



# PHYS 1402 042 DC – General Physics II

Course Syllabus: Spring 2021

*“Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed.”*

**Instructor: Larry Russell**

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Office	Monday	Tuesday	Wednesday	Thursday	Friday	Online
Hours	7:15 – 8:00	7:15 – 8:00	7:15 – 8:00	7:15 – 8:00	7:15 – 8:00	

***This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.***

*Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.*

**Course Description:** Fundamental principles of physics, using algebra and trigonometry; the principles and applications of electricity and magnetism, including circuits, electrostatics, electromagnetism, waves, sound, light, optics, and modern physics topics; with emphasis on problem solving.

**Prerequisite(s):** PHYS 1401

### **Student Learning Outcomes:**

1402.1 Solve problems involving the inter-relationship of fundamentals charged particles, and electrical forces, fields, and currents.

1402.2 Apply Kirchhoff’s Rules to analysis of circuits with potential sources, capacitance, inductance, and resistance, including parallel and series capacitance and resistance.

1402.3 Solve problems in the electrostatic interaction of point charges through the application of Coulomb’s Law.

1402.4 Solve problems involving the effects of magnetic fields on moving charges or currents, and the relationship of magnetic fields to the currents that produce them.

1402.5 Use Faraday’s and Lenz’s laws to determine electromotive forces and solve problems involving electromagnetic induction.

1402.6 Articulate the principles of reflection, refraction, diffraction, interference, and superposition of waves.

1402.7 Describe the characteristics of light and the electromagnetic spectrum.

1402.L1 Demonstrate techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.

1402.L2 Demonstrate the collections, analysis, and reporting of data using the scientific method.

1402.L3 Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written results.

1402.L4 Solve practical problems involving optics, lenses, mirrors, and optical instruments.

### **Core Curriculum Purpose and Objectives:**

Through the core curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world; develop principles of personal and social responsibility for living in a diverse world; and advance intellectual and practical skills that are essential for all learning.

Courses in the foundation area of mathematics focus on quantitative literacy in logic, patterns, and relationships. In addition, these courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience

### **Program Student Learning Outcomes:**

#### Critical Thinking Skills

CT.1 Students will demonstrate the ability to 1) analyze complex issues, 2) synthesize information, and 3) evaluate the logic, validity, and relevance of data.

#### Communication Skills

CS.1 Students will effectively develop, interpret and express ideas through written communication.

#### Empirical and Quantitative Skills

EQS.1 Students will manipulate numerical data or observable facts by organizing and converting relevant information into mathematical or empirical form

EQS.2 Students will analyze numerical data or observable facts by processing information with correct calculations, explicit notations, and appropriate technology.

EQS.3 Students will draw informed conclusions from numerical data or observable facts that are accurate, complete, and relevant to the investigation.

#### Teamwork

TW.2 Students will work with others to support and accomplish a shared goal.

### **Evaluation/Grading Policy:**

Daily work consisting of homework, quizzes, and laboratory assignments will represent 25% of your grade. There will be 4 Unit Tests and a comprehensive Final Exam. The average of the exams will represent 75% of your grade. The letter grading system is: A (90-100%), B (80-89%), C (70-79%), D (60-69%), F (0-59%).

**Required Instructional Materials:** This course will utilize the textbook Serway and Vuille, *College Physics*, Tenth Edition, Cengage Learning, Stamford, CT, 2015. The textbook is issued by MPHS.

**Publisher:** Cengage Learning

**ISBN Number:** 978-1-285-76249-4

**Optional Instructional Materials:** None

**Minimum Technology Requirements:** A scientific calculator is required for this course.

**Required Computer Literacy Skills:** None

**Course Structure and Overview:** This course meets on the daily MPHS schedule. Daily class meetings consists of lectures over the course material, working on assigned problems from the textbook, and performing lab experiments. Quizzes over the material will be given at the completion of major topics. The quizzes are short in nature and are intended to test your understanding of the course concepts. Notes and assigned problems may be used during the quizzes. Exams will be given at the end of units of study during class time. These will typically cover information from two or three related chapters of the textbook. The final exam is comprehensive.

**Communications:** The college's official means of communication is via your campus email address.

**Institutional/Course Policy:** Student attendance, withdrawal, late assignments, and cell phone usage is in accordance with MPHS handbook and NTCC policy.

#### **Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements**

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (<http://www.ntcc.edu/>) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

#### **NTCC Academic Honesty/Ethics Statement:**

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

#### **ADA Statement:**

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the

Request for Accommodations, please refer to the special populations page on the NTCC website.

**Family Educational Rights and Privacy Act (FERPA):**

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children’s educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered “eligible students.” In essence, a parent has no legal right to obtain information concerning the child’s college records without the written consent of the student. In compliance with FERPA, information classified as “directory information” may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student’s name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

**Tentative Course Timeline (\*note\* instructor reserves the right to make adjustments to this timeline at any point in the term):**

Chap.	Title	Week	Key Due Dates*
15	Electric Forces and Electric Fields	1 - 3	
16	Electric Energy and Capacitance	4 - 5	
	<b>Exam #1</b>		<b>2/5/21</b>
17	Current and Resistance	5 - 6	
18	Direct Current Circuits	7 - 8	
	<b>Exam #2</b>		<b>2/26/21</b>
19	Magnetism	9 - 10	
<i>Spring Break 3/16/20 – 3/20/20</i>			
20	Induced Voltages and Inductance	10 - 11	
21	AC Circuits and Electromagnetic Waves	12	
	<b>Exam #3</b>		<b>4/2/21</b>
22	Reflection and Refraction of Light	13 - 14	
23	Mirrors and Lenses	14 - 15	
24	Wave Optics	16	
	<b>Exam #4</b>		<b>4/30/21</b>
28	Atomic Physics	17	
29	Nuclear Physics	18	
	<b>Final Exam</b>		<b>5/12/21</b>

*\*This calendar will be adjusted to the needs of the course. Changes will be based on the course progress. The exam dates could be moved one or two days up or down. The Final Exam date is fixed and will not change.*