Penn State Abington College

Course Outline Summer - 2014

Course Number: MATH 5071 **Sections:** 001 **Course Name:** Mathematics Academic Prep

When:	**Monday, Tuesday, Wednesday and Thursday 10:00 – 12:00 and 12:30 – 2:30pm June 30 to August 7 2014**
Where:	**Abington Campus, Room 227 Sutherland**

Instructor: Rachael Kratzer
Office: 227S
Telephone: TBD
E-mail: rmk24@psu.edu

Hours of Availability: By Appointment

Student Academic Responsibilities: To be successful in this course your responsibility as a student is to take an active role in the learning process, study the appropriate lessons in the handouts, complete all assignments, check your work, be on time for and attend class regularly, participate in classroom activities, deliver your assignments to the instructor on time, and take all tests as scheduled.

Textbook: None

Course Description: This course covers topics commonly found in Algebra I, Algebra II and Trigonometry courses and will prepare students for Calculus I.

Prerequisites: Successful performance on the pre-test.

Calculators: Calculator policy will vary from topic to topic. Sometimes a scientific calculator will be required. Graphing calculator is not allowed for this course.

Learning Goals: **The students will be able to**:

1. Manipulate and simplify algebraic and trigonometric expressions
2. Solve algebraic and trigonometric equations
3. Graph algebraic and trigonometric functions
4. Create and interpret mathematical models

In addition, they will learn how to use standard useful software (MS Word, Excel, Powerpoint; Logger Pro etc.) and boost study, collaborative and problem-solving skills.

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Academic Integrity: Students are expected to refrain from dishonest and unethical conduct of any kind, particularly as it relates to plagiarizing assignments and cheating on examinations. Such is not acceptable and will result in the assignment of a failing grade. Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other student's dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University of community and compromise the worth of work completed by others. For more specific information check the college catalog for policies regarding cheating and plagiarism.

Students with Disabilities: Penn State encourages academically qualified students with disabilities to take advantage of its educational programs. Students with disabilities who may need accommodations for this class should contact the disability liaison Anne Prior, 315 Sutherland, Tel.: (215) 881-7537.

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Tentative Schedule

Week 1	June 30	What is a Variable? Addition and subtraction of polynomials; Rules for exponents; Multiplication of polynomials; Division of polynomials;
	July 01	Greatest common factor and grouping; Quadratic trinomials; Special factoring
	July 02	Simplification, multiplication and division of rational expressions; Addition and subtraction of rational expressions; Complex numbers
	July 03	Simplification, multiplication/division of radical expressions; Addition/subtraction of radical expressions; **HALF DAY (Happy 4th of July!)**
Week 2	July 07	Introduction to logarithms; Rules for logarithmic expressions; Introduction to functions; Composition of functions and inverse functions; Domains and Ranges
	July 08	Basic equations; Linear one variable equations; Word problems
	July 09	**Snow Day!**
	July 10	Quadratic equations (factoring); Quadratic equations (completing the square); Quadratic formula;
Week 3	July 14	**EXAM 1**, Rational and radical equations; Linear and non-linear inequalities; Systems of linear equations with 2 or 3 equations; Solving systems of linear equations by graphing**;**
	July 15	Finding the equation of a parabola from three points; systems of non-linear equations; Financial formulas; Exponential equations; Logarithmic equations
	July 16	Sets of numbers and the real number line; Coordinate plane, graphing points and Pythagorean theorem; Complex plane and absolute value of a complex number
	July 17	Graphing lines with table of values; Slope of a line and slope-intercept/point-slope forms of a linear equation; House Project, **HALF DAY**
Week 4	July 21	Graphing and solving linear inequalities; Linear Programming; Linear Programming from word problems
	July 22	Graphing polynomials (standard and vertex forms); Graphing rational functions (intercepts, asymptotes, and holes)
	July 23	Graphing Exponential Functions; Graphing Logarithmic functions; Parent functions and transformations; Direct, Inverse/Indirect, Joint Variation
	July 24	**EXAM 2,** Logger Pro© project with a rolling ball and graphs of x vs t, v vs t
Week 5	July 28	Graphing Absolute Value functions; Absolute Value Inequalities; Quadratic functions and maximization problems; Getting information from a graph; Average rate of change;
	July 29	Right triangle trigonometry; Definitions of trigonometric functions; Unit circle; Degrees and Radians
	July 30	Graphs of trigonometric functions; Transformations of trigonometric functions; Law of sines; Law of cosines
	July 31	Face Project
Week 6	Aug 04	Review for Exam 3
	Aug 05	**EXAM 3**, Rolling wheel project
	Aug 06	Inverse trigonometric functions; Establishing identities; Sum/difference formulas
	Aug 07	Double/half angle formulas; Sum to product and product to sum formulas; Trigonometric equations