI-84 Calculator is required! Students cannot use TI-89, TI-92, or Voyage 200.

The access code for MATHXL is also required. For more information, please check with FSU bookstore or visit <http://www.mathxl.com>.

III. DISABLED STUDENT SERVICES:

In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability, please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); Tel: 910-672-1203.

IV. TEXTBOOK:

Michael Sullivan: COLLEGE ALGEBRA, 8th Edition, Upper Saddle River, New Jersey: Prentice Hall, Inc., 2008, ISBN: 9780132402866.

V. STUDENT LEARNING OUTCOMES:

Upon completion of this course, students will be able to:

- Solve linear, quadratic, radical, absolute-value equations and related equations.
- Solve linear, quadratic, absolute-value inequalities.
- Find the equations of lines and circles, sketch their graphs, and identify key information.
- State the definition of functions, combine/compose two functions, and identify key information of a function algebraically and graphically.
- State the properties of linear and quadratic functions and sketch their graphs.
- State the definitions of exponential and logarithmic functions, describe their properties, and solve exponential and logarithmic equations.
- Solve real-world problems modeled by linear, quadratic and exponential functions/equations.
- Use graphing calculators and student learning software such as MyMathLab/MATHXL.

Course Competencies:

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- 1.0 Ability to recognize and solve problems.
 - 1.1 Use mathematics and technological tools to solve “real world” problems that arise in social sciences, biological sciences, physical sciences, and other mathematical sciences.
10. Algebra and algebraic structures
 - 2.1 Understand the concepts of variable, expression, equation, inequality, and the properties of integers, rational numbers, real, and complex numbers.
 - a. Represent situations and number patterns with tables, graphs, verbal rules, and equations; and explore connections between these representations.
 - b. Analyze tables and graphs to identify properties and relationships.
 - c. Solve linear and non-linear equations and inequalities and systems using concrete, formal and informal methods.
 - d. Have knowledge of diverse examples of functions arising from a variety of problem situations and investigate the properties of these functions through appropriate technologies, including graphing utilities and graphing calculators.
 - 11.2 Develop skills in using interactive and recursive techniques in solving problems.
 - 11.5 Use computers and graphing calculators to explore mathematical concepts.

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10. MATHEMATICS PREPARATION
 - a. Programs prepare prospective teachers who—
 - i. Use a problem-solving approach to investigate and understand mathematical content.
 - ii. Formulate and solve problems from both mathematical and everyday situations.
 - b. Programs prepare prospective teachers who can communicate mathematical ideas.
 - i. In writing, using everyday and mathematical language, including symbols.
 - ii. Orally, using both everyday and mathematical language.
 - c. Programs prepare prospective teachers who can make and evaluate mathematical conjectures and arguments and validate their own mathematical thinking.

- d. Programs prepare prospective teachers who—
 - i. Show an understanding of the interrelationships within mathematics.
 - ii. Connect mathematics to other disciplines and real-world situations.
- e. Programs prepare prospective teachers who—
 - i. Understand and apply concepts of number, number theory and number systems.
 - ii. Understand and apply numerical computational and estimation techniques and extend them to algebraic expressions.
- f. Programs prepare prospective teachers who—
 - i. Use calculators in computational and problem-solving situations.
 - ii. Use computer software to explore and solve mathematical problems.

11. TEACHING PREPARATION

- 2.1 Programs prepare prospective teachers who can identify and model strategies used for problem solving in grades 7 – 12.
 - a. Programs prepare prospective teachers who use graphing calculators, computers and other technologies as tools for teaching mathematics.

VI. COURSE REQUIREMENTS AND EVALATION CRITERIA:

- a. Grading Scale:

A	92-100%
B	83-91%
C	73-82%
D	64-72%
F	Below 64%

- b. Attendance Requirements – Students are expected to **enter the classroom on time** and remain until the class ends. **Three late arrivals and/or early departures will constitute an absence.** The class attendance policy given in the [2011-2012](#) FSU Catalogue will be strictly adhered to. Students are allowed to miss no more than 10% of the classes/labs with acceptable excuses.

- c. Graded Assignments/Values:

Chapter Tests (the lowest score will be dropped)	40%
Homework (on MATHXL)	25%
Course Project	5%
Class Commitment/Participation	5%
Post-Test	5%
Final Exam	20%

To see how your course grade will be calculated, suppose your test scores are 85, 72, 84, 70, and 90, your score for MATHXL assignments is 90, your course project grade is 95, your class commitment/participation score is 4.5, your post-test score is 90 and your final exam score is 88. Since the lowest chapter test score is dropped (see item 3 under **COURSE REQUIREMENTS**), your grade would be calculated as follows:

$$0.40 [(72 + 90 + 84 + 85)/4] + 0.25(90) + 0.05(95) + 4.5 + 0.05(90) + 0.2(88) = 86.95$$

Since the score 86.95 is between 83 & 91, you would receive a letter grade of B for the course.

- d. **Students are required to take both the pre-test and the post-test on [MATHXL](#). Please consult your course instructor for more details.**

Course Project:

Per instructor's preference, each student will be required to finish one of the following projects:

1. Writing a 4 to 5 page paper or developing a power point presentation illustrating how he/she used or plans to use algebra in his/her field of study or work;
2. Writing a 4 to 5 page paper or developing a power point presentation addressing major findings of famous mathematicians and their applications in his/her field of study or work.
3. Completing a project assigned by the instructor. The instructor will announce the details about this project.
- e. Policy on Missed or Late Assignments: No late homework assignments will be accepted or makeup tests will be given without the course instructor's prior permission.
- f. Other - **Dishonesty on graded assignments will not be tolerated!!!** Students must neither give nor receive any assistance on any work to be graded. The University's cheating policy will be applied for any violations. The minimum penalty will be a grade of zero (0) on the assignment.

COURSE REQUIREMENTS:

Conduct of Course/Classroom Decorum

1. It is the responsibility of the students to avail themselves of **all** class meetings, tutorial/lab sessions and individual help from their instructors. Additional services are provided by Student Services in the Helen T. Chick Building. There are computer software tutorials available for your use in the Helen T. Chick Building, 2nd floor (See Lab Assistants). Each student should have the textbook and graphing calculator during each class session.
2. Students are responsible for maintaining a notebook of problems selected by the instructor. Students are encouraged to include as many additional problems as possible.
3. A test will be given at the end of each chapter. The tests will be announced well in advance of their administration. These tests will be subjective and/or objective. Since the lowest chapter test will be dropped, **no make-up test** will be given. The final examination is cumulative; it covers the contents of all chapters.
4. Students must refrain from smoking, eating, chewing gum and drinking in the classroom. The rights of others must be respected at all times.
5. Students are encouraged to ask questions of the instructor in class and to respond to those posed by the instructor. They should not discourage others from raising or answering questions. Often, other students have the same questions, which they wish to ask, but are hesitant to do so.
6. Students are expected to complete all class assignments and to spend adequate time on their class work to insure that the course outcomes are met. At least two hours of home study are expected for each class hour.
7. Talking in class between students is strictly unacceptable. Discussions should be directed to the instructor.
8. Extra recitation periods and/or computer lab attendance are mandatory for this course for students whose class averages fall below "C". Those students must see their instructor to arrange for this help.

Students must earn at least a final average of a “C” in Math 123-College Algebra to enroll in Math 140-Applied Calculus.

9. Students are not allowed to bring babies and children to class!

FSU Policy on Disruptive Behavior in the Classroom

The *Code of the University of North Carolina* (of which FSU is a constituent institution) and the *FSU Code of Student Conduct* affirm that all students have the right to receive instruction without interference from other students who disrupt classes.

FSU Core Curriculum Learning Outcome under Ethics and Civic Engagement (6.03): All students will “prepare themselves for responsible citizenship by fulfilling roles and responsibilities associated with membership in various organizations.” Each classroom is a mini-community. Students learn and demonstrate responsible citizenship by abiding by the rules of classroom behavior and respecting the rights all members of the class.

The FSU Policy on Disruptive Behavior (see FSU website for complete policy) identifies the following behaviors as disruptive:

1. Failure to respect the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;
2. Excessive talking to other students while the faculty member or other students are presenting information or expressing their viewpoints;
3. Use of cell phones and other electronic devices;
4. Overt inattentiveness (sleeping, reading newspapers);
5. Eating in class (except as permitted by the faculty member);
6. Threats or statements that jeopardize the safety of the student and others;
7. Failure to follow reasonable requests of faculty members;
8. Entering class late or leaving class early on regular basis;
9. Others as specified by the instructor.

The instructor may take the following actions in response to disruptive behavior. Students should recognize that refusing to comply with reasonable requests from the faculty member is another incidence of disruptive behavior.

1. Direct student to cease disruptive behavior;
2. Direct student to change seating locations;
3. Require student to have individual conference with faculty member. At this meeting the faculty member will explain the consequences of continued disruptive behavior;
4. Dismiss the student from class for the remainder of the period. (Must be reported to the department chair.)
5. Lower the student’s final exam by a maximum of one-letter grade;
6. File a complaint with the Dean of Students for more severe disciplinary action.

Students who believe the faculty member has unfairly applied the policy to them may make an appeal with the faculty member’s department chair.

VII. ACADEMIC SUPPORT RESOURCES

Use any academic support resources available in this class. In addition,

1. The Mathematics Laboratory (located at H.T. Chick 216 C) provides computer-assisted instruction and peer tutoring for students who wish to strengthen their mathematics skills. Students enrolled in MATH

123-College Algebra, may complete weekly assignments on MATHXL in the Mathematics Laboratory. Please visit <http://www.uncfsu.edu/learningcenter/math/> for lab schedules. Information on how to access and use *Smarthinking* and *Criterion* can be obtained through University College Learning Center (H. T. Chick 216 C).

2. **Internet Access to [MATHXL](#)** might also be available in other computer labs such as **Lyons Science Annex 125**. Please check with the corresponding lab staff for more information.
3. Some instructors may use the **Supplemental Instruction Service (SI)**. Please see your instructor's announcement for more information. (<http://www.uncfsu.edu/learningcenter/si/>)

THE "EX" GRADE:

Students enrolled in MATH 123-College Algebra are eligible to receive the "EX" grade provided they fulfill the requirement of the course but would receive a semester grade lower than "C". To qualify for this grade "EX", students must have attended at least ten (10) of the extra weekly tutorial sessions in the Math Lab, handed in required assignments, and attended classes/labs on a regular basis. **You need to sign a contract with the university college. For regular sixteen week classes, the contract should be signed no later than the end of the fifth week. Please contact the office located at H.T. Chick 217 and refer to the [2011-2012 FSU catalogue](#) for more detailed information.**

If the "EX" grade is assigned, the student will retake the course during the following semester. On the second attempt in the course the "EX" grade will be changed to reflect the letter grade actually earned. Students may earn the "EX" grade for this course only once. If students fail to repeat the course in the following semester, the "EX" grade is changed to the grade that was originally earned.

VIII. COURSE OUTLINE:

Homework: Homework assignments will be assigned on-line via MATHXL, please check the assignments and due dates in your account on MATHXL at <http://www.mathxl.com>

Important Sources:

1. Final exam date of math 123 will be posted soon at: <http://www.uncfsu.edu/registrar/>. Further detailed information on final exam date, room assignment and rules will be announced by your instructor.
2. Information on other important dates and holidays is available on *Academic Calendar* via: <http://catalog.uncfsu.edu/calendar.htm>

SECTIONS

TOPICS/ASSIGNMENTS

SECTIONS	TOPICS/ASSIGNMENTS
	PRE-TEST on MATHXL
[1.1]	Linear equations
[1.2]	Quadratic equations
[1.4]	Radical equations; equations quadratic in form; factorable equations
[1.5]	Solving inequalities
[1.6]	Equations and inequalities involving absolute value
[1.7]	Problem solving: interest, mixture, uniform motion, and constant rate job applications
	TEST #1, Homework of Chapter 1 Due
[2.1]	The distance and midpoint formulas
[2.2]	Graphs of equations in two variables; intercepts; symmetry
[2.3]	Lines
[2.4]	Circles
	TEST #2, Homework of Chapter 2 Due

- [3.1] Functions
 - [3.2] The graph of a function
 - [3.3] Properties of functions
 - [3.4] Library of functions; piecewise-defined functions
 - [3.5] Graphing techniques: transformations
- TEST #3, Homework of Chapter 3 Due**

- [6.1] Composite functions
 - [6.2] One-to-one functions; inverse functions
 - [6.3] Exponential functions
 - [6.4] Logarithmic functions
 - [6.5] Properties of logarithms
 - [6.6] Logarithmic and exponential equations
 - [6.7] Compound interest
- TEST #4, Homework of Chapter 6 Due**

- [4.1] Linear functions and their properties
 - [4.2] Building linear functions from data
 - [4.3] Quadratic functions and their properties
 - [4.4] Quadratic models; building quadratic functions from data
 - [4.5] Inequalities involving quadratic functions
- TEST #5, Homework of Chapter 4 Due**
POST-TEST on [MATHXL](#)
FINAL EXAM (Exam Time and Site to Be Announced by Course Instructor)

Note: The above tentative schedule may subject to change per instructor's notice.

IV. TEACHING STRATEGIES:

The teaching strategy for the course will vary depending upon the learning styles and strengths of the students enrolled. It is expected that the instructor will place emphasis on lectures, discussions, review and analysis, graphing calculator usage, and cooperative learning.

X. BIBLIOGRAPHY:

Sullivan, Michael, **College Algebra**, Custom Edition for Fayetteville State University, Upper Saddle River, New Jersey, 07458: Prentice Hall, 2007.

Sullivan, Michael, **College Algebra**, 7th ed., Upper Saddle River, New Jersey, 07458: Prentice Hall, 2002

Barnett, Raymond A., Ziegler, Michael R., and Byleen, Karl E., **College Algebra with Trigonometry**, 8th ed., Boston, Mass.: McGraw-Hill Higher Education, 2008.

Fine, Henry B., **College Algebra**, Providence, R.I.: AMS Chelsea Pub., 2005.

Hornsby, John E., **A Graphical Approach to College Algebra and Trigonometry**, 3rd ed. Boston: Addison-Wesley, 2003.

Hall, James W., **College Algebra with Applications**. 3rd ed., Boston, Mass.: PWS-Kent Publishing Co., 1992.

Other books (both textbooks and workbooks) are available in the FSU Chestnut Library.