PHYS 2110: Calculus-Based Physics I

Instructor Information:
Name
Office phone
Office location
Office hours
E-mail address

I. Course Description
A calculus-based course in the concepts and principles of classical mechanics, fluids, mechanical waves, and the thermal properties of matter. This course is primarily intended for students who plan to major in science, engineering, mathematics, or other technical fields at the four-year college level.

Credit Hours: 4 Credits (3 Class Hours, 3 Lab Hours)
Prerequisite: MATH 1910

II. Course Outcomes and Topics
Upon successful completion of this course, the student will be able to:
- Describe the nature of physical quantities.
- Employ the equations necessary to describe general accelerated motion in one or multiple dimensions.
- Illustrate Newton’s Three Laws of motion and apply the laws and the conditions of equilibrium to general systems of forces.
- Interpret the concepts of work, kinetic energy, and potential energy for general force systems and apply the law of conservation of energy.
- Apply the concepts of elasticity, periodic motion, and the universal law of gravitation, including the variation of $g$ with altitude.
- Contrast the statics and dynamics of fluids.
- Describe the general properties of waves and explain the properties of sound waves.
- Illustrate the meaning of temperature and discuss the thermal properties of matter and the basics of thermodynamics.

Topics
- Units and physical quantities
- Motion in one, two, and three dimensions
- Newton’s laws of motion
- Work and energy
- Energy conservation
- Momentum and Impulse
- Collisions
- Rotational motion
- Equilibrium
- Elasticity
- Gravitation
- Periodic motion
- Fluids
- Mechanical waves
- Interference
- Sound
- Temperature
- Heat
- Thermal properties of matter
- Concepts of Thermodynamics
Laboratory Topics

- Measurement
- The Acceleration due to gravity
- Acceleration on an inclined plane
- Resolution of concurrent forces
- Newton’s second law of motion
- Elastic collisions
- Inelastic collisions
- Density
- Torque and equilibrium
- Properties of waves
- Resonance and the speed of Sound
- Boyle’s law
- Thermal expansion
- Heat of fusion of ice

III. Required Materials


or


- First Semester Physics Lab Manual, Provided by NSCC Staff.

IV. Course Policies

Attendance
Each Instructor will provide information regarding his/her attendance policy. Failure to attend class will result in a final course grade of “FA” or “FN” (see explanation below) depending on the individual instructor’s course policy.

FA= failure, attendance-related (unofficial withdrawal) Last recorded date of attendance required. Per TBR policy, a student who does not officially drop or withdraw from a course, but receives a failing grade, will receive an “FA” if the last day of attendance was earlier than two-thirds into the part-of-term. That date equates to the last day to withdraw from the course.
FN= failure, never attended class (unofficial withdrawal).

Method of Assessment/ Evaluation: Subject to change at instructor’s discretion
Course Average = 37.5 - 75%
* Average of the four unit tests = 37.5 - 75%
Average of the highest ten lab reports = 25%
* Final Examination = 37.5 - 0%

* The Final Examination will replace the lowest unit test and the next higher one also if the final is higher. NO MAKE-UP TESTS. Up to two missed tests are replaced by the final; more count as zeros. ONE 4”x 6”index card with GENERAL information and a copy of the conversion factors from the text cover may be used
on the tests. No worked-out problem details may be on the index card. The Final is optional if your test average is 59.5 or higher.

**Course Grade:** Your course average will be rounded to the nearest whole number and the course letter grade determined according to the following grade ranges: 0-59 = F, 60-69 = D, 70-79 = C, 80-89 = B, and 90-100+ = A

**Safety**
The instructor will go over new regulations regarding safety in lab classes. You must turn in a signed copy of the regulations, and you will have a copy to keep.

**V. ADA Statement**

Nashville State Technical Community College complies with the Americans with Disabilities Act. If you wish to request any special accommodations for any courses in which you are enrolled, contact the Disability Coordinator at 353-3721. Such services must have proof of documentation that is not over three years old.

**VI. Classroom Behavior**

Nashville State Community College has a zero tolerance policy for disruptive conduct in the classroom. Students whose behavior disrupts the classroom will be subject to disciplinary sanctions.

The instructor has primary responsibility for control over classroom behavior and maintenance of academic integrity. He/she can order temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or in conduct which violates the general rules and regulations of the College. Disruptive behavior in the classroom may be defined as, but is not limited to, behavior that obstructs or disrupts the learning environment (e.g., offensive language, harassment of students and professors, repeated outbursts from a student which disrupt the flow of instruction or prevent concentration on the subject taught, failure to cooperate in maintaining classroom decorum, etc.), the continued use of any electronic or other noise or light emitting device which disturbs others (e.g., disturbing noises from beepers, cell phones, palm pilots, lap-top computers, games, etc.). Please be aware that children are not allowed in class or unattended on campus.

**VII. Academic Dishonesty (Honor Code)**

Any form of academic dishonesty, cheating, plagiarizing, or other academic misconduct is prohibited. “Plagiarism may result from: (1) failing to cite quotations and borrowed ideas, (2) failing to enclose borrowed language in quotation marks, and (3) failing to put summaries and paraphrases in your own words” (A Writer’s Reference 331). Academic dishonesty may be defined as, but is not limited to, intentionally trying to deceive by claiming credit for the work of another person, using information from a web page or source without citing the reference, fraudulently using someone else’s work on an exam, paper, or
assignment, recycling your own work from another course, purchasing papers or materials from another source and presenting them as your own, attempting to obtain exams/materials/assignments in advance of the date of administration by the instructor, impersonating someone else in a testing situation, providing confidential test information to someone else, submitting the same assignment in two different classes without requesting both instructor’s permission, allowing someone else to copy or use your work, using someone else’s work to complete your own, altering documents, transcripts or grades, and forging a faculty/staff member’s signature.

In addition to other possible disciplinary sanctions that may be imposed through regular college procedures as a result of academic dishonesty the instructor has the authority to assign an “F” or a “Zero” for the exercise, paper, or examination or to assign an “F” for the course.

VIII. Communication Channels

It is the student’s responsibility to check NSOnline and their MyNSCC email on a regular basis. These are the official communication channels between the college and students. Students are responsible for the information communicated through those channels.

NOTE: This syllabus is meant simply as a guide and overview of the course, the topics, the objectives, the general assessments, and some standard college policies. Some items are subject to change or revision at the instructor’s discretion. Each instructor will further clarify their criteria for grading, classroom procedures, attendance, exams and dates, etc.