

MATH 124: COLLEGE ALGEBRA – APPLICATIONS

Class Information Sec 001 CRN 10445

Room: 209 ARM

Time: MF 1:30-2:20 Spring 2006

Lab: Section 002 T 1:00-2:20 213 ARM

Section 003 T 2:30-3:50 213 ARM

Supplemental Instruction: W 1:30-2:20

Instructor Information

Erin Niemiec

Office: 307D Armstrong

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E-mail: Use Vista WebCT mail

Vista WebCT: <http://vista.wvu.edu>

Office Hours: M 2:30 – 4:00,

T 11:30 – 1:00,

F 2:30 – 4:00, or by appointment

Coordinator/Supplemental Instruction

Dr. Robert Mayes

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Office Hours: W 2:30-3:30 or appointment

Supplemental: W 11:00 and 1:30

Text: Mayes, R. & Reitz, J. (2003). *ACT in Algebra*. Boston: WCB McGraw-Hill.

Pre-requisite: One of the following – minimum Math SAT of 480 or Math ACT of 20, satisfactory WVU Math Placement Test score, completion of Pre-College Algebra Workshop, or a grade of C or better in Math 22 from another college.

Technology: Math 124 is a technology enhanced course requiring the following:

- Graphing Utility: *Grapher* applet is provided for student use and can be accessed at the course coordinator's home page <http://www.math.wvu.edu/~rmayes/>
- Vista WebCT: course management software used for assessment, labs, and grade book
- Personal Response System: PRS used for active student participation in class
- A scientific calculator will be needed in class for simple calculations, a graphing calculator such as the TI-83 is allowed but not required. CAS calculators are not allowed on exams.
- Derive 6: a computer algebra system used in computer labs to explore math

Objectives: The general goals of the College Algebra – Applications course are:

- APPLICATIONS: use math to model and solve real world problems
- CONCEPTUAL UNDERSTANDING: explore and understand central concepts in algebra, rather than just rote memorization of algorithms
- ALGEBRAIC SKILLS: develop proficiency in manipulating algebraic expressions and solving algebraic equations and inequalities
- PROBLEM SOLVING: gain experience as a problem solver, to use a heuristic to analyze problems in an organized manner
- MULTIPLE APPROACHES: to examine problems from analytical, geometric and numeric perspectives, to make decisions about the appropriateness of the choice of formal or approximate methods of solution
- TECHNOLOGY AS A TOOL: use technology as an integral part of the process of formulation, solution, and communication, to gain experience in selecting the proper tool for a given problem
- ACTIVE STUDENT LEARNING: to engage in the exploration and discovery of concepts and to learn to work cooperatively to solve problems
- COMMUNICATION OF IDEAS: to demonstrate understanding by explaining in written or oral form the meanings and applications of concepts
- HISTORY OF MATHEMATICS: to learn about mathematics as a fallibilistic human endeavor rather than a mystical finely polished set of rules.

The specific goals of the college algebra course will be to stress an algebraic, graphic, and numeric approach to the study of:

- the concept of function and using functions as models
- modeling techniques used in solving real world problems
- solving equations and inequalities in one variable
- polynomial, rational, radical, absolute value, exponential, logarithmic functions

Evaluation: Multiple forms of assessment will be used to measure your understanding of algebra concepts, skills, and modeling. The distribution of these assessments is:

	Assessment	Number	Points	Percent of Grade
1	Participation & Supplemental Instruction	varies	50	5%
2	Homework Quizzes	10	50	5%
3	Chapter Review Quizzes	5	50	5%
4	Labs and ACT Exams	10	300	30%
5	Pre-assessment Exam	1	50	5%
6	Exams	3	300	30%
7	Comprehensive Final	1	200	20%
	TOTAL		1000	

Grading Scale: A 100-90; B 89-80; C 79-70; D 69-60; F 59-0. The assessments include an individual component worth 70% and a group component (4) worth 30%.

Participation, Attendance, and Supplemental Instruction: Attending and participating in class and labs is critical to being successful in the course. Statistics from previous semesters indicate that students with less than 3 absences earn a letter grade higher than those with 3 or more absences. Participation activities will be conducted in all lecture sessions using the *Personal Response System*. Participation activities cannot be made up later, if you miss class for any reason you lose those points! Attendance will be taken for all class and lab sessions. The 50 points for participation are calculated off of accumulated total points from:

- Class and Lab Participation: 40 days, every class day excluding exams
- Supplemental Instruction: 14 days, attending supplemental sessions if required or maintaining an exam score of over 70%.
- PRS questions during lectures and review sessions.

Attendance Policy: In addition to losing participation points due to absences, we reserve the right to make another deduction of up to 50 points for missing more than 4 days of lectures, labs, or supplemental instruction. This is equivalent to dropping ½ a letter grade.

Supplemental Instruction will be required for any student scoring below 80% on the *Pre-assessment Exam* (2 attempts) or scoring below 70% on a regular exam. The student will be required to attend supplemental instruction sessions until they score higher than 70% on a subsequent exam. Supplemental instruction sections will be held on Wednesdays at the same time and in the same room as your lecture session. Statistics from past semesters indicate that students attending supplemental instruction showed significant improvement in course grade. In addition statistics indicate that student success in the course is strongly related to how well they do on the pre-assessment exam:

- Score at or above 90% on pre-assessment – 85% earned C or better in course
- Score between 80% to 89% on pre-assessment – 73% earned C or better in course
- Score between 70% to 79% on pre-assessment – 53% earned C or better in course
- Score between 60% to 69% on pre-assessment – 23% earned C or better in course
- Score between 50% to 59% on pre-assessment – 8% earned C or better in course

We strongly recommend that if you score below 60% on the pre-assessment after two attempts that you drop the course and take the Algebra Workshop.

Homework Quizzes and Chapter Review Quizzes: The quizzes are taken on Vista WEBCT and assess mastery of skills and concepts. These quizzes are taken outside of class and lab time and can be taken on any computer connected to the web. You will be allowed to take each quiz twice. The highest score on a quiz will count as part of your grade. Homework quizzes are open between Wednesday and the following Monday. Chapter review quizzes will be opened the Friday before an exam and closed the following Monday before the evening review sessions.

Laboratories: Labs will be 1.5 hours in length and attendance will be checked by scanning school IDs. Computer labs are held on Tuesday in the Institute for Mathematics Learning Computer Center in 213-215 Armstrong Hall. All labs will be completed in teams of two and will receive a group score. If a lab is not completed by the end of the lab period, then the student must return to the Computer Center during open lab times to complete it by Sunday at 8:00 p.m. **LAB SHEETS ARE NEVER TO LEAVE THE LAB,** violation of this rule will result in a zero on the lab. Lab teams are encouraged to seek consultation with others, but the team members must complete the data sheet portion of the lab and each member must sign it. If a team member contributes little or nothing to a given report, the working member is not obligated or expected to get that person's signature; absent the signature, that person will not share in the team grade. The lab will be divided into three communities, each of which is led by a lab mentor. The lab mentor will assist their communities by providing feedback to team questions, answering any questions concerning technology use, and grading the labs for their communities. Another component of the lab grade will be a *pre-ACT* and *post-ACT* exam, which will be averaged to count as one lab grade: pre-ACT (10 points) + post-ACT (20 points).

Pre-assessment and Exams: The pre-assessment and exams will be given in the IML Computer Center during your assigned lab time. They will be completed and submitted on the computer. You must present your WVU ID on exam days. The final will be in the lab on Tuesday of finals week, which will require a signup for testing time. Review sessions for exams will be held on Monday evenings before exams. All make ups for exams must be completed within 24 hours of the exam day.

Academic Dishonesty: Failure to comply with any written rules or regulations set forth in the course will result in a zero on that activity and may result in reporting the action to the Dean of Arts and Sciences. PRS remotes are university property used by multiple classes. Failure to return remotes to designated locations, damage done to remotes, or use of another student's remote will result in a severe deduction in the participation grade, and a university charge to your student account.

Help: On an average, you should expect to spend six hours per week outside of class and lab time working on this class. If you are spending more, then you may need to seek help!

- Seek help from your class lab partner.
- Seek assistance from your instructor or lab mentor.
- Seek help in the IML Computer Center in Armstrong 213-215.
- Seek help from the Math Learning Center in Armstrong 301.

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with Disability Services (293-6700).

FAQ – Frequently Asked Questions

(A math 124 student's Q&A dream)

- 1. If I need help in this course, where can I get it?**
See the syllabus, page 3. There are many places to get help for free. The question is whether you'll take advantage of all the help that is afforded to you. Also note lab mentors, tutor for hire – see IML Computer Center Supervisor.
- 2. What happens if I forget to take a quiz?**
If you forget to take a quiz, you'll receive a zero for that quiz. There are no make-ups. However, under certain extreme circumstances, one can have a quiz re-opened.
- 3. If I miss class, can I make up the PRS points?**
You cannot make up any daily PRS points. They are participation points and you have to be present to participate.
- 4. When I get a zero on a quiz or a zero for a PRS day, how much will it hurt my overall grade?**
Any zero hurts your grade! However, only one quiz or two PRS days as a zero won't significantly effect your grade. However, students must realize the deeper effect of missing a quiz or 2-3 days of class: a much lower exam score due to not understanding course material, which hurts your overall grade significantly. Attending and participating in class are essential to success in the course.
- 5. If I feel a lab, quiz, or exam question has been misgraded or has a typo, what do I do?**
There are thousands of questions for this course in Vista WEBCT, so a couple of times each semester there may be typos or an answer marked incorrectly. Please bring this to the instructor's attention through Vista WEBCT email. If the mistake is in the lab you are working on, bring it to the instructor's attention immediately. You will be given full credit for all corrections.
- 6. What do I do if I feel I deserve a higher point total on my lab write-ups?**
First, ask your lab mentor to explain the score you got. If you are not satisfied with the response, then speak with the instructor. The lab mentor and instructor will work together when needed to ensure an equitable grade.
- 7. If I miss an exam day, what do I do?**
If you are sick, you must contact the instructor via Vista WEBCT email before the start of the exam. If you fail to do this, then you are expected to contact the instructor ASAP. Failure to do so will result in a zero on the exam. All exams missed for a valid reason must be made up within 24 hours. Extreme circumstances will be handled on an individual basis with advanced notice.
- 8. If my question is not here, then what do I do?**
Send a mail message from the Vista WEBCT Math 124 homepage. Mail in Vista WEBCT is the only electronic way to contact the instructor in this course. You may also phone his/her office. E-mails in mix should only be used if your access to Vista has been denied.

MATH 124 Calendar

Date		Class/Lab Activity	Read	Assignment
Jan 9	M	Course Introduction & Number Properties	Sec P.1	1-65 odd, 73, 77, 79, 83
Jan 10	T	Pre-ACT and Attitude Assessment		
Jan 11	W	Supplemental A: Preassessment Review Exponents & Polynomial Expressions	Sec P.2 Sec P.3	1-89 odd, 91, 93, 101, 109 1-103 odd, 129, 135, 143
Jan 13	F	Rational Expressions	Sec P.4	1-83 odd, 85, 89, 101
Jan 13-16	F-M	Chapter Review Quiz – Preliminary		
Jan 16	M	HOLIDAY Martin Luther King		
Jan 17	T	PREASSESSMENT Exam		
Jan 18	W	Supplemental B: Preass. Retake Review		
Jan 20	F	Relations and Linear Relationships	Sec 1.1	Concept Map, 5-35 odd, 36, 38, 39-45 odd, 48-97 odd
Jan 22	Sun	PREASSESSMENT Exam Retake		1:00-6:00 IML Computer Lab
Jan 23	M	Functions: Multiple Representations	Sec 1.2	1, 2, 5, 7-47 odd, 48
Jan 24	T	Lab 1: Intro. & Function as Process		
Jan 25	W	Supplemental Instruction – Session 1		Section 1.1-1.2
Jan 25-30	W-M	QUIZ 1		Section 1.1-1.2
Jan 27	F	Functions as Process and Object	Sec 1.3	1, 4, 5-13 odd, 14, 15-111 odd
Jan 30	M	Function Operations	Sec 1.4	1, 8, 11-55 odd, 56, 57- 105 odd
Jan 31	T	Lab 2: Function as Object		
Feb 1	W	Supplemental Instruction – Session 2		Section 1.3-1.4
Feb 1-6	W-M	QUIZ 2		Section 1.3-1.5
Feb 3	F	Function as Object: Inverse Functions	Sec 1.5	1, 5, 13-81 odd, 86, 87
Feb 3-6	F-M	Chapter Review Quiz – Chapter 1		
Feb 6	M	Review for Exam 1		
Feb 7	T	EXAM 1 - CHAPTER 1		
Feb 8	W	Supplemental Instruction – Session 3		Exam 1 Retrospect & Section 1.5
Feb 10	F	Math Modeling - Known Relationships	Sec 2.1	1-31 odd, 32, 33, 36, 37, 39, 41
Feb 13	M	Math Modeling - Finite Differences	Sec 2.2	1, 3, 4-11 all, 13-25 odd, 26
Feb 14	T	Lab 3: Finite Differences		
Feb 15	W	Supplemental Instruction – Session 4		Section 2.1-2.2
Feb 15-20	W-M	QUIZ 3		Section 2.1-2.2
Feb 17	F	Mathematical Modeling - Least Squares	Sec 2.3	1, 4-11 all, 13-17 odd, 18, 19-25 odd, 26, 27
Feb 20	M	Linear Equations of One Variable	Sec 2.4	1, 2, 4-21 odd, 22, 23-57 odd, 61
Feb 21	T	Lab 4: Least Squares Fit		
Feb 22	W	Supplemental Instruction – Session 5		Section 2.3-2.4
Feb 22-27	W-M	QUIZ 4		Section 2.3-2.4
Feb 24	F	Quadratic Equations of One Variable	Sec 2.5	1-21 odd, 24, 25-71 odd, 77
Feb 27	M	Inequalities	Sec 2.6	1-23 odd, 24, 27-63 odd
Feb 28	T	Lab 5: Modeling Real World Problems		
Mar 1	W	Supplemental Instruction – Session 6		Section 2.5-2.6
Mar 1-6	W-M	QUIZ 5		Section 2.5-2.6
Mar 3	F	Polynomial Functions of Degree Two	Sec 3.1	1-49 odd
Mar 3-6	F-M	Chapter Review Quiz – Chapter 2		

Mar 6	M	Review for Exam 2		
Mar 7	T	EXAM 2 – CHAPTER 2		
Mar 8	W	Supplemental Instruction – Session 7		Exam 2 Retrospect & Section 3.1
Mar 10	F	Polynomial Functions of Higher Degree	Sec 3.2	1-45 odd
Mar 13-17	M-F	SPRING BREAK		
Mar 20	M	Absolute Value/Piecewise Defined	Sec 3.3	1-67 odd
Mar 21	T	Lab 6: Interpolating Polynomials		
Mar 22	W	Supplemental Instruction – Session 8		Section 3.2-3.3
Mar 22-27	W-M	QUIZ 6		Section 3.1-3.3
Mar 24	F	Radical Functions	Sec 3.4	1-17 odd, 18, 19-61 odd, 66
Mar 27	M	Rational Functions	Sec 3.5	1-81 odd, 85
Mar 28	T	Lab 7: Rational Models		
Mar 29	W	Supplemental Instruction – Session 9		Section 3.4-3.5
Mar 29-Apr 3	W-M	QUIZ 7		Section 3.4-3.6
Mar 31	F	Rational Equations and Inequalities	Sec 3.6	1, 5-55 odd
Mar 31-Apr 3	F-M	Chapter Review Quiz – Chapter 3		
Apr 3	M	Review for Exam 3		
Apr 4	T	EXAM 3 - CHAPTER 3		
Apr 5	W	Supplemental Instruction – Session 10		Exam 3 Retrospect & Section 3.6
Apr 7	F	Exponential Functions: Data Analysis	Sec 4.1	1, 3, 4, 7-9 all, 13-45 odd, 46, 49-61 odd
Apr 10	M	Exp. Functions: Known Relationship	Sec 4.2	1, 5-29 odd, 35-65- odd, 74
Apr 11	T	Lab 8: Calculations of Interest		
Apr 12	W	Supplemental Instruction – Session 11		Section 4.1-4.2
Apr 12-17	W-M	QUIZ 8		Section 4.1-4.2
Apr 14	F	SPRING Holiday		
Apr 17	M	Logarithmic Functions	Sec 4.3	1-93 odd
Apr 18	T	Post-ACT and Attitude Assessment		
Apr 19	W	Supplemental Instruction – Session 12		Section 4.3
Apr 19-24	W-M	QUIZ 9		Section 4.3
Apr 21	F	Exponential and Logarithmic Equations	Sec 4.4	1, 5-93 odd, 96
Apr 24	M	Mathematical Modeling: Linearization	Sec 4.5	1, 5-25 odd, 26
Apr 25	T	Lab 9: Linearization		
Apr 26	W	Supplemental Instruction – Session 13		Section 4.5
Apr 26-30	W-S	QUIZ 10		Section 4.5
Apr 28	F	Review for Final		
Apr 26-30	W-S	Chapter Review Quiz – Chapter 4		
May 2	T	FINAL EXAM		Must sign up for final exam time