Accelerated Pre-Calculus
2014-2015

"Mathematics is the language in which God has written the universe." Galileo Galilei

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I. Rationale – Course Description:

Pre-Calculus focuses on standards to prepare students for a more intense study of mathematics. The critical areas organized in seven units delve deeper into content from previous courses. The study of circles and parabolas is extended to include other conics such as ellipses and hyperbolas. Trigonometric functions are further developed to include inverses, general triangles and identities. Matrices provide an organizational structure in which to represent and solve complex problems. Students expand the concepts of complex numbers and the coordinate plane to represent and operate upon vectors. Probability rounds out the course using counting methods, including their use in making and evaluating decisions. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.

II. Course Objectives:

Unit 1: This unit builds upon the understanding of the algebraic representations of circles and parabolas. Students develop the understanding of the geometric description and the equation for the conic sections, ellipses and hyperbolas.
Unit 2: Trigonometric functions and the unit circle are further investigated. Students create inverses of trigonometric functions by restricting the domain.
Unit 3: In this unit students expand the use of trigonometric functions beyond right triangles into more general triangles. The students develop the trigonometric formula for area of triangle and use the Laws of Sines and Cosines to solve problems.
Unit 4: Students build upon their work with trigonometric identities with addition and subtraction formulas and use them to solve problems.
Unit 5: In this unit, students learn to compute with matrices. They use matrices in order to represent and solve more complex problems such as systems.
Unit 6: In this unit, students further their understanding of complex numbers through graphical representations. Vector operations are used to represent and model various quantities such as velocity.
Unit 7: Students expand their ability to compute and interpret theoretical and experimental probabilities for compound events, attending to mutually exclusive events, independent events, and conditional probability. Students should make use of geometric probability models wherever possible. They use probability to make informed decisions.

III. Format and Procedures:

The Instructor will:

1. present concepts, principles and other information about Accelerated Pre-Calculus and applications.
2. use modeling strategies, lecture, discovery lessons, demonstrations, projects, and manipulatives.
3. provide opportunities for discovery and discussion.
4. provide the tools necessary for lesson investigations and lab activities.
5. demonstrate how to use tools and other manipulatives.
6. stimulate use of technology.

Students will:

1. takes notes and work example problems.
2. perform lesson investigations.
3. use graphing calculators and computers.
4. participate in class discussion and ask questions when needed.
5. present solutions to problems both written and orally. All work must be shown at all times.
6. complete assignments on time. **Late work is not accepted**.
7. complete lab assignments.
8. cooperate with peers when working with groups or with a partner.
9. communicate effectively both orally and written.
10. complete unit test, quizzes, and nine-week exams.
11. organize a notebook with all material from this course.

IV. Course Requirements:

Students are expected to bring a notebook, textbook, and pencil to class each day. Students should be ready to begin at the sound of the bell. This includes notebooks out and pencils sharpened. Detention will be given to unprepared/tardy students. Your personal Agenda is required to use the restroom. Please make sure you bring it to

class everyday. This course requires that students take notes each day and complete all assignments on time. Students will be responsible for class lectures, lab activities and other assignments. Students will have assignments that include quizzes, tests and other work. Students will also have a nine-week comprehensive test at the end of each nine-week period. A notebook will be expected to be kept including the following:

1. Syllabus (signed by student and parent)
2. All Assignments (CW, HW, quizzes)
3. Notes
4. Labs

Notebook quizzes may be given. Homework will be given almost every night. It is the students' responsibility to complete the homework assignments. A homework check will be given every Monday. Quizzes will usually be announced, but an occasional pop quiz may be given.

- It is recommended that students spend 10 minutes each night reading over the days' notes even if no homework is assigned. Vocabulary and examples are important and the time spent reading over the notes will help the student become more familiar with the material.
- Students who are absent must have an admit slip the day of return. If you check out, please bring the check out slip to class the day of return.
- If a student leaves school the day of the quiz or test, the student must take the quiz or test, the day of return either before or after school.
- If a student knows about a test in advance and is absent the day before or the day of the quiz or test, the student must take the quiz or test on the day of return either before or after school.
- Students who have EXCUSED absences should check the assignment sheet and check with the instructor within three days of the absence to makeup work that was missed. Students are responsible for all notes and assignments. All tests, quizzes, labs, and varied other assignments will have to be made up either before or after school. Please plan accordingly.
- Students will have three days to complete and turn in all makeup work.
- Students who have UNEXCUSED absences will not be able to make up any missed grades. Students who are absent due to school related activities should see the instructor before the absence and turn in all work on time.
- Students will receive a zero on <u>any</u> assignments for cheating. Copying or letting another student copy your paper is cheating, and both situations will result in a zero.
- **Cell phone and electronic device usage will not be tolerated.** Please ensure that all cell phones are turned off and put away before entering the classroom.

V. Grading Procedures:

Test	**40%**
Quizzes and Labs	**20%**
Class work, Homework, Notebook	**20%**
Nine-weeks Comprehensive Exam	**20%**

***Note to Students:**If you need extra help, you may see me for one-on-one instruction and guidance. I will work with you after school, as necessary. Do not hesitate to ask for assistance – sitting quietly when you do not understand may only get you left behind and lost. Be willing to ask questions and to stick your neck out! Sending an email or stopping by before or after school may be the deciding factor in the grade you want and the grade you earn. Peer tutoring is available weekly. Most importantly, be positive – a positive mind is the most powerful tool you can equip yourself with!

***To Parents/Guardians:** Please feel free to call and leave a message at the school, 706-628-4278, if you ever have any questions or concerns. I will return the call as soon as I can. You may also email me at harbin-s@harris.k12.ga.us. You can keep track of your student's progress in all their classes using Parent Portal. Contact the school for more information on setting up your Parent Portal account. I look forward to working with your student this year.