

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. Required Materials

- **Textbook- Choose from one of the following:**
University Physics with Modern Physics, 13th Edition by Hugh D. Young and Roger A. Freeman, Addison Wesley, ISBN 9780321696861, *or*
University Physics with Modern Physics, 14th Edition by Hugh D. Young and Roger A. Freeman, Addison Wesley, ISBN 9780321973610. (Newer edition, same content)
- First Semester Physics Lab Manual, Provided by NSCC Staff.
- Calculator: A scientific calculator is required for this course.

Once enrolled, all students should verify that they have the correct textbook and materials information by consulting the D2L/NS Online shell for the course. If you are registered with the Access Center and require an alternate format for the textbook and other course materials, please contact the Access Center at 615-353-3721, 615-353-3741, or accesscenter@nscc.edu.

III. Course Outcomes and Topics

Course Outcomes

Upon successful completion of this course, the student should be able to:

- Describe the nature of physical quantities.
- Employ the equations necessary to describe general accelerated motion in one or multiple dimensions.

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- 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
- Vectors
- 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
- 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

IV. Course Policies

Attendance

Students are expected to attend all scheduled classes and laboratories. Absences in a course may affect a student's final grade. The student is responsible for all assigned work in the course regardless of excused or unexcused absences. Tardiness may also affect a student's final grade.

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In online courses, attendance is signaled by logging on to the D2L/NS Online shell, participating as prompted (e.g., responding to an instructor's email, posting to a discussion board) and/or completing and submitting assignments. Campus closures do not affect attendance and assignment completion in online courses.

Each instructor will provide further information regarding his/her attendance policy. Failure to attend class could 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. *According to NSCC policy, if a student fails a course, but has not officially withdrawn from the course, and her/his last date of attendance is before the last date to withdraw, the student will receive a grade of FA (i.e., "Failure for Attendance Reasons").*
- FN= An FN is awarded to students who never attended class.

Please be advised that instructors may have a more specific class policy.

Method of Assessment/Evaluation- The following performance assessments will be used to demonstrate students' understanding, knowledge, and skills: *(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/NS Online and myNSCC

It is students' responsibility to check D2L/NS Online course shells for all enrolled courses and myNSCC, including student email, on a regular basis. These are the official communication channels between the college and students, who are responsible for the information communicated through those channels. D2L/NS Online 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 D2L/NS Online course shells. Computers are available for student use at each campus during campus open hours.

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VII. ADA Compliance Statement

Nashville State complies with the Americans with Disabilities Act (ADA). If you require accommodations for any courses in which you are enrolled, contact the Access Center at 615.353.3741 or 615.353.3721, or e-mail accesscenter@nsc.edu. If you are registered with the Access Center and require an alternate format for the textbook and other course materials, please contact the Access Center.

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 measures. Please review the [Nashville State Student Code of Conduct policy](#). Please be aware that children are not allowed in class or to be left 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 abiding by the [Academic Misconduct Policy](#) in the Nashville State Student Code of Conduct. In addition to other possible disciplinary measures that may be applied 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.

X. Academic Early Alert System

Nashville State Community College uses an Early Alert System to let students know of a faculty member’s concern in one or more of these academic areas: lack of attendance, lack of classroom participation, late or missing assignments, and/or poor performance on assignments/tests. *Please note that Early Alerts do not affect a student’s academic standing. If you receive an Early Alert email, please see your instructor and your academic advisor as soon as possible.

XI. RAVE Emergency Alert System

Emergency events can happen at any time and Nashville State Community College wants to be able to 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://www.getrave.com/login/nsc> 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.

XII. Inclement Weather & Campus Closings

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.nsc.edu for announcements on campus closures, which may vary from campus to campus. Campus closures will also be announced on local television stations. Students should use their own

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best judgment in determining whether to report to campus during inclement weather when classes are not cancelled.

Even when campuses are closed, students are still responsible for completing all assigned work. When classes are cancelled, faculty will post online assignments and any additional instructions in the D2L/NS Online course shell. Check D2L/NS Online for a message from your instructor regarding your online assignment requirements. Faculty have discretion over adjusting deadlines or due date for assignments, but students are responsible for completing all assigned work by the due date established by the instructor.

XIII. Class Cancellation Policy

If the class is cancelled, the instructor will notify all students by posting in the D2L/NS Online course, e-mailing through D2L/NS Online, and/or by posting a sign on the classroom door. In the event of class cancellation, students must access D2L/NS Online 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.