MATH 121 – 006 - College Algebra Spring 2009, Liberty University, Lynchburg, VA	Class Meets in: DeMoss Learning Center room 1101 Lecture Times: M-W-F 2:55pm - 3:45 pm
Even though I walk through the valley of the shadow of death, I will fear no evil, for you are with me; your rod and your staff, they comfort me. *Psalm 23:4 (E.S.V.)*	Instructor: Dr. James S. Cook Office: Applied Science 105 Office Hours: 11am-12pm weekdays. Email: jcook4@liberty.edu office phone: 434-582-2476

I. Course Description

Fundamental concepts of college algebra including sets, equations and inequalities, functions and graphs, polynomials, rational functions, exponential and logarithmic functions, linear inequalities, and linear programming.

II. Rationale

MATH 121 provides fundamental math skills needed for further study in mathematics, science and liberal arts. This course fosters university level competencies in analytical reasoning and is part of the liberal arts foundation needed to pursue higher education in many fields. Also, understanding mathematics gives us a greater appreciation of God's creative wisdom since it is, to a large extent, the language of His natural revelation.

III. Prequisite Statement

MATH 110 with a minimum grade of C

It is the student's responsibility to make up any prerequisite deficiencies, as stated in the Liberty University Catalog, which would prevent the successful completion of this course

IV. Materials List

College Algebra, 7th edition by Larson and Hostetler, 2007. ISBN-10: 0618643109 or ISBN-13: 9780618643103
NON-GRAPHING scientific calculator
Note: A calculator on a cell phone, PDA, computer, etc. may not be used for tests/quizzes.

V. Learning Outcomes

The student will be able to:

1. Correctly perform algebraic manipulations
2. Demonstrate an understanding of the concept of a functions to include evaluating functions, determining domains of functions, combining functions, and finding inverse functions with the proper use of functional notation
3. Solve appropriate algebraic, exponential, and logarithmic equations and inequalities and systems of equations and inequalities
4. Graph and analyze the graphs of algebraic, exponential, and logarithmic functions
5. Employ techniques of problem solving

VI. Assignments/Requirements

- Cognitive growth – Demonstrate mathematical proficiency by working exercises and solving problems related to the topics discussed. (See the course description and the outcomes listed in Section V above.)
- Product – Daily assignments and quizzes, three in-class tests, and a comprehensive final exam
- Process – A students will demonstrate individual progress by solving problems in daily assignments, quizzes, and tests. (See the outcomes listed in Section V above.)

VII. Grading Policies

- Free tutoring is available in the Testing/Tutoring Center (TE 128) and in the Math Help Center (SH 134).
- No late assignments are accepted.
- Quizzes may be announced or unannounced, take-home or in class, open or closed book, group or independent work.
- No make-up quizzes will be given.
- Homework assignments are generally collected weekly. There is a complete list of problems as well as due dates on the course website and at the end of this syllabus. It is in your best interest to work on the problems well before the due date. Proper time management will allow you to get more out of the homework and ultimately the course as a whole. I will answer reasonable questions about homework in lecture, but it's hard to ask a reasonable question unless you have already tried to work the problems.
- There are a number of bonus homework problems (marked with a * in the homework list) thus no homework grades are dropped. If you are worried about your homework grade you can do additional work to remedy the missed or unsuccessful problems.
- Tests must be taken as scheduled. No make-up tests will be given after the scheduled time. If a test is missed due to an excused absence, the final exam grade may be substituted.
- **GRADING SCALE**: A – 90% and above, B – 80-89%, C – 70-79%, D – 60-69%, F – below 60%
- The course grade will be determined based on: homework/quizzes (20%), three tests (20% each), and the cumulative final exam (20%). Grades are based on academic performance. I do not "give grades", rather you EARN your grade through your responsible

and continual efforts to master the material. I want everyone to pass my course, but it is you who must do the work. I will do everything in my power to help you work effectively. The recipe for passing is quite simple: come to class, pay attention, do your homework. I rarely fail anyone who actually does these three simple things.

VIII. Attendance Policies

- Class attendance is essential and students are expected to be present each class. If an absence is unavoidable, then the student should notify the professor in writing or by email in advance. If advance notice is not possible, then an email should be sent promptly after the absence. STUDENTS ARE RESPONSIBLE FOR ALL MATERIAL COVERED AND ASSIGNMENTS MADE DURING AN ABSENCE.
- Phones, beepers, iPods, etc. should be turned off and put away during class.
- Students will arrive on time and stay for the entire class.
- Students will bring textbook, pen/pencil, paper, calculator, and completed homework to class.

IX. Other Policies

Dress Code

Students are expected to come to class dressed in a manner consistent with The Liberty Way.

Honor Code

We, the students, faculty, and staff of Liberty University, have a responsibility to uphold the moral and ethical standards of this institution and personally confront those who do not.

Academic Misconduct

Academic misconduct includes: academic dishonesty, plagiarism, and falsification. See The Liberty Way for specific definitions, penalties, and processes for reporting.

Disability Statement

Any student with a documented disability may contact the Office of Disability Academic Support (ODAS) in Teacher Education Building-TE 127 in order to make arrangements for an academic accommodation.

DROP/ADD POLICY

A Fall/Spring course may be dropped without a grade, tuition, and fee charges within the first five days of the semester. From the sixth day until the end of the tenth week, a Fall/Spring course may be withdrawn with a grade of W or WF.

Classroom Policies

The inappropriate use of technology, such as cell phones, iPods, laptops, calculators, etc. in the classroom is not tolerated. Other disruptive behavior in the classroom is not tolerated. Students who engage in such misconduct will be subject the penalties and processes as written in the Liberty Way**. Also, I may dedicate pop-quizzes to those caught texting in lecture.**

X. Calendar for the semester/term

- **TEST DATES:** Test 1 –February 18; Test 2 – March 25; Test 3 – April 29
- The final exam must be taken at the time scheduled by the University.
- MATH 121-004 (MWF 1:45-2:35) final exam – Wed. May 6, 1-3pm, 1:00-3:00pm (DeMoss Learning Center room 1101)

XII. Homework Assignments and Course Calendar

		Math 121		Show **all** work for credit and do **all** work **neatly** and **legibly**. No fuzzy edges. Please use standard sized paper (printer paper is fine)	
	HOMEWORKS THAT PREPARE YOU FOR TEST 1: Late homework not accepted. The problems marked with a * are bonus problems, they will increase your homework score if you do them correctly. I do not cap the homework score at 100. If you had a 105 homework average then this would help balance out points lost in other aspects of the course. In any event, completion of the homework is likely the most vital step towards success in this course.				
	Due	Sec.	page	Problems	Topic
	1-16	P.1	9	10, 24, 32, 60, 78, 84, 110 *	Number Systems
	1-16	8.3	622	93, 94*	Repeating Decimals
	1-16	P.2	21	10, 12, 18, 22, 24, 26, 30, 35, 66, 87*	Exponents, Radicals
	1-23	P.3	29	16, 24, 38, 40, 58, 60, 62, 64, 66, 70, 74, 90, 92, 104* (please use algebra to multiply these out, do not use the special form short-cuts, thanks.)	Polynomial Multiplication
	1-23	P.4	38	10, 14, 18, 68, 72, 80, 82, 86, 100, 106, 108, 112, 116*	Factoring Polynomials
	1-23	P.5	48	20, 26, 27, 38, 40, 42, 49, 52, 53, 54, 61, 65, 67, 71, 74*	Rational Expressions
	1-23	P.6	56	20, 22, 24, 28, 30, 32, 36, 38, 44, 46, 48, 50, 57, 58*	Skill Builders
	1-30	1.1	86	2, 8, 10, 12, 57, 62*	Graphing Equations
	1-30	1.2	94	34, 73, 76 , 78, 80, 84, 100, 109*	Linear Equations in one variable
	2-6	1.4	120	10, 12, 16, 20, 24, 28, 32, 34, 38, 44, 48, 60, 62, 70, 74, 76, 112, 117*	Quadratic Equations
	2-6	1.5	131	2*, 14*, 28*, 40*, 50*, 56*, 66, 70, 83*, 101, 102*	Complex Numbers

	2-6	1.6	140	3, 4, 8, 15, 22, 34, 40, 46, 60, 66, 67, 91*(based on E9 on 139)	Skill Building
	2-13	1.7	150	26, 28, 30, 32, 34, 37, 42, 46, 50, 54, 60, 76, 80, 88, 95*	Linear Inequalities
	2-13	1.8	161	4, 5, 8, 10, 14, 18, 24, 40, 42, 54, 56, 58*	Polynomial Inequalities
	2-13	2.1	183	2, 10, 16, 20, 32, 54, 70*	Lines
	2-16			**REVIEW SESSION FOR TEST 1**	
	2-18			**TEST 1 (closed book, partial credit can be earned, based on homework)**	
	HOMEWORKS FOR TEST 2 Late homework not accepted. The problems marked with a * are bonus problems, they will increase your homework score if you do them correctly. I do not cap the homework score at 100. If you had a 105 homework average then this would help balance out points lost in other aspects of the course. In any event, completion of the homework is likely the most vital step towards success in this course.				
	2-27	2.2	197	5, 6, 24, 28, 32, 36, 44, 48, 52, 56, 60, 66, 69, 77, 79, 80, 85, 93*	Functions
	2-27	2.3	210	3, 6, 7, 8, 10, 12, 16, 18, 20, 62, 66, 97, 98*	Graphs of Functions
	3-27	2.5	228	8, 10a, 10b, 11c, 14, 22, 24, 26, 40, 42, 48*	Graphing by Transformations
	3-6	2.6	238	2, 8, 10, 12, 14, 16, 18, 20, 34, 38, 46, 50, 51, 70, 71*	Composite Functions
	3-6	2.7	248	8, 10, 14, 20, 23, 28, 32, 40, 45, 69*	Inverse Functions
	3-6	3.1	270	2, 8, 14, 17, 18, 20, 23, 24 (there may or may not be x-intercepts for 14, 17, 18, 20, 23 and 24), 44, 48, 76*, 78, 82	Quadratic Functions and Models
				SPRING BREAK (March 9-13)	"The Holidays"
	3-20	3.2	284	2, 8, 11, 28, 34, 38, 40, 42, 60	Polynomial Functions
	3-20	3.3	295	2, 6, 13, 14, 38, 42, 57, 58, 59, 61, 62, 70, 76, 84*	Long Division and guided factoring.
	3-20	3.4	308	2, 6, 12, 22, 38, 42, 48, 50, 54, 60, 68, 72*	Zeros of Polynomial Functions, guided factoring
	3-20	4.1	341	8, 10, 11, 12, 20, 23*	Rational Functions and their Asymptotes
	3-20	4.2	350	14, 18, 24, 26, 28, 30*	Graphs of Rational Functions
	3-23			**REVIEW SESSION FOR TEST 2**	
	3-25			**TEST 2 (closed book, partial credit can be earned, based on homework)**	
	HOMEWORK COVERED BY TEST 3 Late homework not accepted. The problems marked with a * are bonus problems, they will increase your homework score if you do them correctly. I do not cap the homework score at 100. If you had a 105 homework average then this would help balance out points lost in other aspects of the course. In any event, completion of the homework is likely the most vital step towards success in this course.				
	4-3	5.1	392	2, 8, 9, 10, 18, 44, 46, 48, 52, 56, 58, 66*	Exponential Functions
	4-3	5.2	402	2, 10, 18, 22, 24, 30, 34, 64, 70, 72, 80, 86*	Logarithmic Functions
	4-3	5.3	409	8, 12, 18, 24, 30, 38, 48, 50, 58, 60, 62, 68, 78*	Properties of Logarithms
	4-3	5.4	419	12, 14, 22, 26, 52, 59, 78, 86, 91, 95, 102 *	Solving Equations with Exponentials and Logarithms.
	4-8			Assessment Day (No Lecture)	
	4-10	6.1	455	6, 8, 9, 18, 24, 30, 32, 55, 56	Linear and Nonlinear equations.
	4-10	6.2	467	2, 6, 12, 16, 26	Linear Equations in 2 unknowns
	4-10	6.3	471	2, 6, 10, 14, 44, 45, 46, 48, 50, 65*	Linear Equations in 3 unknowns
	4-13			Easter Break	
	4-17	6.5	500	2, 4, 35, 36, 44*	Systems of Inequalities
	4-17	6.6	510	6*, 14*	Linear Programming (bonus section)

	4-17	7.2	549	1, 2, 6, 31, 32, 33, 42, 44, 81*, 82*	Matrix Math
	4-17	7.3	561	12, 13, 16, 18, 21, 22 (use website calculator, or matrix-math capable calculator for #21 and #22, I don't intend for you to be able to do 21 or 22 by hand) 46, 50, 54, 71*, 75*	Inverse Matrices
	4-24	7.1	534	8, 10, 14, 16, 37, 38, 54, 56, 58 (use any method covered in lecture to solve #'s 54, 56, and 58; your choice), 82*	Solving Linear Systems with Matrices
	4-24	7.4		4, 8, 37, 44, 62, 76, 85*(justify or no bonus)	Determinants
	4-24	7.5		1, 2, 3, 4, 8, 9, 49, 51, 52, 56, 57*	Cryptography and Applications of Matrices
	4-27			**REVIEW SESSION FOR TEST 3**	
	4-29			**TEST 3 (closed book, partial credit can be earned, based on homework)**	
	5-6			Wed. May 6, 1-3pm, usual room, Final Exam for Section 6	Cumulative

XI. Disclaimer:

While I have attempted to completely specify the content of this course, I reserve the right to change this syllabus if necessary. It is your responsibility to monitor your Liberty University email account for any changes in the syllabus. I will notify you via email and announce in class in the event something needs modification.