

*Tullahoma High School
Honors Pre-Calculus
Syllabus*

COURSE DESCRIPTION

Pre-calculus is a program of mathematical studies focusing on the development of the student's ability to understand and apply the study of functions and advanced mathematics concepts to solve problems. The course will include an in-depth study of polynomial, rational, exponential, logarithmic, trigonometric functions, and polar curves. Emphasis is placed on active participation through modeling, technology lab activities, group activities, and communication in mathematics.

Students are expected to use technology, including graphing calculators, computers, and data-gathering equipment throughout the course.

*Honors Pre-Calculus is a pre-requisite for Advanced Placement Calculus.

Instructional Philosophy

▪ ***Instructional Approach***

As teachers, we in the math department want to provide the very best education and learning experience for the students in our classes. We believe the teacher should work with the students in the classroom, not just be the lecturer.

▪ ***Classroom Design***

The classroom design will change according to the strategy of teaching. Students will also change seats after every test to have the opportunity to work with everyone.

▪ ***Student Participation***

You will be expected to take part in the class by doing your work, paying attention, and asking and answering questions. You can expect to have assignments every class period. Use your time wisely in class so that if you do have time to get started in class, you can acquire help.

- Students are expected to follow school rules as printed in the handbook. I expect them to observe and follow all classroom rules and procedures as indicated in the syllabus and policy sheet.

*A written assignment will be made almost every night (including most weekends). Since practice and enrichment are an integral part of each math lesson, it is expected that ALL assignments will be completed on a daily basis.

Academic Dishonesty:

Academic dishonesty is considered a serious offense in my class. Students caught cheating will face serious consequences. I encourage collaboration on all assignments but I expect the work you hand in to be your own. I will inform you about various places to get help, but expect all work to be completed by you with all necessary work shown.

I expect the following generalities from all students:

1. Be RESPECTFUL, PROMPT, and READY!
 - Be kind, courteous, and respectful of others.
 - Do not talk while I am teaching or talking. You will not be allowed to hinder another student's education.
 - Keep your hands and feet and other objects to yourself.
 - Show respect to other people and their property.
 - Do not talk while others are talking, disrupt class, talk excessively, or make unnecessary comments.
 - Speak at appropriate times using appropriate voices and language.
 - Be on time. You must be in your seat **BEFORE** the tardy bell rings.
 - Be fully prepared for class.
 - Sharpen pencils and take care of any other business of such a manner Before the tardy bell rings. Class will start immediately after the bell, and we do not have time to waste.
 - Have your book, notebook, paper, pencil, and graphing calculator for class everyday.
 - Complete all assignments given.
2. Give your undivided attention to this class for the entire 90 minutes you are in class.
 - Put all other materials away.
 - You should stay in your seat, especially during instruction – standing desk.
 - FOCUS – CONCENTRATE- PARTICIPATE
3. Cell phones and other electronic devices should be OFF and NEVER visible in my classroom.

School Rule: Cell Phones WILL be taken up if seen OR heard in the classroom at any time – NO EXCUSES. Make sure they are PUT UP Daily!!!!

It is important to be in class each day. Absences due to illness, family situations, or school initiated activities do not excuse one from the homework assigned during the absence or from learning the concepts taught during the absence. Each student is responsible for submitting all class notes and homework due and assigned during one's absence. Failure to turn in the necessary work will result in a grade of 0.

Always bring the textbook, writing instruments, and notebook to class each day. One may not work on any other material in class without permission. Inappropriate materials, which interfere with one's participation in class, will become the property of the teacher.

COURSE GOALS AND STANDARDS

The academic standards for the pre-calculus core area establish the process skills and core content for Pre-calculus, which should provide students with the mathematics skills and conceptual understanding necessary for them to further their mathematical education or to pursue mathematics-related technical careers.

The content of the pre-calculus standards encompasses characteristics and behaviors of functions, operations on functions, behaviors of polynomial functions and rational functions, behaviors of exponential and logarithmic functions, behaviors of trigonometric functions, and behaviors of conic sections. Teachers, schools, and districts should use the pre-calculus standards to make decisions concerning the structure and content of Pre-calculus. Content in this course may go beyond the pre-calculus standards.

All courses based on the academic standards for pre-calculus must include instruction using the mathematics process standards, allowing students to engage in problem solving, decision making, critical thinking, and applied learning. Educators must determine the extent to which such courses or individual classes may go beyond these standards. Such decisions will involve choices regarding additional content, activities, and learning strategies and will depend on the objectives of the particular courses or individual classes.

In all courses based on the pre-calculus standards, hand-held graphing calculators are necessary at times for instruction and assessment. Students should learn to use a variety of ways to represent data, to use a variety of mathematical tools such as graph paper, and to use technologies such as graphing calculators to solve problems.

Content to be taught in this course:

Unit 1 Functions & Their Graphs

- Systems of Equations
- Parent Graphs
- Transformations of Graphs
- Combinations & Compositions of Functions
- Inverse Functions
- Modeling
- Introduction to Limits

Unit 2 Polynomial & Rational Functions

- Quadratics
- Higher Degree Polynomials
- Complex Numbers
- Rational Functions
- Modeling

Unit 3 Exponential & Logarithmic Functions

- Exponential Functions
- Logarithmic Functions
- Modeling

UNIT 4 TRIGONOMETRY

- Angles
- Unit Circle
- Right Triangle Trigonometry
- Graphs of Trigonometric Functions
- Inverse Trigonometric Functions
- Modeling

Unit 5 Analytic Trigonometry

- Fundamental Identities
- Sum & Difference Formulas
- Multiple Angle Formulas
- Solving Trigonometric Equations

Unit 6 Additional Topics in Trigonometry

- Applications of Trigonometry
- Solving Oblique Triangles
- Area of Oblique Triangles
- Modeling

UNIT 7 TOPICS IN ANALYTIC GEOMETRY

- Conics
- Parametric Equations
- Polar Coordinates
- Graphing Polar Equations
- Trigonometric Form of Complex Numbers

UNIT 8 ANALYTIC GEOMETRY IN THREE DIMENSIONS

- Vectors
- Direction Angles
- Angle of Inclination

Unit 9 Topics in Discrete Mathematics

- Sequences
- Series
- Combinatorics
- Probability

ASSESSMENT AND GRADING PLAN

You can expect to have assignments every class period. Use your time wisely in class so that if you do have time to get started in class, you can acquire help. Classwork/homework will be checked at random and will be graded on a completion basis. If you have it all, you receive full credit; if not, you receive a 0. Therefore, you should at least attempt each problem. If you have no idea how to do a problem, you should copy the problem and directions that go with it and then move on to the next problem. If you leave a problem blank, you will not receive credit for it. *There is no LATE work accepted in Pre-calculus.*

EVALUATION

The following methods will typically be used to aid in evaluating one's performance:

TESTS <100 points each>

At least three tests over several related topics will be administered during each nine-week grading period. When a test requires the use of a graphing calculator, the TI-Inspire will be the calculator supplied by the teacher.

PROJECTS/ LABS <points may vary from 10 to 50 points for each project or lab>

QUIZZES <10-50 points each>

Several quizzes will be administered during each nine-week period. A quiz typically contains only a few problems over closely related topics. Sometimes homework problems may be used for a quiz grade. Most quizzes will be announced; however, some quizzes may be unannounced. For excused absences, a make up quiz will be given only after all appropriate assignments are turned in and are considered acceptable. It is the student's responsibility to schedule a time after school for a make up quiz.

Notebook Grade: Each student is expected to keep a notebook of notes, assignments, and other material as specified in class. A notebook grade may be obtained during each nine-week period. Selected problems from assignments and class notes taken during the nine weeks will determine the notebook grade. The notebook grade could count as much as two quizzes.

At least ONE quiz grade will be dropped during each nine-week grading period.

HOMEWORK <4 points each>

All assignments are expected to be completed and will be checked for thoroughness and completeness on a random basis. Repeated failure to complete assignments will result in a conference with a student and/ or the student's parent(s) and possible expulsion from the honors math program. Incompletes will be given for assignments that are not completed to satisfaction.

NINE-WEEK AND QUARTER AVERAGES:

The nine-week average is calculated by adding all points earned (including extra points) and dividing by the total number of possible points that each student could earn. The quarter average is calculated by using the nine-week average and the quarter exam score. The exam score counts as 20% and the nine-week average counts as 80% of the quarter average. The quarter average is recorded on the student's permanent record.

REPORT OF GRADES:

It is the responsibility of the student to keep an accurate record of his grades during the nine weeks. A progress report will be sent home with the student at the end of the 4th week of each nine-week grading period. Grades may be viewed through the school website and will be updated as often as possible.

EXTRA HELP:

Every student has the opportunity to come in for additional help. I will be most happy to help students before and after school on most school days. Please don't hesitate to come in for help at the first sign of trouble. Waiting until the end of the nine weeks is not the most advantageous time for help.

MATH FEE:

There is a \$5.00 math technology fee due the first week of the course.

Kim Carter

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