2023-2024 ATYP Algebra 2 Syllabus
Thursday: 1:20 – 3:50 pm

Instructor: Ms. Alla White

Office hours: by appointment; schedule via email

E-mail: **alla.white@wmich.edu**

Website **Gowmu.wmich.edu** - Use to access both eLearning for our course and **WMU email** - You should be checking your WMU email frequently and use this email to communicate with me

Supplies for Class

- Textbook (provided): Algebra 2, Prentice Hall Mathematics High School Math Series by Bellman, Bragg, Charles, Hall Handlin & Kennedy, 2007

- Calculator: The TI-84 graphing calculator will be used as the primary computing device for this course. Students should become adept at using their graphing calculators not only to evaluate algebraic expressions, but also to investigate the behavior of functions and their graphs and to carry out elementary statistical procedures. Nevertheless, students also have to learn the basic paper-and-pencil rules and techniques of algebra. It is expected that students will be equally competent using both methods.

- Notebook: for in class notes and exercises. I very strongly recommend using graph paper (4 squares per inch) for all math work.

- IF not using graph paper/notebooks, must have **Graph Paper:** 4 squares per inch, for accurate graphs.

- Folder or Binder: to stay organized and hold all relevant course materials.

- Pencil(s) and eraser: Math should be completed in pencil, not pen or marker. Mistakes happen and should be easily correctable.

- **Ruler** to be used for drawing straight lines.

- Red pen for in-class quizzes

- Highlighter/ Colored Pencils (optional) can be useful in identifying important information or drawing attention to specific parts of notes/homework, can also be useful when graphing multiple graphs on the same coordinate plane.

Grading Scale
A (80 - 99%) B (70 - 79%) C (60 – 69%).

To obtain credit for the course, students are expected to perform satisfactorily on both homework and exams. Both averages must meet the minimum requirements. Other factors, such as class performance and class discussion, will assist the instructor in assessing the student's understanding of content. Final evaluations will assess the student's overall comprehension of the content. Homework grades falling below

60% three times indicates that the program might not be suited to the student. A conference between the parent(s)/guardian(s) and the teacher will be arranged.

Grading Categories and Weight:

Homework: 45% Quizzes,

In-Class Assignments: 10%

Exams: 45%

Homework (and Other Academic Expectations)

- Mastery comes from practice, i.e., doing homework problems – on a daily basis. Concepts and skills are honed through study and completing homework assignments on time. **Before attempting HW problems** from the new section, read the section for understanding and review your notes from class. Expect to spend an hour a day on your homework.

- Organization: - Start each problem by writing the problem number on the left of the margin. Clearly label each section and each problem number. Do **not** try to fill a page with problems written all over. **Show steps**/methods on separate lines. If an answer comes from your calculator, state clearly the procedure you used and/or draw a sketch of your graphing screen. Graphs are to be drawn on graph paper (4 squares per inch) Use **a ruler** for straight lines.

- Each piece of homework must have your name on the top right-hand corner and the Week Number below your name in the top right-hand corner. If separate graph paper used to draw accompanying graphs for problems should be stapled at the end of the homework.

- Be sure to show all steps in completing problems, and box in or circle your answer. Write legibly. If I cannot read your work, I cannot grade it and provide you feedback.

- Complete problems sequentially by section. Problems out of order may not receive credit.

- Leave a few lines between problems.

- Show all of your work and give detailed, complete answers on all of your assignments and exams to earn full credit. Answers with little or no work to support them usually receive at best half credit, sometimes less. Showing your work allows us to give partial credit if your answer is incorrect, informs about misconceptions you may have, and is an important skill for upcoming coursework that utilizes math skills, logic, and analytical reasoning. In your career, you will almost always be expected to justify your work. Start now where we can help with feedback.

- Due Dates: Homework will be turned in each week of class. Specific, individual due dates for assignments are outlined on the final page of this syllabus. Please be reminded that being absent for ATYP is the equivalent of missing an entire week of your home school. Experience has shown that skipping a week proves to have a negative effect on student overall class performance and final grade.

- Grading: Homework will be graded each week. This may be a sampling of the problems or all of them. The solutions will be returned in a timely fashion to allow the student feedback on the problems. To assist in feedback to the student, the assignments have an overlap of sections from one week to the next.

- Corrections: Students are encouraged to take risks, to make mistakes and to learn from them. To become fluent and competent in mathematics, students must be aware of their shortcomings and their wrong interpretations of concepts. Doing corrections is a very important habit in the growth of an algebra student..

Other Important Considerations:

- One of the most important aspects of this class is the need for clear, logical and concise communication of algebraic concepts. A correct answer to a problem is not the end by itself – I seek for the flow of reasoning in arriving at the answer. Students should be asking: What properties allow me to do that? What operations do I use? Is the answer reasonable?

- Every problem assigned should be completed. Do not give up on a difficult problem. Discuss with a classmate, seek help from a parent, <u>attend a help session</u>, or ask for assistance by contacting me. There are a variety of ways we can effectively communicate outside of our class time for support!

Tips for Success

- Begin homework as soon as possible after our weekly class sessions.
- Take quality in-class notes, including documenting examples to reference later.
- Read the introduction to new sections for understanding.
- Pace yourself throughout the week with homework sessions each day or every other day.
- Work through the examples step-by-step, thinking about why each step was made.
- Work an odd numbered problem adjacent to the even numbered problem [answers in book].
- Write out every step in the solution process and check your work as you go.
- Text or e-mail a classmate or Mrs. Koch for additional homework help.
- When seeking help, be prepared to explain your question and what you've tried so far.
- Form a study group with your peers.

<h1 align="center">Algebra II Course Syllabus</h1>
<p align="center">(Subject to change, as needed)</p>

Chapter 1: Tools of Algebra
This chapter summarizes properties of real numbers and operations, equalities and inequalities – to be used to simplify algebraic expressions and to solve equations and inequalities throughout the course.

Chapter 2: Functions, Equations, and Graphs
Family of functions with respect to translations will be emphasized.

Chapter 3: Linear Systems
Using the skills on solving two-variable inequalities, students will learn some basics of linear programming. New in this chapter will be solving systems of equations with three variables.

Chapter 4: Matrices
Students learn to represent data in matrices. New concepts will include multiplying and finding determinants and inverses of 2 by 2 matrices. Students will learn to represent a system of linear equations in matrix form to solve it. Kramer's Rule will also be introduced.

Chapter 5: Quadratic Equations
Students already learnt the properties of Quadratic Functions. Built on what they have learnt, they will learn to transform quadratic functions into vertex form. After studying the properties of complex numbers, students will learn how to solve quadratic equations with complex solutions.

Chapter 6: Polynomials and Polynomial Equations
Students examine polynomial functions in more detail – solving polynomial equations of degree 3 and higher, by factoring and using the Rational Root Theorem and the Fundamental Theorem of algebra.
Concepts of Permutations and Combinations are to be studied as an application to the Binomial Theorem.

Chapter 7: Radical Functions and Rational Exponentials
The *nth r*oot of a real number leads to *nth* power and rational exponents. Students will perform operations on radical expressions and functions with rational exponents using the properties of integer number exponents studied in Algebra I.
Operations on functions are extended to compositions and inverses of functions.

Chapter 8: Exponential and Logarithmic Functions
Logarithmic functions as inverses of exponential functions will be introduced, together with the properties of logarithms. Students will learn to solve exponential and logarithmic equations.

Chapter 9: Rational Functions
Students will learn to sketch graphs of more complicated rational functions that may have more than one asymptote. Some of these functions may have holes. The concept of points of discontinuity is discussed.

Chapter 10: Quadratic Relations and Conic Sections
Students identify and graph and write equations of conic sections. Students will also learn to solve systems of quadratic equations.

Chapter 11: Sequences and Series
Students will learn to write a sequence both explicitly and recursively. We will also cover both finite and infinite arithmetic and geometric series.

Homework Schedule

In addition to assigned problems to be completed, homework also includes reading the new sections to be taught in the coming week. This homework schedule is tentative and subject to change given notice.

Week/Date	New Sections	Homework Sections	Problems	Due
1. Jan 25	2.1 – 2.6	ABC:1.1 – 2.6; 2.2 Extension WS	**4's**: 4, 14, 24, …	Feb 1
2. Feb 1	2.7 – 3.4	BC: 1.1 – 1.6 ABC: 2.1 – 3.4; 2.2 Extension WS	**6's**: 6, 16, 26, …	Feb 8
3. Feb 8	3.6 – 4.7 (omit 4.4)	BC: 2.1 – 2.6; 2.2 Extension WS ABC 2.7 – 3.4, 3.6 – 4.3, 4.5 – 4.7	**2's**: 2, 12, 22, …	Feb 15
4. Feb 15	5.1 – 5.6	BC: 2.7 – 3.4 ABC: 3.6 – 4.3, 4.5 – 4.7, 5.1 – 5.6	**4's**: 4, 14, 24, …	Feb 22
5. Feb 22	5.7 – 6.3	End of Chapter Review: Chapters 1 – 4	**ALL**	Feb 29
6. Feb 29	*Exam 1* **CH 1 – 4**	BC: 3.6 – 4.3, 4.5 – 4.7 ABC: 5.1 – 6.3	**6's**: 6, 16, 26, …	March 7
7. March 7	6.4 – 6.8	BC: 5.1 – 5.6 ABC: 5.7 – 6.8	**4's:** 4, 14, 24, …	March 14
8. March 14	7.1 – 7.6	BC: 5.7– 6.3 ABC: 6.4 – 7.6	**2's**: 2, 12, 22, …	March 21
9. March 21	7.7 – 8.3	BC: 6.4 – 6.8 ABC: 7.1 – 8.3	**6's**: 6, 16, 26, …	April 11
March 28- April 4	No Class	Spring Break; No Assignment		
10. April 11	8.4 – 9.2	BC: 7.1 – 7.6 ABC: 7.7 – 9.2	**4's:** 4, 14, 24, …	April 18
11. April 18	9.3 – 10.1	End of Chapter Review: Chapters 5 – 8	**ALL**	April 25
12. April 25	*Exam 2* **CH 5 – 8**	BC: 7.7 – 8.3 ABC: 8.4 – 9.4 – 10.2	**2's**: 2, 12, 22, …	May 2
13. May 2	10.2 – 10.5	BC: 8.4 – 9.4 ABC: 9.5 – 11.1	**6's**: 6, 16, 26, …	May 9
14. May 9	11.1 – 11.4	BC: 9.5 – 10.2	**4's:** 4, 14, 24, …	May 16

		ABC: 10.3– 11.5, 12.1		
15. May 16	11.5 – 12.2	BC: 10.3 – 11.1 ABC: 11.2 – 11.5, 12.1 – 12.2	**2's**: 2, 12, 22, …	May 23
16. May 23	Wrap Up/Review	BC: 11.2 – 11.5, 12.1 ABC: 12.2 – 12.7	**6's**: 6, 16, 26, …	May 30
17. May 30	*Final Exam* **Part 1 & Part 2**	No Assignment		

All homework comes from sections labeled **Practice and Problem Solving: A, B and C.**

Exam 1 – February 29 – Content material concentration on Chapters 1 – 4

Exam 2 – April 25 – Content material concentration on Chapters 5 – 8

Final Exam – May 30 – state standardized and timed assessment that covers Algebra I and II content.