PHYS 2110: Calculus Based Physics I

Instructor Information

Instructor name: 
Office location: 
Office phone: 
Office hours: 
Email 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

Course Outcomes

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
- Gravitation
- Periodic motion
- Fluids
- Mechanical waves
- Interference
- Sound
- Temperature
- Heat
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- Rotational motion
- Equilibrium
- Elasticity
- Thermal properties of matter
- Concepts of Thermodynamics

Laboratory Topics
- Measurement
- The Acceleration Due to Gravity
- Acceleration on an Inclined Plane
- Elastic Collisions
- Inelastic Collisions
- Hooke’s Law
- Density and Buoyancy
- Torque and Equilibrium
- Thermal Expansion
- Specific Heat Capacity of Solids
- Heat of Fusion of Ice

III. Required Materials


or


- First Semester Physics Lab Manual, Provided by NSCC Staff.
- Calculator: A scientific calculator is required for this course.

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).

Please be advised that instructors may have a more specific class policy.
Method of Assessment/Evaluation: *(Subject to change at instructor’s discretion)*

Course average
- Average of unit tests and final examination: 40% - 75%
- Average of the highest ten lab reports: 25%
- Other (quizzes, homework, etc.): 0 - 35%

The course letter grade is determined according to the following point ranges:
- 0-59 = F, 60-69 = D, 70-79 = C, 80-89 = B, and 90-100 = A.

Please consult your instructor for specific information regarding method of assessment.

Safety:
The instructor will review the regulations regarding safety in lab classes. You must turn in a signed copy of the regulations, and you should keep a copy for your records.

V. D2L Brightspace/NSOnline and myNSCC email

It is the student’s responsibility to check D2L and 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. D2L contains specific course information and MyNSCC contains information important for other purposes.

VI. Technology Statement

Nashville State's classes are considered to be web-enhanced. Faculty have an expectation that students will use a computer and the Internet to complete assignments, engage in online discussions, and access various course materials through Desire2Learn (D2L) course shells. Computers are available for student use at each campus during campus open hours.

VII. ADA Compliance Statement

Nashville State 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 Access Center at 615.353.3741 or 615.353.3721.

VIII. Classroom Misconduct

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 Nashville State Student Code of Conduct policy is available at http://www.nscc.edu/content/resources/Student_Code_of_Conduct_Policy.pdf.

Please be aware that children are not allowed in class or unattended on campus.

IX. Academic Misconduct

Any form of academic dishonesty, cheating, plagiarizing, or other academic misconduct is prohibited. Students are responsible for understanding and aiding by the Academic Misconduct Policy in the Nashville State Student Code of Conduct that can be found at http://www.nscc.edu/content/resources/Student_Code_of_Conduct_Policy.pdf.

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. Students may appeal through the appropriate college grade appeal procedures.

**Academic Early Warning System**
Nashville State Community College has implemented an Early Warning System to notify students via e-mail about academic problems such as poor classroom attendance, poor performance on assignments/tests, poor communication skills, late/missing assignments, and/or lack of classroom participation. *Please note that Early Warning Alerts do not affect a student’s academic standing.*

**X. RAVE Emergency Alert System**
Emergency events can happen at any time and Nashville State Community College wants to be able notify students if and when they occur. For this reason, all students have been enrolled in the free RAVE alert system. If you have not already done so, please log in at [https://getrave.com/login/nscc](https://getrave.com/login/nscc) to confirm and update your contact information and notification preferences. It is critical that your information be correct so that you will receive any emergency notifications. Your RAVE Username is your NSCC email address. If you've never received an email from RAVE with your password, or if you need to reset your password, select “Forgot your password?” and a new password will be emailed to you. Should the RAVE system indicate “user not found”, select Register and create your own RAVE account.

**XI. Inclement Weather Policy**
Nashville State will use the RAVE alert system to send a text message to students, staff, and faculty about adjusted hours of operation and/or closings at individual campuses. All students should check the Nashville State web site home page at www.nscc.edu for announcements on campus closures, which may vary from campus to campus. Campus closures will also be announced on local television stations.

When classes are cancelled, an online assignment will be posted in NS Online. Check NS Online for a message from your instructor regarding your online assignment requirements.

Students should use their own best judgment in determining whether to report to campus during inclement weather when classes are not cancelled.

**XII. Class Cancellation Policy**
If the class is cancelled, the instructor will notify all students by posting in the NSOnline/D2L course, e-mailing through NSOnline/D2L, and/or by posting a sign on the classroom door. In the event of class cancellation, students must access NSOnline/D2L to complete classwork and the assignment that will be posted in the course D2L site.

**NOTE:** This syllabus is meant simply as a guide and overview of the course outcomes, topics, classroom policies, and 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.