SEMINOLE STATE COLLEGE
OF FLORIDA

General Physics I Syllabus

PHY 1053, Summer 2019, June 24 - July 26

Course & Faculty Information

Lecturer: TBA
Email: TBA
Time: Monday through Friday (3.6 contact hours each day)
Contact hour: 90 hours
Credit: 4
Office hours: By Appointment

Course Description

This course contains a descriptive and quantitative study of kinematics, mechanics, energy and applications of mechanics. This course meets the requirements for professional and technical students needing an algebra-based physics course.

TextbookInformation

Lecture: *No text is required. Your Instructor will provide you with all materials from the text below:*

Title: Physics

Author: Walker

ISBN: 9780321976444

Publisher: Pearson

Edition: 5th ed.

Lab: Lab handouts will be provided

Collegewide Student Learning Outcomes

The Collegewide Student Learning Outcomes assessed and reinforced in this course include the following:

- Communication
- Critical Thinking
- Scientific and Quantitative Reasoning
- Information Literacy

Measurable Course Objectives

Measurable Course Objectives are outcomes students are expected to achieve by the end of the course.

- Describe and explain how the principles of physics apply to physical situations and everyday applications.
- Complete analytical problems involving the use of algebra and/or right-angle trigonometry applied to physical situations.
- Demonstrate basic understanding and use of the various ways in which scientific information can be communicated (verbally, diagrammatically, graphically and/or mathematically).

Course Objectives Specific to this Class

Course topics:

Unit 1: Units and significant figures, one and two-dimensional kinematics, position, velocity, and acceleration vs. time graphs, free-fall, projectile motion, vectors, trigonometric analysis of vectors, coordinate systems and vector components

Unit 2: Newton's three laws of motion, identifying forces, Hooke's law, static and kinetic friction, drag, free-body diagrams, equilibrium, statics in two dimensions, motion on inclined planes, dynamics in two dimensions, ropes and pulleys.

Unit 3: Impulse, momentum, the impulse-momentum theorem in one and two dimensions, conservation of momentum, collisions, work, power output, kinetic energy, gravitational potential energy, elastic potential energy, thermal energy, the work-energy theorem, and conservation of energy

Unit 4: Rotational motion, equations of motion for rotational motion, centripetal forces and accelerations, center of mass, torque, gravitational torque and stability, rotational inertia, Newton's second law for rotational

motion, angular momentum, conservation of angular momentum, rotational kinetic energy

Unit 5: Fluids, pressure, hydraulic lifts, Buoyancy and Archimedes' principle, fluid dynamics and Bernoulli's principle, solids and elasticity, tensile strength, Young's modulus, and bulk modulus

Attendance Policy

The College recognizes the correlation between attendance and both student retention and achievement. **Students are expected to attend all classes, actively participate and complete all assigned course work for all courses for which they are registered.**

Grade Scale and Evaluation Methods

There will be a total of 800 points available during this semester. The breakdown of these points, as well as the grading scale, is shown below.

Tests - 500 points. There will be five unit tests, each worth 100 points.

Homework - 100 points. Daily homework problems will be assigned and graded. Typically, you will have 2 days to complete each assignment. One day to attempt the problems, 1 day to ask questions if needed.

Labs – 200 points We will complete 17 labs at 8 points each, (136 pts) as well as 2 quizzes based on the knowledge that should be gained from the labs worth 32 points each. (64 pts, for total of 200)

Grading Scale:

A = 90-100%

B = 80-89.99%

C = 70-79.99%

D = 60-69.99%

F = Below 60%

**Note: this is a non-rounding grading scale*

Late Assignments and Make-up Exams

Tests and assignments cannot be made up under any circumstances.

Classroom Guidelines

- Talking is a distraction for both me and other students around you. If you have any questions, please ask me.
- It is your responsibility to be here on time. You will not get extra time if you come late to a test or quiz.
- It is your responsibility to come to class prepared. I will not provide you with a calculator in the event you forget one.
- Food is not permitted. Drinks with a screw cap are permitted. Any other drink must be left outside the classroom.

Laptop/Netbook/Tablet Policy

Laptops, tablets, and any other electronic devices are prohibited during lecture. See me if you use a tablet for note taking.

Cell Phones

Keep your phone OFF and in your bag. If you are using it in class, you will be asked to leave. The classroom is not an appropriate place to charge your phone. It should be in your bag at all times unless specified by your instructor.

Lecture Course Schedule

Week 1:

a. Units and significant figures

b. Motion in one dimension

    i. Average vs. instantaneous speed

    ii. Velocity

    iii. Uniform Acceleration

        1. Equations of motion for constant acceleration

    iv. Free-fall

c. Graphing motion

    i. Position, velocity, and acceleration vs. time graphs

d. Vectors

    i. Trigonometric representations of vectors

    ii. Coordinate systems and Vector components

    iii. Projectile motion

Week 2: (may begin at end of week 1)

a. Motion and Force
    i. Newton's first law
    ii. Identifying forces
        1. Friction, normal, tension, etc..
    iii. Free-body diagrams
    iv. Newtons Second Law
        1. Applying Newton's Second Law in 1 and 2 dimensions
    v. Newton's Third Law

b. Equilibrium
    i. Static and dynamic equilibrium

c. Dynamics and Newton's second Law

d. Mass vs. weight and weightlessness

e. Inclined planes

f. Friction and drag

g. Pulley systems

Week 3:

a. Momentum and Impulse
    i. Conservation of momentum
    ii. Impulse-momentum Theorem
    iii. Inelastic collisions

b. Work and Energy
    i. Work and power
    ii. Kinetic energy
    iii. Gravitational potential energy
    iv. Elastic potential energy
    v. Work-energy theorem
    vi. Conservation of energy
    vii. Elastic collisions

Week 4:

a. Rotational motion
    i. Uniform circular motion
    ii. Centripetal forces and accelerations
    iii. Angular displacement, velocity, and acceleration
        1. Rotational kinematics

b. Torque
    i. Gravitational torque and center of gravity

c. Rotational dynamics
    i. Moment of inertia
    ii. Newton's second law for rotational motion

Week 5:

a. Fluids
    i. Pressure
        1. Hydraulic lift
    ii. Buoyancy
        1. Archimedes' principle
    iii. Fluid dynamics
        1. Bernoulli's equation

b. Solids and Elasticity
    i. Tensile strength, Young's modulus, and Bulk Modulus

Lab Schedule

- Labs may require 1 or 2 periods to complete
- Each lab is worth 8 points (total of 136)
- Each quiz is 32 pts (total of 64)
- Lab total 200 pts.

Week 1:

1) Displacement
2) Car Races
3) Falling Objects
4) Rolling on a Hill

Week 2:

5) Basketball Toss
6) What keeps it going?
7) I push, you push
8) Vector Addition

Week 3:

9) Find Forces
10) Force and Acceleration
11) Going in Circles

Quiz 1: Labs 1 - 10

Week 4:

12) Force and Rotation
13) Angular Dynamics
14) Impulse and Momentum

Week 5:

15) Thinking About Work
16) Squashing Cars
17) Energy of a tossed Ball

Quiz 2: Labs 10 - 17

Academic Integrity

It is expected that all students in this class adhere to the highest standards of academic integrity. This includes turning in one's own work, not plagiarizing on written assignments, and completing exams without referring to other students' exams, notecards (other than provided), or any other forms of cheating. Failure to adhere to these standards of academic integrity can result in penalties ranging from a zero on an assignment to a grade of F in the course. *Please read the cheating/plagiarism policies below:*

Students are expected to be honest in all of their academic coursework and activities.

Academic dishonesty, such as cheating of any kind on examinations, course assignments or projects, plagiarism, misrepresentation and the unauthorized possession of examinations or other course-related materials, is prohibited.

Plagiarism is unacceptable to the college community. Academic work that is submitted by students is assumed to be the result of their own thought, research or self-expression. When students borrow ideas, wording or organization from another source, they are expected to acknowledge that fact

in an appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass-off such work as the student's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized.

Students who share their work for the purpose of cheating on class assignments or tests are subject to the same penalties as the student who commits the act of cheating.

When cheating or plagiarism has occurred, instructors may take academic action that ranges from denial of credit for the assignment or a grade of "F" on a specific assignment, examination or project, to the assignment of a grade of "F" for the course.