Pequannock Township School District
Curriculum Syllabus

Course Name and level / Grade level and Subject: <u>Calculus Honors</u>

Course Description:

       This is a one-year course designed for the accelerated 12th grade mathematics student who is considering advanced placement in college or wishes to have maximum preparation for college calculus. The course content will include a study of the mathematics of change and motion, linear and quadratic functions, trigonometry, log functions, and determining area and volumes.

Course Standards:
Course Proficiencies:

* Content in this course surpasses the expectations of the NJSLS

Standards for Mathematical Practice
1. Make sense of problems and persevere in solving them. *SMP1*
2. Reason abstractly and quantitatively. *SMP2*
3. Construct viable arguments and critique the reasoning of others. *SMP3*
4. Model with mathematics. *SMP4*
5. Use appropriate tools strategically. *SMP5*
6. Attend to precision. *SMP6*
7. Look for and make use of structure. *SMP7*
8. Look for and express regularity in repeated reasoning. *SMP8*

Scope and Sequence

Unit 1 (MP 1)

Review Algebraic and Geometric Concepts : Review the most important topics in algebra. Examine Linear models and use for prediction. Review properties of quadratic, exponential, and logarithmic functions to apply to real world applications.

Unit 2 (MP 1) **Limits :** The limit is one of the tools that we will use to describe the behavior of a function as the values of x approach, or become closer and closer to some particular number.
Unit 3 (MP 2 and MP 3) **Derivatives:** Students will gain knowledge of the meaning a derivative, find the derivatives of various functions using many different rules and techniques.
Unit 4 (MP 2 and MP 3) **Applications of Derivatives:** Students will apply their knowledge of derivatives to real world problems.
Unit 5 (MP 4) **Integration:** Students will use various strategies to integrate expressions. These skills will allow them to apply to real-world problems.
Unit 6 (MP 4) **Applications of Integration. Differential Equations:** Students will apply the Fundamental Theorem of Calculus. They will apply this to real-world situations.

Assessments

Evaluation of student achievement in this course will be based on the following:

1. Tests & Quizzes
2. Classwork
3. Projects

Curriculum Resources

Anchor Programs/Teacher Materials
Textbook:
Calculus with Applications. Lial, Greenwell, Ritchey

<u>Ancillary Resources:</u>
Test Generator
Online Text Resources
Student Solution Manual

<u>Technology Resources:</u>
Smartboard, Relevant websites, Graphing Calculator

Home and School Connection
The following are suggestions and/or resources that will help parents support their children:
- Khan Academy: www.kahnacademy.com
- Teacher Google Classroom