Jefferson County High School
Course Syllabus

A. Course – Physics I

B. Department - Science

C. Course Description - The student will explore the reasons the universe operates the way it does. The student will study scientific principles that control the events of everyday life. The student will have fun while learning organizational and study skills that will help him experience success in college. This course focuses on mechanics involving observations, laboratory experiments, and projects.

D. Grade Term - Semester

E. Grading Scale

Range		Regular	Honors/College-Level	A.P.
93-100	A	4.0	4.5	5.0
85-92	B	3.0	3.5	4.0
75-84	C	2.0	2.5	3.0
70-74	D	1.0	1.5	2.0

Each nine weeks:
a. Tests – 60 %
b. Quizzes – 30% (Lowest one is dropped.)
c. Labs – 10%

F. Term Dates
a. 1st 9 Weeks August 5, 2016 – October 7, 2016
b. 2nd 9 Weeks October 8, 2016 – December 16, 2016
c. 3rd 9 Weeks January 5, 2017 – March 15, 2017
d. 4th 9 Weeks March 16, 2017 – May 25, 2017

G. Textbook(s) - Physics Principles and Problems, 2009, McGraw-Hill Companies

H. Other Required Reading

I. Other Resources
a. Odysseyware (if applicable)

J. Major Assignments
a. Labs

K. Procedures for Parental Access to Instructional Materials

a. Aspen Parent Portal
b. Instructor's Website:
c. Email Instructor
d. Parent Teacher Conference

There are two designated conference dates during the school year. Parents who would like to request additional meetings may make appointments for conferences with the teachers (during their planning periods), counselors, or a principal by telephoning the school office.

L. Field Trips

a. Any schedule fieldtrip will have a definite educational purpose and will reflect careful planning. Signed permission forms will be obtained when an off campus trip is planned.
b. Engineers Day, Oct 20, 2016
c. Six Flags Over Georgia, Apr 28, 2017

M. Standards & Objectives

1st nine weeks or 3rd nine weeks:

SPI 3221.Inq.1 I can select a description or scenario that reevaluates and/or extends a scientific finding.

SPI 3231.Inq.2 I can analyze the components of a properly designed scientific investigation.

SPI 3231.Inq.3 I can determine appropriate tools to gather precise and accurate data.

SPI 3231.Inq.4 I can evaluate the accuracy and precision of data.

SPI 3231.Inq.5 I can defend a conclusion based on scientific evidence.

SPI 3231.Inq.6 I can determine why a conclusion is free of bias.

SPI 3231.Inq.7 I can compare conclusions that offer different, but acceptable explanations for the same set of experimental data.

SPI 3231.T/E.1 I can distinguish among tools and procedures best suited to conduct a specified scientific inquiry.

SPI 3231.T/E.2 I can evaluate a protocol to determine the degree to which an engineering design process was successfully applied.

SPI 3231.T/E.3 I can evaluate the overall benefit to cost ratio of a new technology.

SPI 3231.T/E.4 I can use design principles to determine if a new technology will improve the quality of life for an intended audience.

SPI 3231.Math.1 I can graph basic physics relations and functions.

SPI 3231.Math.3 I can, given a graph of a physics relationship, recognize the type of function that relates to that graph: i.e. $y = x^2$.

SPI 3231.Math.2 I can determine the slope of a linear function that represents physics data.

SPI 3231.Math.4 I can utilize a graphing calculator to enter physics data and find basic statistics: frequency, range, mean, mode, median, and standard deviation.

SPI 3231.Math.5 I can solve for the t – value, p (probability), and % of confidence between two lists of physics data (manipulated variables and responding variables).

SPI 3231.Math.6 I can reject or accept a null hypothesis based on statistical analysis.

SPI 3231.Math.7 I can find the regression line (equation) between physics data for manipulated and responding variables.

**Special Notation: Students should know metric conversions.

SPI.3231.1.2 I can, given various examples of quantities, categorize them as scalar or vector quantities.

SPI.3231.1.4 I can solve motion and conceptual problems regarding velocity, acceleration, and displacement using displacement-time graphs and velocity-time graphs.

**Special Notation: CLE 3231.1.4 “Investigate Kinematics” does not have a matching SPI.

SPI.3231.1.11 I can, given a projectile launched at an angle, select the correct equation from a list for calculating: the maximum height of travel, time of flight and/or the maximum horizontal distance covered.

SPI.3231.1.12 I can, given a scenario where a projectile is being launched at an angle, answer the following conceptual questions:

• What is the velocity in the *y* direction when the projectile is at maximum height?

• What acceleration does the projectile have in the x direction after launch?

• What forces are acting on the projectile in the y direction before it reaches maximum height?

PHY.WCE.1: I can explain how air resistance affects the motion of an object in free fall or during projectile motion.

Honors Course Addendum

SPI 3231.1.4 I can investigate kinematics and dynamics.

2nd nine weeks or 4th nine weeks:

SPI.3231.1.1 I can identify mass and weight data using units in the SI system.

SPI.3231.1.3 I can analyze scenarios related to inertia, force, and action-reaction, given Newton's laws of motion.

SPI.3231.1.7 I can select the correct vector diagram to illustrate all forces on an object affected by gravity, friction and an applied force.

PHY.WCE.2: I can investigate and test for the net acceleration of a mass, given two dissimilar masses, string, and a pulley.

SPI 3231.Inq.2 I can analyze the components of a properly designed scientific investigation.

SPI 3231.Inq.3 I can determine appropriate tools to gather precise and accurate data.

SPI 3231.Inq.4 I can evaluate the accuracy and precision of data.

SPI 3231.Inq.5 I can defend a conclusion based on scientific evidence.

SPI 3231.Inq.6 I can determine why a conclusion is free of bias.

SPI 3231.Inq.7 I can compare conclusions that offer different, but acceptable explanations for the same set of experimental data.

SPI.3231.1.8 I can, given an inclined plane, the required coefficient of friction and an object of a specific mass, select the appropriate trigonometry functions to determine whether the object will slide down the plane or not.

SPI.3231.1.6 I can, given the static and kinetic friction coefficients (μs and μk); select the appropriate coefficient of friction and calculate the force necessary to move the object.

SPI.3231.1.9 I can, given the mass, velocity and time it takes to stop an object in an inelastic collision, determine the momentum and impulse of the collision.

SPI.3231.1.10 I can analyze and solve problems related to elastic and inelastic collisions related to change in momentum.

SPI.3231.1.16 I can calculate the tangential velocity of a satellite's motion given the angular speed.

SPI.3231.1.15 I can calculate the gravitational attraction between two objects.

SPI.3231.1.17 I can solve problems for centripetal force, and angular acceleration.

SPI.3231.1.18 I can analyze and solve problems related to rotational motion and torque.

PHY.WCE.3: I can use the work-energy theorem to relate the change in kinetic energy of a system and the work done on that system.

SPI.3231.1.14 I can relate the variables of work, power, kinetic energy, and potential energy to mechanical situations and solve for these variables.

PHY.WCE.4: I can investigate Hooke's Law.

PHY.WCE.5: I can explain how the total energy and mechanical energy of a system change when friction is introduced to a system.

Honors Course Addendum

SPI.3231.1.3 I can, given Newton's laws of motion, analyze scenarios related to inertia, force, and action-reaction.

SPI.3231.1.10 I can analyze and solve problems related to elastic and inelastic collisions related to change in momentum.

SPI.3231.1.14 I can relate the variables of work, power, kinetic energy, and potential energy to mechanical situations and solve for these variables.