I. **Course Description**

A calculus-based course in the concepts and principles of electricity, magnetism, light and optics. 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:** PHYS 2110

II. **Course Outcomes and Topics**

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

- Illustrate the nature of electric charge and electrostatic forces.
- Describe the properties of the electric field from both the force and energy points of view.
- Illustrate the applications of Gauss's Law.
- Appraise the behavior of simple electric circuits including the properties of capacitors, resistors, inductors, and sources of electromotive force.
- Illustrate the difference between DC circuits and AC circuits.
- Discuss magnetism, the magnetic field, the Lorentz force, electromagnetic induction, electromagnetic waves and Ampere’s Law.
- Discuss the nature and propagation of light.
- Employ various aspects of geometric and physical optics.
- Discuss the phenomena of Light Interference and Diffraction.

**Course Topics**

- Electric Charge and Fields
- Gauss’s Law
- Electric Potential
- Capacitance
- Current
- Resistance
- DC Circuits
- Magnetic Fields and Forces
- Sources of Magnetic Fields
- EM Induction
- Inductance
- Alternating Current
- Electromagnetic Waves
- Nature and Propagation of Light
- Geometric Optics
- Optical Instruments
- Interference
- Diffraction
Sample Laboratory Topics

- Electrostatics
- Electric Field Mapping
- Capacitance
- Introduction to Electric Circuits I
- Introduction to Electric Circuits II
- Discharging a Capacitor
- Magnetism

- Charge to Mass Ratio of the Electron
- Induced Electromotive Forces
- Lenses and Optical Instruments
- Fraunhofer Diffraction
- Index of refraction
- Spectroscopy

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 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 in the Student Services building, D-26. 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.