North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Engineering Technology, Business & Criminal Justice Division

B. Discipline: Physics

C. Course Number and Title: PHYS2030 – College Physics II

D. Assistant Dean: Brooke Miller, M.B.A.

E. Credit Hours: 4
Lecture: 3 hours
Laboratory: 3 hours

F. Prerequisites: PHYS2010 (a minimum grade of C required)

G. Last Course/Curriculum Revision Date: Fall 2025 Origin date: 10/21/2013

H. Textbook(s) Title:

Physics for Scientists and Engineers
- Author(s): Knight
- Copyright Year: 2017
- Edition: 4th
- ISBN #: 9780133942651

I. Workbook(s) and/or Lab Manual:

Labs will be distributed online.

J. Course Description: This is a calculus-based physics course that has a study of heat to include calorimetry, expansion, heat capacity, conductivity, phase change, kinetic theory and gas laws. A study of light including its nature, and geometric optics. Also, a study of electricity and magnetism including electric charges at rest, potentials, capacitance and dielectrics, current, resistance, and voltage, alternating circuits theory of frequency, reactance, impedance, power and resonance, magnetic field definition and effects on moving charges and conductors.

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met All listed assignments are graded
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Computation	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Calculate the Doppler Shift of sound waves for either the source or observer moving.	Homework, labs, quizzes, and exams during the weeks 1-16
2. Solve for indicated variables in problems involving Archimedes' principle or Bernoulli's principle.	Homework, labs, quizzes, and exams during the weeks 2-16
3. Solve for the pressure, volume, temperature, mass of gas, or amount of gas in ideal gas law problems.	Homework, labs, quizzes, and exams during the weeks 3-16
4. Calculate the thermal expansion and thermal stresses in an object given the material and temperature range.	Homework, labs, quizzes, and exams during the weeks 3-16
5. Solve for the indicated variables in calorimetric problems with or without change of phase and involving no more than three materials.	Homework, labs, quizzes, and exams during the weeks 4-16
6. Calculate the heat loss due to conduction, convection, or radiation given the temperature of an object and its environment.	Homework, labs, quizzes, and exams during the weeks 4-16
7. Calculate the net electric force and potential energy of a test charge and the electric field and electric potential at a point due to a specified array of not more than three-point charges at rest.	Homework, labs, quizzes, and exams during the weeks 5-16
8. Calculate specified electrostatic or kinematic variables due to a specified electric field or charge distribution using conservation of energy.	Homework, labs, quizzes, and exams during the weeks 6-16
9. Calculate the equivalent capacitance of a specified network of capacitors and the charge on, potential difference across and energy stored by specified capacitors in the network.	Homework, labs, quizzes, and exams during the weeks 6-16
10. Calculate current, resistance, electromotive force, power loss, potential difference, and resistivity for specified parts of a direct current circuit.	Homework, labs, quizzes, and exams during the weeks 7-16
11. Calculate related current, magnetic force and magnetic flux, induced electromotive force, and torque for magnetic field problems.	Homework, labs, quizzes, and exams during the weeks 11-16
12. Calculate the peak current, RMS current, impedance, peak voltage, and RMS voltage for alternating current problems.	Homework, labs, quizzes, and exams during the weeks 13-16
13. Calculate the position, size and nature of an image (or object) given a problem in geometrical optics with no more than two optical devices.	Homework, labs, quizzes, and exams during the weeks 15-16

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	EBC	**Discipline:**	Physics
Course Coordinator:	Wesley L. Adams		
Course Number:	PHYS 2010-CN1	**Course Title:**	College Physics II
Semester / Session:	Spring 2026 / 16 week	**Start / End Date:**	01/12/2026 thru 05/09/2026

Instructor Information

Name:	Wesley L. Adams	**Credentials:**	MS Physics - East Texas A&M University
Phone Number:	419-755-4861	**E-Mail Address:**	wadams@ncstatecollege.edu
Office Location:	Kehoe 134	**Office Hours:**	Mon & Wed 2 – 3 pm & Thu 09 – 12 pm

I. Topical Timeline / Course Calendar (Subject to Change):

Weeks	Topics	Assignment	Due Date
1 01/12	Ch 15 Oscillations Ch 16 Traveling Waves	Lab Sound Resonance	01/14
2 01/19	Ch 17 Superposition		
3 01/26		HW Ch 15 – 17 & HW Quiz Ch 15 Exam 1 Ch (15 – 17)	01/28
4 02/02	Ch 22 Electric Charges and Forces Ch 23 The Electric Field	Lab Intro to Electricity	02/04
5 02/09	Ch 24 Gauss's Law	HW Ch 22 & HW Quiz Ch 22 Lab Electric Fields	02/11
6 02/16	Ch 25 The Electric Potential	HW Ch 6 – 8 Exam 2 (Ch 22 – 24)	09/17
7 02/23	Ch 26 Potential and Field Ch 27 Current and Resistance	Lab DC Circuits HW Quiz Ch 25	02/25
8 03/02	Ch 28 Fundamentals of Circuits	HW Ch 27 & 28 & HW Quiz Ch 26 Exam 3 (Ch 25 – 28)	03/04
-B- 03/09	Fall Break	Fall Break	
09 03/16	Ch 29 The Magnetic Field	HW Ch 9 & 10	03/18
10 03/23	Ch 30 Electromagnetic Induction	HW Ch 11	03/25
11 03/30	Ch 31 Electromagnetic Fields and Waves	HW Ch 12 Lab Centripetal Force	04/01
12 04/06	Ch 32 AC Circuits	HW Ch 13 & 14 Exam 4 (Ch 29 – 32)	04/08
13 04/13	Ch 33 Wave Optics	Lab Diffraction and Interference	04/15
14 04/20	Ch 34 Ray Optics Ch 35 Optical Instruments	HW Ch 33	04/22
15 04/27		HW Ch 33 & 35 Exam 5 (Ch 33 – 35)	04/27
16 05/04		Exam Final	04/06

II. Grading and Testing Guidelines:

Final Grade Calculation

Activity	Qty	Points	Percentage
HW Assignments	17	236	20%
Lab	7	70	20%
HW Quizzes	9	90	10%
Exams	6	700	50%
		1096	100%

Assessment of your learning will come in two primary ways. First, you will be graded on your application of physics concepts in solving conceptual and mathematical problems. This grade will come from quizzes, homework assignments, and exams. Secondly, assessment will be done in class through questions you will answer and demonstrations you will work together to explain. The student is responsible for his or her active learning in the course.

Assignments: Assignments are required to be done online at www.masteringphysics.com by the due date given. To register, **first log into the class NCSC Canvas** site and select the 'Access Pearson' tab. From there you can use the number from your textbook or buy one there online. After registering, you must join the class by using the class code **adams43738**. Assignments submitted after the due date will be marked down 3% for each day after the due date, down to receiving 50% credit. These assignments require time and are not conducive to procrastination. Note that the assignments are due a week after the date of the class discussion. Some time may be given at the beginning of class for homework related questions.

Lab: Part of the class will include semi-weekly labs that will relate to the lecture part of the week. Labs write up will be provided. Labs will be completed in class, handed in by the end of the week, and graded over the weekend. There will be **no lab makeups**, if you are going to be absent for whatever reason when we have a lab, you must inform me ahead of time and you can receive an excused and not a zero for the lab.

Quizzes: Part of the class will include semi-weekly quizzes (no quizzes after exam weeks, first week, and finals/dead week) given on the last day of the week (Wednesday) unless there is an exam on a Wednesday then we will have the quiz on Monday. The quiz will consist of a randomly picked (number generator in class) homework question from the homework that is previously due. Quiz will be given at the start of class, completed on a separate piece of paper, and then turned in. If you are late or have to miss class you must let me know beforehand to receive an excused, otherwise you will receive a zero.

III. Examination Policy:

There will be five exams (worth 100 points each) and a final (worth 200 points). You will be given test notes that you may use on the exam. Be sure to bring your calculator. Cell phones must be out of pockets, lying face down in front of you during every exam. **If your cell phone is not in front of you, or you are found using your cell phone your exam is subject to be taken and you receive a 0 for that exam. Second offences will result in involving administration and possible expulsion from the class**. If you have questions during an exam you are allowed to come ask the professor, but they are free to be as cryptic with their response as needed. If you have a question concerning the grading of a test feel free to bring it to the instructor's attention and argue your point either before or after class. If you need to leave the class for any reason during a test, acquire permission from your instructor and leave your cell phone in the classroom where the instructor can see it. Grading of the exams will mostly be based **on your shown work and not the final result**. Your work getting to the answer is more important than the answer being correct. The final exam will be comprehensive questions covering all the topics of the semester. It will be built from previous exam and practice exam questions. If you are able to earn a 100% on the final exam (not including extra credit problems), the instructor will increase your grade by one full letter grade.

Extensions of time for assignments and exams are only available at the discretion of the professor and only if requested PRIOR to the due date. Students unable to attend the scheduled test must notify the professor PRIOR to the time of the test (contact info above). If an emergency arises (for example: car accident, hospitalization) then contact your instructor *IMMEDIATELY* or ASAP.

Extra Credit

Extra credit is offered by way of test corrections. The due date will be the next class period after the weekend, normally one week after the tests are handed back. Test corrections are always due at the end of the announced class period and will not be accepted late.

Instructions:

- Do your work on a SEPARATE SHEET OF PAPER (do not write on your original exam).
- If you miss a workout problem, it's best if you first explain where you went wrong. If you used incorrect equations, explain WHY they were incorrect (what type of problem would the equation be used for and why does it not work here). Be sure to start all corrected problems using equations from the test notes, since these are the equations you are given when you take the exam. Finally, recalculate the problem showing how you arrive at the correct answer (show all your calculation steps).
- Get help from classmates if you need it. Or you can get my help during office hours.
- Turn the corrections in by the due date, typically the class after the weekend it is handed back (you can turn them in earlier if you want).
- Make sure you include everything that was asked for. You will not receive credit unless everything is included.

You will receive 1/3 of the points you missed as extra credit (assuming your corrections are done correctly). No partial credit is given for test corrections.

The only other form of extra credit will be editing the class exam notes. If you find errors, omissions, or have a new idea to include I will award extra credit points. Do not ask about other extra credit options as they will not be entertained

IV. Class Attendance and Homework Make-Up Policy:

Attendance will not be strictly enforced. However, attendance is encouraged as physics is a difficult subject to master, and there are several labs and homework quizzes that require attendance and cannot be made up. Homework will be available until the end of finals week, see above for late policy.

V. Classroom Expectations:

Keys to Success:

- Be prepared for class – *read the chapter, think about the material and prepare questions you want to ask.*
- Take responsibility for your learning – *form study groups, and discuss class topics, do the homework early.*
- Start homework the day of class and spend time every day doing more – *Physics is not conducive to cramming.*
- Learn how to approach problems rather than memorizing one problem and making it fit all the other.