North Central State College

| MASTER SYLLABUS | 2025-2026 |
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A. Academic Division: Engineering Technology, Business & Criminal Justice Division

B. Discipline: Physics

C. Course Number and Title: PHYS1130 – General Physics II

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

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

F. Prerequisites: PHYS1110 (a minimum grade of C- required)

G. Last Course/Curriculum Revision Date: Fall 2025 Origin date: 05/11/2011

H. Textbook(s) Title:

*College Physics: A Strategic Approach with Mastering Physics w/ Pearson eText*
- Author: Knight, Jones, Field
- Copyright Year: 2020
- Edition: 4TH
- ISBN: 9780134724744

I. Workbook(s) and/or Lab Manual: None

J. Course Description: 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. This course meets the requirements for TAG# OSC015. If combined with PHYS1110, TAG# OSC021 is met.

K. College-Wide Learning Outcomes:

| College-Wide Learning Outcome | Assessments - - How it is met & When it is met |
|---|---|
| Communication – Written | |
| Communication – Speech | |
| Intercultural Knowledge and Competence | |
| Critical Thinking | |
| Information Literacy | |
| Quantitative Literacy | |

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. | Class discussions, homework, labs, quizzes, and exams during the weeks 1-16 |
| 2. Solve for indicated variables in problems involving Archimedes' principle or Bernoulli's principle. | Class discussions, 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. | Class discussions, 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. | Class discussions, 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. | Class discussions, 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. | Class discussions, 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. | Class discussions, homework, labs, quizzes, and exams during the weeks 5-16 |
| 8. Use conservation of energy to calculate specified electrostatic or kinematic variables due to a specified electric field or charge distribution. | Class discussions, 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. | Class discussions, 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. | Class discussions, homework, labs, quizzes, and exams during the weeks 7-16 |
| 11. Calculate related current, magnetic force and magnetic flux, induced<br>12. electromotive force, and torque for magnetic field problems. | Class discussions, homework, labs, quizzes, and exams during the weeks 11-16 |
| 13. Calculate the peak current, RMS current, impedance, peak voltage, and RMS voltage for alternating current problems. | Class discussions, homework, labs, quizzes, and exams during the weeks 13-16 |
| 14. Calculate the position, size and nature of an image (or object) given a problem in geometrical optics with no more than two optical devices. | Class discussions, 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**

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|---|---|---|---|
| **Academic Division:** | EBC | **Discipline:** | Physics |
| **Course Coordinator:** | Wesley L. Adams | | |
| **Course Number:** | PHYS 1130-CN1 | **Course Title:** | General Physics II |
| **Semester / Session:** | Spring 2026 / 16 week | **Start / End Date:** | 01/12/2026 thru 05/09/2026 |

**Instructor Information**

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|---|---|---|---|
| **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 02 – 03 pm & Thu 09 – 12 pm |

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

| Weeks | Topics | Assignment | Due Date |
|---|---|---|---|
| 1<br>01/12 | Ch 17 Wave Optics | | |
| 2<br>01/19 | Ch 18 Ray Optics | Lab Diffraction & Interference | 01/21 |
| 3<br>01/26 | Ch 19 Optical Instruments | HW Quiz Ch 17 | 01/28 |
| 4<br>02/02 | Ch 20 Electric Fields and Forces | Exam 1 (Ch 1 – 5)<br>HW Assignment Ch 17 - 19 | 02/04 |
| 5<br>02/09 | Ch 21 Electric Potential | Lab Intro to Electricity<br>Lab Capacitors | 02/11 |
| 6<br>02/16 | Ch 22 Current and Resistance<br>Ch 23 Circuits | HW Quiz Ch 21<br>HW Assignment (Ch 20 & 21) | 02/18 |
| 7<br>02/23 | | HW Quiz Ch 21<br>HW Assignment Ch 22 & 23<br>Exam 2 (Ch 20 – 23) | 02/25 |
| 8<br>03/02 | Ch 24 Magnetic Fields and Forces | Lab Magnetic Fields in a Coil | 03/04 |
| -B-<br>03/09 | Spring Break | Spring Break | |
| 09<br>03/16 | Ch 25 EM Induction and EM Waves | HW Assignment Ch 9<br>Lab Force on a Current | 03/18 |
| 10<br>03/23 | Ch 26 AC Electricity | HW Assignment Ch 10<br>Exam 3 (Ch 9 & 10) | 03/25 |
| 11<br>03/30 | Ch 27 Relativity | Exam 4 (Ch 24 – 26) | 04/01 |
| 12<br>04/06 | Ch 28 Quantum Physics | HW Assignment Ch 27<br>Lab The Photoelectric Effect | 04/08 |
| 13<br>04/13 | Ch 29 Atoms and Molecules | HW Assignment Ch 28<br>Lab Atomic Spectroscopy | |
| 14<br>04/20 | Ch 30 Nuclear Physics | HW Assignment Ch 29<br>Lab Radioactivity | 11/19 |
| 15<br>04/27 | | HW Assignment Ch 30<br>Exam 4 (Ch 27 – 30) | 05/27 |
| 16<br>05/04 | | Exam Final | 05/06 |

## II. Grading and Testing Guidelines:

Final Grade Calculation

| Activity | Qty | Points | Percentage |
|---|---|---|---|
| HW Assignments | 14 | 195 | 20% |
| Lab | 9 | 90 | 20% |
| HW Quizzes | 9 | 90 | 10% |
| Exams | 4 | 600 | 50% |
| | | 975 | 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 **adams51178**. 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 on or after exam weeks, first week, and finals/dead week) given on the last day of the week (Wednesday). The quiz will consist of a randomly picked (number generator in class) homework question from the homework that is due that day or previously. 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 four 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.