MATHEMATICS

Course Description:
The Mathematics course has two components:

- The personalized online component provides the differentiated mathematics content required for each student, at any level.
- The applications component ensures that students collect, apply, and interpret real-world data in a meaningful way.

The mathematics applications component of the course is organized around quantifying the world through collecting data, mathematical modeling, and interpreting the results of mathematical models. Learners will then apply these concepts to understand better, to communicate better, and to better predict significant trends within the city of Atlanta.

Course Objectives:
Students will:

- Observe, measure, and synthesize real-world data
- Mathematically model real-world data
- Predict trends using mathematical models
- Apply concepts in context, to promote quicker recall and longer retention of topics
- Apply, organize, and present conjectures based upon quantifiable data that students have measured and observed

Learning Experiences:
The applications course component will enhance the online learning experience. Students will quantify patterns and behaviors from Lab Atlanta site visits in the field. For instance, learners might study the flow of people entering and exiting a MARTA train at a particular time of day. Learners might also study the cost-benefit of growing vegetables using traditional methods versus using aquaponics. This immersive component is designed to complement students' understanding of the standards and benchmarks for each learner's specific target mathematics course (online).

Instructional Resources:
Online component: The curricular resources originate from our online math provider, The Virtual High School.
Application component: We will also use Kahn Academy curricular units, Desmos as a free online mathematical modeling software, Google Documents as a data analysis software package, and Google Sketchup.

Assessment:
Supplementing the online course's assessments, larger school-wide projects will provide opportunities for learners to exhibit mastery in applying topics relating to or extending from their target math course. Formative assessments measuring mastery of skills and standards will be reflected in specific rubrics for each project. In addition to the project rubrics, learners will write reflections to articulate their understanding of the application and a mathematical modeling exercise. The (Virtual High School) online course will provide a summative assessment of each learner's understanding of core content.

Course Assessment (continued):

- 15% Daily Work: daily work consists of logging into the VHS platform each day for at least 45 minutes, journal reflections, homework assignments, and posts in the VHS platform.
- 25% Quizzes: quizzes will be given intermittently during the semester usually at the end of a weekly lesson.
- 40% Tests: tests will be given at the end of a major unit
- 20% Final Exam/Applications: a final exam will be given at the end of the semester to Assess cumulative understanding of the topics covered. In addition to the final Exam, data analysis, and statistical modeling will be evaluated integrated in other courses.

Classroom Behavior:

It is understood that you will comply by the Lab Atlanta student handbook for general behavior. Specifically in the classroom, I expect you to be On time, Prepared, and Respectful.

Also:

1. The graphing calculator is a powerful tool that makes it possible for students to analyze functions and sets of data and to complete complex computations. However, running programs and retrieving stored information when such actions contradict guidelines for assignments or assessments is a clear violation of the Honor Code. Any questions regarding appropriate use of a graphing calculator should be directed to individual teachers.
2. Absences and the make-up work that ensues sometimes create scheduling problems.
    a. Missed assignments and assessments may be made up only in case of illness or other excused absence and must be done so in a timely manner. Students must see teachers on the day of their return to school to determine a make-up schedule.
    b. Any student who misses a math class but who is present for some portion of that school day must contact his or her math teacher on that day to make arrangements for the make-up of any assignments or assessments. The student should expect to take any assessment that day. Failure to do so may result in an academic penalty.
3. Tardies to class will be recorded.
4. All students are expected to maintain and routinely check their Lab Atlanta email account and each class's web page.
5. Students should keep cell phones and pagers turned off and in bookbags.

Curricular Alignment:

The Georgia Department of Education (DOE) course number for this course will correspond to the personalized mathematics selection and level for each individual Lab Atlanta student.

Students enrolled for the Spring 2017 Semester, for instance, will be taking Math courses including:

- GSE Algebra II 27.09927
- GSE Honors Geometry 27.09917
- GSE Accelerated Geometry B/Algebra II 27.09957
- Accelerated GSE Analytic Geometry B/Advanced Algebra 27.09767
- Accelerated GPS Pre-Calculus 27.09607
- Calculus 27.07800