

Math 129 Precalculus Fall 2008

4 credits

INSTRUCTOR:	OFFICE:
PHONE: EMAIL: OFFICE Hours:	PREREQUISITES: Two units of algebra, one unit of geometry, and satisfactory performance on departmental placement examination.
TEXT: Sullivan: College Algebra and Trigonometry: Enhanced with Graphing Utilities, 4th edition. Upper Saddle River, NJ, Prentice -Hall.	LAB MANUAL: Interactive Computer Laboratories for College Algebra and Precalculus: Pyzdrowski, available through WVU Bookstore
FINAL: Tuesday, December 9 11:00 – 1:00 Either a scientific or graphing calculator is required for the course. Only those calculators permitted for use on the ACT test are permitted. Please see your instructor if you have questions.	Your grades are determined by your instructor. All course and grade questions should be first directed to your instructor. If for some reason, you or your instructor feel that it is necessary, you may wish to schedule an appointment with the M129 Course Coordinator to discuss this course. Course Coordinator: Dr. Laura J. Pyzdrowski 411 - B Armstrong Hall 304.293.2011
Students must register for both lecture and laboratory. 80531 LEC 001 MWF 0830-0920 225 BKH-D Goodykoontz 81814 LAB 002 R 0830-0920 215 ARM-D	All extreme case situations are reviewed and decided upon by the Math 129 instructional team during finals week. Such cases require written documentation from the student outlining the request and circumstances surrounding the request. Please contact your instructor for more information.

- **You must attend a laboratory section that is attached to your lecture section and you must work with a laboratory partner from your lecture section in order to receive participation points on a lab.**
- **Labs must be turned in only to YOUR instructor and are due IN YOUR CLASS on the Monday following the lab day. As a courtesy to students, labs will be accepted on the next lecture day IN YOUR CLASS with no penalty. After that, NO LATE LABS WILL BE ACCEPTED.**
- **Each student should complete his/her own copy of the laboratory sheets. Be prepared to turn in your copy of the lab if your partner is absent the day that it is due. Only one lab per team (2-3 students) will be graded; if more than one lab is turned in, only one will be graded and returned.**
- **Only labs turned in to your instructor during regularly scheduled class time will be accepted. Make plans to get your lab turned in if you must miss class.**

This course is a part of WVU's General Education Curriculum and focuses on Basic Mathematics and has been certified as part of WVU's Liberal Studies Program, Math and Natural Sciences (cluster C). The course will focus in part on developing your ability to communicate effectively, understand alternative views and cultures, and use quantitative and scientific knowledge accurately.

Objectives: The general goals of this course are common to all the courses in the Institute for Math Learning at WVU:

- **CONCEPTUAL UNDERSTANDING:** rather than just rote memorization of algorithms
- **MULTIPLE APPROACHES:** to examine problems from analytical, geometric and numerical perspectives, to make judgments 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
- **APPLICATIONS:** use mathematics to model and solve problems
- **PROBLEM SOLVING:** gain experience as a problem solver, to analyze problems in an organized manner
- **HISTORY OF MATHEMATICS:** to learn about mathematics as a human endeavor.

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

- understanding and using the concept of function
- mathematical application problems
- solving equations and inequalities in one variable using multiple representations
- graphing equations and functions
- lines, parabolas, and circles
- higher order polynomial, rational, radical, absolute value, exponential and logarithmic functions
- systems of equations and matrices

To accomplish course goals, the class incorporates interactive laboratories which use technology and student activities that emphasize writing and student collaboration. Students will work in pairs or triads on the laboratories and in class exercises in order to develop mathematical communication skills. **The development of your communication skills is an integral part of the course.**

Evaluation: Multiple forms of assessment will be used to measure your understanding of algebra concepts and problem solving. The point distribution of these assessments is:

Assessment	Number	Max Points Awarded
Exams: There will be four tests given throughout the semester in the lab during your scheduled lab or class time, each is worth 100 points. Make Up Exams: If a student contacts the instructor <u>prior to an exam</u> , a make up exam is tentatively scheduled to be given during lab time in 213/215 Armstrong Hall on the date on your schedule. Missed exams WILL affect midterm grades.	4	400
Comprehensive Final: There will be a comprehensive final worth 200 points	1	200
Laboratory Assignments: There will be 10 computer laboratory assignments. The laboratory scores will be averaged. You will be awarded laboratory points that are 2 times your laboratory average. Laboratory assignments should be done with a partner in the lab during scheduled lab time. If you fail to complete the laboratory during your scheduled lab time, you and your group must complete the laboratory during open lab times prior to the due date. See the schedule posted in 213-215 Armstrong Hall for open lab times. Laboratory points are awarded for the ability to do and communicate about mathematics as well as for your ability to manage your time and follow directions and a schedule. Any laboratories not submitted as a team effort, will not be awarded communication points. An eCampus component that is available only in the lab must be completed. If you do not complete the eCampus component, you will not receive points for the laboratory. No late labs will be accepted and they must be turned in by the Monday following the assignment and only during class time.	10	200
Quizzes: There will be 4 online VISTA homework quizzes (HQ). Each HQ may be attempted 3 times and the best score is counted with one attempt made before the test on which the content appears. The homework quizzes will be averaged for a possible 100 points. Each HQ can be accessed once the Quiz Release is completed with a perfect score. Each HQ closes at 5:00 PM server time on December 7, 2008.	4	100
Participation: You will be awarded up to 100 participation points for the course. All absences are treated the same whether University excused or not. Each instructor chooses to use sign-in sheets and/or short participation quiz/work sheets, worth up to 2.5 points per lecture, if completed satisfactorily. If you forget to sign the sheet or turn in work, you do not demonstrate active participation worthy of points for that day. All students are awarded 2.5 points for Labor Day recess. All students are awarded the full 7.5 points to accommodate schedule changes during the first week of classes. All students have the opportunity to tally more than 100 points, but only are awarded up to 100 points toward their grade. Hence, a student may miss up to 5 times before the possible 100 points are affected due to absences.	45	100

Grade: points 900 A, 900 > points 800 B, 800 > points 700 C, 700 > points 600 D, points < 600 : Fail

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).

Help: On an average, you should expect to study two hours outside of class for each one hour in class. If you are spending more, then you may need to seek help! There are several excellent sources for such help. First, seek help from your classmates; often they can explain the problem since they have been working on it. You may also seek assistance from the Math Learning Center on the 3rd floor of Armstrong Hall, a residence hall study session, or you may seek help from your instructor during office hours.

TENTATIVE SCHEDULE

Week	Text Sections	Laboratory/Quiz/Exam
1	R.1 - R.5 & R.7 - R.8, 1.1 (BRUSH-UP/REVIEW) The content found in the Review is considered review/foundation. Your instructor will not “teach” the content from the Review. It is quickly skimmed through during the first week as a warm-up to the course. If you do not feel comfortable working through the exercises on your own, you should consider enrolling in the Algebra Workshop or obtaining a tutor. Content from the Review will be on Test 1 and mastery of it is expected throughout the course.	LAB: eCampus Check in, Bonus Pre-Test (earn up to 10 bonus points) (M129 ECAMPUS LINK: https://ecampus.wvu.edu Your instructor will provide information so that you can access your account.)
2	1.2 - 1.3, 1.5, 1.7	LAB: Introduction and Basic Graphs QUIZ: Quiz Release
3	Labor Day Recess, 1.8-1.9, 2.1	LAB: Graphing Techniques
4	2.2, 2.3, 2.4	EXAM: Test 1 QUIZ 1: One attempt due before Test 1
5	2.6, 2.7, 4.1	LAB: The Box
6	2.8, 3.1, 3.2, 1.4	LAB: Quadratic Functions
7	R6, 3.3-3.4	LAB: Polynomial Functions
8	3.6-3.7, 4.2-4.3	EXAM: Test 2 QUIZ 2: One attempt due before Test 2
9	4.4-4.7	LAB: Rational Functions
10	4.8, 5.1	LAB: Exponential Functions
11	6.1-6.4	EXAM: Test 3 QUIZ 3: One attempt due before Test 3
12	6.5-6.8, 7.1	LAB: Logarithmic Functions
13	7.2-7.3	LAB: Trigonometric Functions
14	7.4-7.5, 7.7, 8.1	LAB: Trigonometric Graphs EXAM: Test 4 (IN CLASS) QUIZ 4: One attempt due before Test 4
15	8.2-8.3, 9.1	LAB: Make-up Exams The HQ portion of the course will be “turned off” by 5:00 pm December 7, 2008.

Math 129 ECAMPUS LINK: <https://ecampus.wvu.edu/>

Section	Name	Problem Numbers
R.1	Real Numbers	1, 9, 11, 13, 15, 27, 29, 33, 35, 39, 45, 47, 53, 63, 69, 71, 75
R.2	Algebra Review	4, 11, 15, 23, 24, 31, 37, 41, 45, 47, 49, 57, 59, 61, 65, 73, 74, 75, 76, 77, 87, 89, 93, 95, 141
R.3	Geometry Review	7, 17, 21, 23, 25, 27, 33, 35
R.4	Polynomials	7, 9, 17, 21, 29, 31, 34, 39, 47, 55, 69, 93, 97
R.5	Factoring Polynomials	5, 13, 17, 25, 33, 39, 45, 51, 57, 61, 65, 85, 91, 95, 105, 107, 121
R.6	Synthetic Division	5, 9, 17
R.7	Rational Expressions	5, 13, 19, 25, 31, 47, 53, 63, 73
R.8	n th Roots; Rational Exponents	1, 2, 7, 15, 17, 21, 23, 31, 43, 47, 55, 63, 71, 75
1.1	Rectangular Coordinates; Graphing Utilities; Introduction to Graphing Equations	5, 7, 9, 13, 33, 39, 49, 57, 64, 75, 77, 79, 83, 95, 105
1.2	Solving Equations Using a Graphing Utility; Linear and Rational Equations	77, 41, 43, 45, 51, 53, 55, 61, 71, 89, 95, 99, 101, 105, 107, 109
1.3	Quadratic Equations	5, 6, 13, 15, 17, 25, 35, 37, 39, 43, 47, 49, 61, 69, 73, 75, 85, 87, 93
1.4	Complex Numbers; Quadratic Equations in Complex Numbers	9, 13, 19, 26, 27, 31, 33, 35, 49, 51, 53, 59, 73, 79
1.5	Radical Equations; Equations in Quadratic Form, Absolute Value Equations; Factorable Equations	13, 17, 25, 29, 35, 39, 59, 65, 71, 81, 83, 100, 103, 107
1.7	Solving Inequalities	11, 13, 14, 25, 29, 33, 37, 51, 53, 65, 73, 77, 83, 89, 91, 95, 97, 107, 109
1.8	Lines	9, 13, 23, 25, 27, 37, 39, 41, 53, 59, 71, 77, 79, 91, 111, 115
1.9	Circles	4, 7, 9, 15, 21, 25, 29, 33, 35, 37
2.1	Symmetry; Graphing Key Equations	7, 13, 17, 25, 27, 31, 37, 39, 43, 49
2.2	Functions	15, 19, 27, 33, 39, 41, 53, 57, 55, 61, 65, 73, 75, 89, 98
2.3	The Graph of a Function	9, 13, 15, 23, 25, 37
2.4	Properties of Functions	11, 13, 15, 17, 19, 21, 29, 33, 53, 63, 64
2.6	Library of Functions; Piece-wise Defined Functions	9, 10, 11, 12, 13, 14, 15, 16, 25, 29, 35, 41, 43
2.7	Graphing Techniques: Transformations	7, 9, 11, 13, 15, 17, 19, 27, 31, 41, 59, 65
2.8	Math Models: Construction Functions	3, 7, 8, 9, 11, 13, 14, 15, 29, 31
3.1	Quadratic Functions and Models	11, 13, 15, 17, 27, 45, 51, 53, 59, 71, 79, 81, 85
3.2	Polynomial Functions and Models	11, 15, 23, 25, 32, 37, 43, 55, 65, 75, 79, 91
3.3	Properties of Rational Functions	13, 23, 25, 31, 41, 45, 49
3.4	Graphs of Rational Functions	7, 15, 27, 33, 35, 51, 61
3.6	The Real Zeros of a Polynomial Functions	11, 13, 21, 27, 39, 43, 63, 73
3.7	Complex Zeros	7, 9, 17, 23, 33
4.1	Composite Functions	7, 9, 11, 19, 47, 53, 69, 63
4.2	One-to-one functions; Inverse functions	11, 15, 19, 21, 33, 41, 50, 63, 65, 80
4.3	Exponential Functions	15, 21, 23, 25, 27, 29, 31, 33, 35, 39, 45, 53, 63, 67, 71, 77, 101
4.4	Logarithmic Functions	15, 19, 23, 31, 39, 45, 61, 67-74, 77, 85, 89, 91, 101, 111
4.5	Properties of Logarithmic Functions	2, 13, 15, 23, 27, 41, 49, 51, 53, 61, 63, 65, 69, 75, 76, 83
4.6	Logarithmic and Exponential Equations	7, 11, 15, 19, 23, 27, 31, 45
4.7	Compound Interest	7, 15, 29, 31, 35, 39, 49
4.8	Exponential Growth and Decay	1, 3, 7, 9, 11
5.1	Systems of Linear Equations:	7, 11, 19, 23, 25, 29, 41, 55
6.1	Angles and Their Measure	11-14, 17-20, 35-37, 47-49, 71
6.2	Right Triangle Trigonometry	11-14, 21, 23, 25, 27, 37, 39, 49, 68
6.3	Computing the Values of Trig Functions	5-9, 17, 19, 20, 21, 29, 31, 34, 41, 53
6.4	Trigonometric Functions of General Angles	11-14, 21-24, 33-35, 41-46, 59-62, 71-74, 89, 90
6.5	Unit Circle Approach	9-12, 17, 21, 37-39, 55-57, 61, 65, 79
6.6	Graphs of the Sine and Cosine Functions	9-14, 19-21, 43, 65, 77, 78

6.7	Graphs of the Tangent, Cotangent...	7-12, 19, 45
6.8	Phase Shift, Sinusoidal Curve Fitting	3-7
7.1	Inverse Sine, Cosine, Tangent Functions	13-19, 25-27, 37-40
7.2	Inverse Trigonometric Functions	9-14, 37, 39, 41, 45-47
7.3	Trigonometric Identities	19-24, 27, 31, 35, 41
7.4	Sum and Difference Formulas	9-14, 21-24, 31, 77
7.5	Double Angle and Half Angle Formulas	7-11, 19-25, 35-37, 59
7.7	Trigonometric Equations	7, 13, 31-37, 41, 43
8.1	Applications Involving Right Triangles	9-13, 23, 27
8.2	Law of Sines	9, 11, 17, 25, 27, 41
8.3	Law of Cosines	9, 11, 13, 17, 19, 25, 34
9.1	Polar Coordinates	11-18, 19, 25, 31, 39, 45, 75-78