Course Description and Expectations

Algebra II is a continuation of Algebra I, which is also a Pre-requisite. The Algebra II course reflects the belief that the Belchertown High School educational community fosters academic excellence and responsible citizenship in a positive, safe and respectful environment in order to develop productive contributors to society.

Algebra II students are expected to:

- Read mathematical problems actively and critically.
- Write effective solutions to problems and projects
- Present solutions to problems effectively
- Use a variety of appropriate resources including the computer and calculator to solve mathematical problems
- Employ multiple critical and creative thinking strategies in reasoning and problem solving
- Demonstrate a knowledge and appreciation of how mathematics can be used outside the mathematics classroom
- And meet all of the course objectives listed below

Topics Include:

- Real Numbers and Algebraic Expressions
- Equations, Inequalities and Problem Solving
- Graphs and Functions
- Rational Expressions
- Rational Exponents, Radicals and Complex Numbers
- Quadratic Equations and Functions
- Probability and Statistics
- Function Operations
- Exponential and Logarithmic Functions
- Systems of Equations
- Exponents, Polynomial and Polynomial Functions
- Analytical Geometry
- Sequences and Series

Course Objectives

The student will be able to:

- Identify, state the properties and perform arithmetic operations on real numbers in any format
- Solve systems of linear equations and in two or three variables using algebraic and matrix methods
- Describe and use the properties of exponents to simplify polynomial expressions
- Simplify, multiply, divide, add and subtract rational expressions
- Solve rational equations and real world applications that are modeled by rational equations
- Use the remainder theorem to factor and evaluate polynomials
- Describe and use the properties of rational exponents to simplify radical functions and expressions
- Solve radical equations and real world problems modeled by radical equations
- Identify, add, subtract, multiply and divide complex numbers
- Solve quadratic equations and real world applications modeled by quadratic functions
- Solve quadratic and rational inequalities
- Graph and analyze the graphs of quadratic equations
- Use combinations and permutations to solve problems
- Use the binomial theorem to expand (x+y)ⁿ
- Find probability of various single, compound, dependent and independent events
- Perform algebraic, composition and inverse operations on functions
- Describe the characteristics of exponential functions and show how are they useful in solving real-world problems
- Describe characteristics of logarithmic functions and show how are they useful in solving real-world problems
- Solve systems of non-linear equations
- Demonstrate the ability to identify and evaluate arithmetic and geometric sequences and series
- Identify, evaluate, perform arithmetic operations and create algebraic expressions
- Find solutions of linear equations
- Find solution of simple and compound linear inequalities
- Translate real world applications into equations or inequalities and solve them

- Understand the properties of functions and demonstrate how relations and functions can be represented numerically, graphically, algebraically, and/or verbally
- Find the equations of linear functions and use those equations to solve real world applications
- Solve real world applications which use systems of linear equations in two or three variables using algebraic and matrix methods
- Add, subtract and multiply polynomials and polynomial functions
- Factor polynomials and use this method to solve polynomials
- Find the distance and midpoint between points in the coordinate plane

Required Materials:

In order to be prepared to succeed to the maximum of your potential you should bring the following with you to class each day. You will not be allowed to retrieve anything from your locker once class has started.

- Notebook A three-ring binder is required.
- Writing utensil Tests do not have to be done in pencil. However, you must make sure all writing is legible and any mistakes are clearly and neatly crossed out.
- The Algebra 2 Common Core textbook or access to the e-book
- $\cdot~$ Calculator The mathematics department recommends a TI-84 graphing calculator or higher.

Assessment:

Grades are determined on a weighted system. I suggest that you keep a record of your grades at all times as well as saving any and all returned graded assessments. Please keep in mind that you can always access your grades on MMS. These grades are updated frequently. *Please note that while I will make every attempt to keep you informed of your current grade, class time is not the appropriate time to ask me to check your grades. I will not log into MMS and tell you your grade at any time during class. It is your responsibility to check MMS.*

- *Tests (50%)* Tests are administered at the completion of each chapter and/or mid-chapter as needed. If a student earns below a 70% on a test he/she may complete a retest per the Tamaqua Area High School Math Department Guidelines and improve their grade. I require that you give me at least 24 hours notice before attempting a re-test.
- *Quizzes (30%)* Quizzes are administered at the teacher's discretion as needed. They may be unannounced. If a student earns below a 70% on a quiz he/she may complete a "re-quiz"

per the Tamaqua Area High School Math Department Guidelines and improve their grade. I require that you give me at least 24 hours notice before attempting a re-quiz.

· IN CLASS Practice/IN CLASS Activities (20%) -

Practice will be assigned daily. Practice will be collected and graded at the teacher's <u>discretion</u>. If this occurs, students will have a chance to correct any mistakes providing that the practice was completed on time. These assignments will be listed individually on MMS. Practice problems will be assigned in class and students will be given time in class to complete them. If a student does not finish the work before the end of class they may complete the assignment at home, set up a time to finish it with me before or after school, and or during one of my free periods. All graded practice problems will be assigned with a reasonable amount of time to complete the assignment provided the student is working diligently.

IMPORTANT NOTE

It is my belief that the majority of mathematics learning should occur during school hours. While I believe in homework and the value it adds to a students' education, I do not believe that homework should hurt a students' grade. Therefore, suggested homework problems will be assigned daily. These problems *WILL NOT* be graded. I will however, upon request, correct and provide feedback on any homework a student completes. Furthermore, I will, upon request and at my discretion, create assignments specially designed to meet students' individual needs and help students to raise their grade. I will keep a daily log of completed homework. This log will be made available to a parent or student at any time. While completion of homework is not mandatory, it has been my experience that there is a direct correlation between completion of homework and increase in students' grades. Many times graded assessments will be partly, if not completely, composed of previously assigned homework problems. Lastly, when considering retests, re-quizzes, the opportunity for extra credit, or grading, I will strongly consider and review a students' homework completion.

General Classroom Behavior

- You are expected to respect and value yourself, your school environment and the diversity of the TAHS community.
- You are expected to contribute to classes and work cooperatively whenever the situation requires.
- You are expected to come to class prepared and you are responsible for all missing work
- Bullying of any kind is not permitted in this classroom
- You are to be in your assigned seat when the bell rings. Otherwise you are late which may result in a detention.
- You are expected not to talk while I am speaking or interrupt while other people are speaking.
- There will be no getting out of your seat or speaking without permission. If you want to speak or get of your seat during class, raise your hand and wait to be recognized.
- There will be no leaving the room except for emergencies, which should not occur often.
- If you need to leave the room please quietly raise your pass in the air and I will, at my absolute earliest possibility, sign your pass and allow you to leave.
- Books should be covered at all times. If you lose your book, report it to me immediately. When you feel as though you do not need to take your book home, you may leave it on my shelf. ANY lost book is the students' responsibility. This includes if your book goes missing from my book shelves.
- The bell does not dismiss the class, I will dismiss the class once all items are returned and put in their proper places.
- No eating or drinking in the classroom.
- The Pass is to be used only in an emergency

- Attendance Attendance is necessary on a regular basis. Math is a building subject. It is very important that you are here every day. If you know that you will be absent beforehand, please let me know. If you miss class, it **is your responsibility** to ask a **<u>classmate</u>** what you missed, copy the notes, hand in any **<u>practice</u>** that was due that day, and hand in your missed practice **<u>the following day</u>**. Also, all assigned and graded assessment will be posted online as well as on my personal website. When you return, always check the <u>**"absent shelf"**</u> for any papers you may have missed and I will try to post any and all missed notes and assessments to my website as often as possible. It is **YOUR** responsibility to make-up anything you missed. I will <u>not</u> remind you! However, I will help you complete and understand anything that you miss!
- Extra help I am available for help after school from 2:30 until 3:00 unless I have a scheduled meeting. I am also available before school from 7:00 to 7:30 if you prearrange a day with me. There is a calendar in class that you can use to sign up for extra help. It is very important that you seek help when you need it! Also, please keep in mind that there are resources available online on <u>www.pearsonsuccessnet.com</u>, my website, and <u>www.khanacademy.org</u>.

Final Note-

Clearly this document is not exhaustive and a situation may arise where I find the need to add or change classroom policies and procedures. I will however, not make any changes to this document without posting them to my website and sending home with each student a detailed description of the change as well as my logic for it. I am open to discussion on any ideas, suggestions, concerns, and or problems that a student or parent/guardian may have. I look forward to the upcoming year and look forward to working with you. You may contact me via the school's phone number or my email <u>ptraube@tamaqua.k12.pa.us</u> at anytime.

Sincerely

Shilip Traube