

Course Syllabus MTH 127 Section 112 Fall 2017

Course Title:	College Algebra - Expanded										
Course Number:	MTH 127 -- Section 112 -- CRN 3131 -- Credit: 5 Hours										
Textbook:	College Algebra with Integrated Review ISBN: 978-1-944894-97-9 (with textbook) or 978-1-944894-98-6 (with e-book only)										
Sections Covered:	1.1, 1.5, 1.6, 2.1- 2.6, 3.1-3.4, 3.6, 4.1- 4.6, 5.1, 5.2, 5.4, 6.1, 7.1-7.5, 8.1										
Course Description:	Basic Concepts of algebra; Equations and Inequalities; Graphs; Study of Functions and their Graphs; Linear and Quadratic Functions; Polynomial and Rational Functions; Exponential and Logarithmic Functions.										
Calculator:	Any Scientific calculator (TI-30), graphing calculators will not be allowed in exams.										
Prerequisites:	Math ACT of 17 or above, SAT 400										
Meeting Time:	MW: 11:00 – 11:50 AM (SH 624), TRF: 10:00 – 10:50 AM (SH 513)										
Classroom:	Smith Hall 624/513										
Instructor:	Dr. Basant Karna										
Office:	Smith Hall 715										
Office Hours:	MW: 10:00-11:00, TRF: 11:00-12:00 PM, others by appointment										
Phone/Email:	Phone: (304) 696-4332, Email: karna@marshall.edu										
Webpage:	http://www.science.marshall.edu/karna/										
Course Objectives:	<p>The students completing this course should be able to:</p> <ul style="list-style-type: none"> - Understand mathematical concept of a function. - Sketch and interpret the graphs of elementary functions. - Manipulate and solve polynomial, rational, exponential, and logarithmic Equations and apply to new situations in mathematics and daily life. <p>The students will be ready for MTH 132.</p>										
Course Contents:	<ul style="list-style-type: none"> - Review - Equations and Inequalities - Functions and Their Graphs - Polynomial and Rational Functions - Exponential and Logarithmic Functions - System of Linear Equations 										
Attendance Policy:	Attendance is required and you must come with your text. Attendance will be taken every class day. Having more than 25% absences (excused or unexcused) may result in a course grade of F! Absences which can be excused include illness, emergencies, or participation in another university activity.										
Grading Policy:	<p>A. <i>Homework Problems:</i> Online homework problems are assigned and graded. You are responsible for reading the text, working the exercises, coming to office hours for help when you're stuck, and being aware of the dates for the major exams. Lowest 5 (out of 50) scores will be dropped.</p> <p>B. <i>Exams:</i> There will be 3 exams given in class during the semester.</p> <p>C. <i>Final Exam:</i> There will be a two-hour common final on December 9.</p>										
Points Distribution:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Homework Assignments/Attendance</td> <td style="text-align: right;">100 Pts</td> </tr> <tr> <td>Three Major Exams</td> <td style="text-align: right;">300 Pts</td> </tr> <tr> <td>Final Exam</td> <td style="text-align: right;">100 Pts</td> </tr> <tr> <td colspan="2" style="border-top: 1px dashed black; padding-top: 5px;">Total Pts:</td> </tr> <tr> <td></td> <td style="text-align: right;">500 Pts</td> </tr> </table>	Homework Assignments/Attendance	100 Pts	Three Major Exams	300 Pts	Final Exam	100 Pts	Total Pts:			500 Pts
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Three Major Exams	300 Pts										
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Total Pts:											
	500 Pts										

Grades	The semester grade will be based on the percentage of the 500 total possible points, using the following scale. A: 90 -100 % , B: 80 - 89 % , C: 70 - 79 % , D: 60 - 69 % , F: 0 - 59 % Note: The class score will be posted on MUOnline.
Make-ups:	A. <i>Exams:</i> Making up a missed exam is possible only if you receive prior permission from me and only for serious and unavoidable circumstances. Make-ups are likely to be more difficult than the original exam and must be taken within a week of the original exam date. B. <i>Final:</i> If you don't take final exam, you will receive "F" for the class. C. <i>Homework Assignments:</i> If you miss the deadline for online homework assignments, you will not get any point. Lowest 5 scores out of 50 assignments will be dropped.
Exam Dates:	Exam 1 – Sep 12, Exam 2 – OCT 10 , Exam 3 – Nov 7 (Tuesdays) Common Final Exam: December 9 @ 2:00 PM (Saturday)
Important Dates:	<ul style="list-style-type: none"> ▪ August 28, Monday – "W" Withdrawal period begins ▪ September 4, Monday – Labor Day – No Class ▪ October 27, Friday – Last day to drop ▪ November 20, Monday – November 25, Saturday – Thanksgiving Break ▪ December 8, Friday – Last class day
Disruptive Actions:	If your actions become disruptive or distracting for me or another student, you will be asked to cease your behavior. If you choose to continue, you will be asked to leave. Disruptive behavior may include, but are not limited to the following: cell phone use in class, talking during class, and the use of iPods or MP3 players during class. These will count as unexcused absences.
University Policies	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to http://www.marshall.edu/academic-affairs/policies/ Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment
Free Tutoring:	Free tutoring in Smith Music Hall 115 (10:00 – 4:00 PM Monday to Thursday and 10:00 to Noon on Friday) and in Smith Hall 620 (5:00 PM to 6:30 PM Monday to Thursday).
Disable Students:	The Disabled Student Services web site is now available. You may visit it at http://www.marshall.edu/disabled . Students seeking special accommodations need to follow the university policy detailed at this web site. It is their responsibility to initiate the process for receiving accommodations based upon their disability. If you have any questions or comments, please contact Sandra Clements, the Director of Disabled Student Services.
Coming Late:	Students should come on time and stay in the class for entire class. If you are late by more than 5 minutes, you will be considered to be absent.
Hawkes Mastery-based Homework and Webtests:	Each textbook section corresponds to at least one homework (Certify) section in the Hawkes learning system. To sign in, go to learn.hawkeslearning.com and follow the onscreen prompts to enter your code. Many assignments have prerequisite sections that must be completed prior to attempting the assignment. These prerequisites are review and reinforcement of mathematical topics that support the material you are learning in class. They are listed on the course schedule as "Prep work" and you should read through the "Learn" screens and attempt the assignments prior to the lab day they are assigned for.

Course Student Learning Outcomes	How students will practice this outcome	How students will be assessed on this outcome
Identify and implement appropriate solution methods for single-variable eqns	Online homework, written assignments, in-class activities	Course exams and common final
Identify and graph standard algebraic functions	Online homework, written assignments, in-class activities	Course exams and common final
Interpret graphs of functions	Online homework, written assignments, in-class activities	Course exams and common final
Construct functions to model applications	Online homework, written assignments, in-class activities	Course exams and common final
Communicate written mathematics using appropriate notation and explanation where appropriate	Online homework, written assignments, in-class activities	Course exams and common final

MTH 127 Fall 2017 Schedule (TRF Class, MW Labs)		Recommended problems:	
Week 1 8/21-8/25	1	Introduction to the course Introduction to Hawkes Introduction to Desmos: Compound Inequalities	
	2	1.1 The Real Number System 3: Inequalities 4: Set-builder and interval notation 5: Absolute value	Pg. 12 # 5-25, 32-40, 41-52
	3	Prep Work Due: 1.R.2 Reducing Fractions, 2.R.1 Multiplication and Division with Fractions, 2.R.2 Addition and Subtraction with Fractions Lab: Practice and Certify 1.1 Desmos: Pool Border Problem	
	4	3.1 Cartesian Coordinate System 1: Cartesian coordinate system 2: The graph of an equation 3: Distance and midpoint formulas	Pg. 185-187 #1-26, 33-51, 54, 55-60, 69-73
	5	2.1a Linear Equations in One Variable 1: Solutions to equations 2: Solving linear equations 4: Solving linear equations for one variable	Pg 106-108 #1-25
Week 2 8/28-9/1	1	Prep Work Due: 4.R.1 Order of Operations Lab: Practice and Certify 3.1, 2.1a Desmos: The Coordinate Plane	
	2	2.1b Applications of Linear Equations in One Variable (Topic 5)	#47-56, 61,65-67, 69, 72
	3	Prep Work Due: 4.R.2 Variables and Algebraic Expressions Lab: Practice and Certify 2.1a,b Desmos: Expression Mash-Up	
	4	2.2 Linear Inequalities in One Variable 1: Solving linear inequalities 2: Solving compound linear inequalities 4: Translating Inequality Phrases	Pg. 118-119 #1-33, 49-57, 59
	5	3.2 Linear Equations in Two Variables 1: Recognizing linear equations in two variables 2: x and y intercepts 3: Horizontal and vertical lines	Pg 194-196 # 1-48
Week 3 9/4-9/8	1	Labor Day	
	2	3.3 Forms of Linear Equations 1: The slope of a line 2: Slope-intercept form of a line 3: Point-slope form of a line	Pg. 209-210 #1-12, 13- 21, 25-28, 34-67

	3	Prep Work Due: 4.R.3 Simplifying Expressions Lab: Practice and Certify 2.2, 3.2, 3.3 Desmos: Connecting Graphs, Equations, and Tables	
	4	3.4 Parallel and Perpendicular Lines 1: Slopes of parallel lines 2: Slopes of perpendicular lines	Pg. 219-221#1-6, 19-21, 29-33, 39-41, 55-66
	5	Review for Test 1	
Week 4 9/11-9/15	1	Review Activities: Test 1 Desmos: Polygraph: Lines	
	2	Test 1 (September 12 – Tuesday)	
	3	Prep Work: 5.R.1 Greatest Common Factor Lab: Practice, Certify 5.R.2 Factoring Trinomials by Grouping Desmos: Marbleslide: Lines	
	4	2.3 Quadratic Equations in One Variable (Real Solutions Only) 1: Solving quadratic equations by factoring 2: Solving "perfect square" quadratic equations	Pg. 132-133 #1-8, 15-19
	5	2.3 Quadratic Equations in One Variable (Real Solutions Only) 1: Solving quadratic equations by factoring 2: Solving "perfect square" quadratic equations	Pg. 132-133 #9-13, 21-23
Week 5 9/18-9/22	1	Prep Work: 5.R.3 Additional Factoring Practice Lab: Discuss Test 1 Desmos: Picture Perfect	
	2	1.6 The Complex Number System 1: The imaginary unit and its properties 2: The algebra of complex numbers (no division) 3: Roots and complex numbers	Pg. 83-84 # 1-21, 42, 43
	3	Prep Work: 1.5 Factoring Practice Lab: Practice Factoring, Practice and Certify 1.6 Desmos: Central Park	
	4	2.3 Quadratic Equations in One Variable 4: The quadratic formula	Pg. 133 #34-60
	5	3.6 Introduction to Circles 1: Standard form 2: Graphing circles (omit completing the square to write in standard)	Pg. 239-241 #1-24, 25-29, 30-39
Week 6 9/25-9/29	1	Lab: Practice and Certify 2.3 and 3.6 Desmos: Function Carnival	
	2	4.1 Relations and Functions 1: Relations, domains, and ranges 2: Functions and the vertical line test	Pg 266-268 #1,2,4,9,10,12,13,14,17-20,25-31,35
	3	Prep Work: 4.R.4 Translating Phrases into Algebraic Expressions Lab: Practice with Functions Desmos: Circle Patterns	
	4	4.1 Relations and Functions 3: Functional notation and evaluation 4: Implied domain of a function	Pg. 268-269 #43-46, 49, 61,63, 66,67,68
	5	4.2 Linear and Quadratic Functions 1: Linear functions and graphs 2: Quadratic functions and graphs (Vertex form by formula, not completing the square)	Pg. 281 #1-5, 8, 16, 17, 19-21, 31-37
Week 7 10/2-10/6	1	Prep Work 1.R.4 Simplifying Radicals Lab: Practice and Certify 4.1, 4.2a Desmos: Domain and Range Introduction	
	2	4.2 Linear and Quadratic Functions 3: Max/min problems 4.3a Other Common Functions 1: Commonly occurring functions: ax^n , $ax^{(1/n)}$, absolute value	Pg 281-285 # 39, 41, 42, 47, 49-53 Pg.299 # 1-8, 13-18, 37-40

	3	Lab: Practice and Certify 4.2b, 4.3a Desmos: Polygraph: Parabolas	
	4	2.6 Radical Equations 1: Solving radical equations (with only one radical expression)	Pg. 162 #1,4,5,6,10,13,14, 16, 34-41
	5	Review Test 2	
Week 8 10/9-10/13	1	Review activities Test 2 Desmos: Polygraph: Power, Root, Absolute Value Functions	
	2	Test 2 (October 10 – Tuesday)	
	3	Lab: Practice with graphing functions Desmos: Marbleslide: Parabolas	
	4	4.4 Transformations of Functions 1: Shifting and reflecting only	Pg. 317-318 # 1-3, 8, 9-12, 13-21, 36-45
	5	4.4 Transformations of Functions 2: Symmetry of functions and equations 3: Intervals of monotonicity	Pg. 319 # 46-54, 61-66
Week 9 10/16-10/20	1	Prep Work: 6.R.2 Special Products Lab: Practice and Certify 4.4 Desmos: What's My Transformation	
	2	2.4 Higher Degree Polynomial Equations 2: General polynomial equations of the form $ax^n=b$, or cubics that have a common factor of x only, real solutions only	Pg. 141 # 21, 28, 29, 30
	3	Prep Work: 6.R.3 Special Factorizations - Squares Lab: Practice and Certify 2.4 Desmos: Card Sort: Transformations	
	4	A.1 Polynomial Equations and Graphs (Text Section 5.1) 1: Zeros of polynomials 2: Graphing factored polynomials A.2 Polynomial Division and the Division Algorithm (Omit Division!) (Text Section 5.2) 3: Constructing polynomials with given zeros	Pg. 372-373 #1, 5, 6, 8, 9, 18-21, 24, 27,28, 36-41, 42-49 Pg. 388 #53, 57, 58
	5	A.4 The Fundamental Theorem of Algebra (Text Section 5.4) 1: The fundamental theorem of algebra 2: Multiple zeros and their geometric meaning	Pg. 415 #1-8, 39, 42, 44
Week 10 10/23-10/27	1	Prep Work: 6.R.1 Defining Rational Expressions Lab: Practice and Certify A.1, A.2, A.4 Desmos: Polygraph: Polynomial Pandemonium	
	2	2.5 Rational Expressions and Equations 1: Simplifying rational expressions 2: Combining rational expression 4: Solving rational equations	Pg. 152-154 #1-6, 13,14,17,23,24,25,27, 49, 50, 52, 54,55
	3	Lab: Practice and Certify 2.5 Desmos: Constructing Polynomials	
	4	6.1 Rational Functions 1: Definitions 2: Vertical asymptotes	Pg. 443 # 1-11, 69
	5	6.1 Rational Functions 3: Horizontal asymptotes (no oblique) 4: Graphing rational functions	Pg. 444-445 #19, 22, 23, 24, 25, 29, 31, 34, 37, 40, 41, 42, 43, 47, 49-52
Week 11 10/30-11/3	1	Lab: Practice and Certify 6.1 Desmos: Polygraph: Rational Functions	
	2	4.5 Combining Functions 2: Composing functions	Pg. 331 #23-27,31-37, 44-46
	3	Lab: Practice and Certify 4.5 Desmos: Marbleslide: Rationals	

	4	4.6 Inverses of Functions 2: Inverse functions and the horizontal line test 3: Finding inverse function formulas (basic only)	Pg: 345-346 #13-16, 17-22, 30,35,36,39,47,49,51,53
	5	Review for Test 3	
Week 12 11/6- 11/10	1	Review Activities for Test 3 Desmos: Inverse Functions	
	2	Test 3 (November 7 – Tuesday)	
	3	Prep Work: 7.R.1 Simplifying Integer Exponents I Lab: Learn, Practice, Certify 7.R.2 Desmos: Avi and Benita's Repair Shop	
	4	7.1 Exponential Functions and Their Graphs 1: Definition 2: Graphing 3: Solving basic equations	Pg. 514-515 # 1-6, 22-38, 49, 51, 52, 53, 55, 57
	5	Review 7.1 7.2 Applications of Exponential Functions 3: Compound interest	Pg. 530-531 #22,23,25,26,27,28,29,32,33
Week 13 11/13- 11/17	1	Prep Work: 7.R.3 Rational Exponents Lab: Practice and Certify 7.1, 7.2 Desmos: Polygraph: Exponentials	
	2	7.3 Logarithmic Functions 1: Definition of logarithmic functions 4: Common and Natural logarithms 2: Graphing logarithmic functions	Pg. 541-543 #1-8, 13-20, 25,26,31,37-45, 73-77
	3	Lab: Practice with logarithms Desmos: Marbleslide: Exponentials	
	4	7.3 Logarithmic Functions 3: Evaluating elementary logarithmic expressions	Pg. 543 #46-54, 61-64
	5	7.4 Properties of Logarithms 1: Properties of logarithms 3: Applications (Richter Scale only)	Pg. 555-557 #1-6, 19-26, 31-36,97, 98,
Thanksgiving Break			
Week 14 11/27- 12/1	1	Lab: Practice and Certify 7.3, 7.4 Desmos: Polygraph: Exponential and Logarithmic Functions	
	2	7.5 Exponential and Logarithmic Equations 1: Converting between exponential and logarithmic forms	Pg. 571-572 #1-12, 25-33,49-53
	3	Lab: Practice solving exponential and logarithmic equations Desmos: What Comes Next?	
	4	7.5 Exponential and Logarithmic Equations 2: Further applications (Interest only)	Pg. 573-574 #75, 79, 80
	5	8.1 Systems of Linear Equations 1: Definition and classification 2: Solving by substitution	Pg. 601 #1-15
Week 15 12/4-12/8	1	Prep Work: 8.R.1 Solving systems by graphing Lab: Practice Solving Systems of Linear Equations Practice and Certify 7.5 Desmos: System of Two Linear Equations	
	2	8.1 Systems of Linear Equations 2: Solving by substitution, applications	Pg. 603-604 #58, 63, 64, 65, 70
	3	Review for Final Exam Desmos: Polygraph: Linear Systems	
	4	Review for Final Exam	
	5	Review for Final Exam	