

PHYS 1030 - Survey of Physics with Lab (formerly Concepts of Physics and Lab)
4 Credit Hours

Course Description:

This is a one-semester introductory physics course for non-science and non-engineering majors. Emphasis is placed on understanding the nature of physics and applying basic physics concepts in one's everyday life experience and work. The use of mathematics is limited to basic algebraic manipulations required to understand and apply physics concepts. Topics covered include mechanical motion, energy, temperature and heat, fluids, electricity, magnetism, and wave motion. Three hours lecture and three hours laboratory

Course Outcomes:

This course integrates ideas, data acquisition, problem-solving skills, and computer applications. Such a broad-based course requires the student to integrate physics knowledge with that from other areas, to critically assess any situation confronting him or her, and to develop investigation skills that he or she can use to acquire knowledge for the rest of his or her life. By the end of the term the student should be able to:

- Describe what physics is and where it fits in the broader scheme of the sciences.
- Demonstrate by example how the application of the scientific principle has changed the way in which people think.
- Recognize and employ in conversation the terms used in physics to describe motion.
- Understand how objects move under the influence of gravity near the surface of the earth.
- Apply each of Newton's three laws of motion to familiar situations and describe how these laws have helped alter mankind's understanding of motion from that of Aristotle to that of Galileo.
- Explain how acceleration is involved in changing the direction of an objects velocity in circular motion (centripetal acceleration).
- Use the concepts of work, energy, and power; and tell how work done on a system can result in either an increase in kinetic energy or potential energy.
- Comprehend the principle of conservation of energy and apply it to practical problems.
- Compare and contrast impulse and momentum. Employ the law of conservation of momentum in analyzing simple collisions.
- Relate the concept of torque to rotational equilibrium and levers.
- Show how Kepler's Laws of Planetary motion have affected mankind's understanding of the solar system and the universe.
- Understand the concept of pressure and apply Archimedes' Principle and Bernoulli's

Principle.

- Recognize the distinction between temperature and heat and, briefly, describe the methods of heat transfer.
- Describe the behavior of the electrostatic force, and use the concepts of electric field and electric potential.
- Explain the concepts of an electric circuit and electric current to a reasonably informed peer.
- Identify the basic components of the electromagnetic spectrum and tell how different types of electromagnetic radiation interact with the body.

Prerequisites and Corequisites:

Knowledge of basic algebra to solve simple literal equations. This course is not appropriate for students needing remedial mathematics.

Course Topics:

The course is divided into twelve sequential units. Each subsequent unit is dependent on the previous units. The topics covered are An Introduction to Physics; Straight-line Motion; Projectile Motion; Newton's Laws of Motion; Circular Motion, the Planets and Gravity; Energy; Momentum and Impulse; Torque and Rotational Equilibrium; Fluid Behavior; Temperature and Heat; Electrostatics and Electric Circuits; and Wave Phenomena.

Specific Course Requirements:

To succeed in this course the student must be curious, self-motivated, well-organized and capable of sustained effort. The student must be computer-literate having the abilities to access and browse the web, to use word processing software, and to send and receive attachments via email. The ability to use spreadsheet software to create simple line graphs is a plus.

Required Textbooks:

Please visit the [Virtual Bookstore](#) to obtain textbook information for this course. Move your cursor over the "Books" link in the navigation bar and select "Textbooks & Course Materials." Select your Program, Term, Department, and Course; then select "Submit."

Supplementary Materials:

- In order to do the required "homework" the student must purchase, either in the bookstore or online, access to WebAssign. This code can also be purchased as a card from the bookstore or as direct access, online with a credit card, at the following URL <http://www.webassign.net/>.
- The student must acquire materials used in performing the laboratory exercises. Click on the link Lab Materials to go to this list.

Hardware and Software Requirements:

Minimum hardware requirements can be found [here](#).

Minimum software requirements can be found [here](#).

Common applications you might need:

To read a PDF file download the latest version of [Adobe Reader here](#)

Don't have Microsoft Word? Explore an alternative [OpenOffice here](#)

Accessing a PowerPoint file? Download the [PowerPoint Viewer here](#)

Web Resources:

Purdue [OWL Online Writing Lab](#) (for APA, MLA, or Chicago style)

The Writing Center [Online Writer's Handbook](#)

Student Resources:

- Technical support information can be found on the [TN eCampus Help Desk](#) page.
- Smarthinking virtual tutoring is available **FREE** of charge. to access Smarthinking, visit the course homepage and select Smarthinking under Course Resources. You also view [sample sessions](#) to see what Smarthinking offers and how it works.
- Information on other student issues or concerns can be located on the [TN eCampus Student Resources](#) page.

Instructor Information:

Please see "Instructor Information" in the Getting Started Module for instructor contact

information, virtual office hours, and other communication information. You can expect to receive a response from the instructor within 24-48 hours unless notified of extenuating circumstances.

Testing Procedures:

- Pre-tests are required at the beginning of each unit. These self-tests are taken online with immediate feedback. Grades on these tests do not contribute toward the semester grade.
- Unit tests are required at the conclusion of each unit. They may be taken one time only during a specified time period. These grades do count toward the semester grade. Results, with feedback, will be available immediately to both student and instructor.
- One proctored mid-term and one proctored final exam, each taken during a specified time period, complete the testing process. The student is responsible for selecting and obtaining an acceptable proctor. Instructions for this procedure are found at <https://www.tnecampus.info/student-proctoring-responsibilities>

Grading Procedures:

A student's grade is determined based on his/her numerical average achieved through completion of seven items: homework, laboratory reports, class participation (discussion forum usage), unit tests, internet research project, mid-term examination and final examination. Levels of achievement and weighting for each of these elements are outlined below.

Grading Scale:

90 to 100	A
80 to 89	B
70 to 79	C
65 to 69	D
Below 65	F

Assignments and Projects:

The assignments for this course consist of one homework set per unit, nine laboratory experiments with reports, one vector graphical problem set, and an internet research paper. Exact due dates for homework are specified on the WebAssign web site. Laboratory due dates are more flexible and suggested due dates are listed in the course calendar. The first five laboratory reports must be turned in prior to taking the mid-term examination. The internet research paper is due one week prior to the final examination. The time window during which each unit test can be taken is shown in the course calendar.

Class Participation:

As an online learner there can be a sense of loneliness if one does not communicate with his or her peers. To prevent that all students are required to participate in the class discussion forums. There are several different forum topics. Occasionally, the instructor may post discussion questions on the class bulletin board. If so, each student has two responsibilities: to post comments about the discussion question and to respond to the posted comments of at least one other student. The most important way in which class participation points can be earned is through asking for help from other students and responding to the calls for help of others via the discussion forum. Your class participation grade depends how much you contribute compared to your classmates. NOTE: since the Class Participation [Discussion] component is weighted at 10%, if at the end of the semester you have not participated as much as the average for your class, your overall final grade will be reduced by up to ten percentage points: that's one letter grade.

Course Ground Rules:

The following two statements (1., 2.) were derived from the TBR System-wide Student Rules document, released January 2012:

RULES OF THE TENNESSEE BOARD OF REGENTS STATE UNIVERSITY AND
COMMUNITY COLLEGE SYSTEM OF TENNESSEE SYSTEMWIDE STUDENT RULES
CHAPTER 0240-02-03 STUDENT CONDUCT AND DISCIPLINARY SANCTIONS

[Read the document in its entirety here.](#)

1. Standards of Conduct:

- Students are required to adhere to the same professional, legal and ethical standards of conduct online as on campus. In addition, students should conform to generally accepted standards of "netiquette" while sending e-mail, posting comments to the discussion board, and while participating in other means of communicating online. Specifically, students should refrain from inappropriate and/or offensive language, comments and actions.

2. [Review the TN eCampus Academic Integrity/Academic Honesty Policy:](#)

- In their academic activities, students are expected to maintain high standards of honesty and integrity. Academic dishonesty is prohibited.

Such conduct includes, but is not limited to:

- an attempt by one or more students to use unauthorized information in the taking of an exam
- to submit as one's own work, themes, reports, drawings, laboratory notes, computer programs, or other products prepared by another person,
- or to knowingly assist another student in obtaining or using unauthorized materials.

Plagiarism, cheating, and other forms of academic dishonesty are prohibited.

Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are subject to disciplinary action through the regular procedures of the student's home institution. Refer to the student handbook provided by your home institution to review the student conduct policy.

In addition to other possible disciplinary sanctions that may be imposed, the instructor has the authority to assign an "F" or zero for an activity or to assign an "F" for the course.

Other Course Rules:

Students are expected to:

- Participate in all aspects of the course
- Communicate with other students
- Learn how to navigate in Brightspace
- Keep abreast of course announcements
- Use the assigned course management (Brightspace) email address rather than a personal email address
- Address technical problems immediately:
 - [Contact Technical Support](#)
 - [View Term Calendar here](#)
- Observe course netiquette at all times.

Guidelines for Communications:

Email:

- Always include a subject line.
- Remember without facial expressions some comments may be taken the wrong way. Be careful in wording your emails. Use of emoticons might be helpful in some cases.
- Use standard fonts.
- Do not send large attachments without permission.
- Special formatting such as centering, audio messages, tables, html, etc. should be avoided unless necessary to complete an assignment or other communication.
- Respect the privacy of other class members

Discussions:

- Review the discussion threads thoroughly before entering the discussion. Be a lurker then a discussant.
- Try to maintain threads by using the "Reply" button rather starting a new topic.
- Do not make insulting or inflammatory statements to other members of the discussion group. Be respectful of other's ideas.
- Be patient and read the comments of other group members thoroughly before entering your remarks.
- Be cooperative with group leaders in completing assigned tasks.
- Be positive and constructive in group discussions.
- Respond in a thoughtful and timely manner.

Library:

The [Tennessee Virtual Library](#) is available to all students enrolled in TN eCampus programs and courses. Links to library materials (such as electronic journals, databases, interlibrary loans, digital reserves, dictionaries, encyclopedias, maps, and librarian support) and Internet resources needed by learners to complete online assignments and as background reading will be included within the course modules. To access the Virtual Library, go to the course homepage and select the **Virtual Library** link under Course Resources.

Students with Disabilities:

Qualified students with disabilities will be provided reasonable and necessary academic

accommodations if determined eligible by the appropriate disability services staff at their home institution. Prior to granting disability accommodations in this course, the instructor must receive written verification of a student's eligibility for specific accommodations from the disability services staff at the home institution. It is the student's responsibility to initiate contact with their home institution's disability services staff and to follow the established procedures for having the accommodation notice sent to the instructor.

Syllabus Changes:

The instructor reserves the right to make changes as necessary to this syllabus. If changes are necessitated during the term of the course, the instructor will immediately notify students of such changes both by individual email communication and posting both notification and nature of change(s) on the course bulletin board.

Disclaimer

The information contained in this syllabus is for general information purposes only. While we endeavor to keep this information up-to-date and accurate, there may be some discrepancies between this syllabus and the one found in your online course. The syllabus of record is the one found in your online course. Please make sure you read the syllabus in your course at the beginning of the semester. Questions regarding course content should be directed to your instructor.