SEMINOLE STATE COLLEGE
OF FLORIDA

General Physics I Syllabus
PHY 1053C, 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.

Textbook Information

College Physics

Author: Richard Feynman, Mattew Sands

ISBN-13: 0465023827
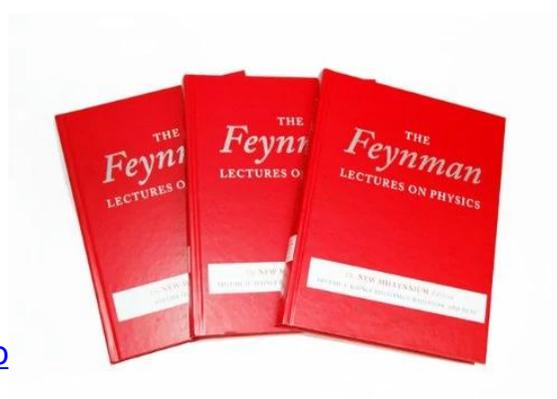
Publisher: Basic Books

Edition: The New Millennium Edition

The usage of the textbook is recommended.

However, for quick/electronic access, see

http://www.feynmanlectures.caltech.edu/I_to

All labs will be posted online and should be downloaded and printed before each class.

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.
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- Complete analytical problems involving the use of algebra and/or rightangle
- trigonometry applied to physical situations.
- Complete laboratory measurements accurately and analyze the information gathered in light of physical principles.
- Present scientific information in a technical laboratory report.
- 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. Weekly homework problems will be assigned and graded. Doing the homework in a timely matter and making sure you understand all of the concepts used to solve the problems on the homework assignments will increase your chances of success in this class. Physics requires practice, so doing the problems and making sure you understand each step will help you succeed in this course!

Labs - 100 points. You will work in groups of 3 to 4 students (no more than 4 students) to conduct experiments. For each experiment, your group will turn in one typed lab report. The lab report will consist of the following sections: Abstract, Equipment List, Procedures, Data Analysis and a Conclusion. On the lab report, list the names of all lab partners. Lab reports should be at least 3-4 pages in length. Reports are to be submitted one

week from the date of the experiment completion. NO LATE LAB REPORTS WILL BE ACCEPTED.

Final Exam – **100 points.** If you have an 'A' average going into the final, you are exempt from taking the final exam. If not, you are required to take the final exam. If you take the final, it can replace your lowest test grade. If your score on the final is not higher than any of your previous tests, it will be added towards your point total.

Grading Scale:

A = 90-100%

B = 80-89.99%

C = 70-79.99%

D = 60-69.99%

F = Below 60%

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.
- Students are not to be on the computers unless we are doing a lab, or you have permission directly from me. Any other circumstances are prohibited.
- Respect your classmates! Speak kindly and act in a courteous manner. Help keep the classroom environment positive.

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 on silent 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.

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

LAB :

a. Basic measurement

b. Distance, velocity and acceleration measurements

c. Ploting Position/velocity/acceleration v.s. time graphs

d. Basic vector measurements

Test1

Week 2:

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 2D

    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

Lab

a. Simple Free-body diagrams

b. Newton's Second Law

c. Inclined planes

d. Pulley systems

Test2

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

Lab

a. Conservation of momentum in inelastic collisions

b. Measurement of kinetic energy and potential energy

c. Conservation of energy

d. Elastic collisions

Test3

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

Lab:

a. Acceleration due to rotation

b. Conservation of energy and angular momentum in rotational motion

c. Impact of Moment of inertia

d. Newton's second law for rotational motion

Test 4

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:

a. Pressure in fluids

b. Bernoulli's equation

c. Tensile strength, Young's modulus, and Bulk Modulus

Test 5

EXAM

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.