

Northern Illinois University

Course Syllabus for Physics 283 --- Modern Physics

Fall Semester, 2026

Instructor: Dennis Eugene Brown Faraday West 208W and/or 213W
DEBrown.niu.edu@gmail.com

Office Hours: TTh 11-2:00pm tel: 630-910-5512
(always available on a walk-in basis if I am in my office or lab)

Physics 283 WebPage: www.niu.edu/brown

Course Textbook: Modern Physics, 4th edition **Author:** Kenneth Krane
OpenStax University Physics Volume 2 & 3 (free and online)

We will be covering the following material in Krane / OpenStax: (Tentative Schedule)

The Special Theory of Relativity:	Chapter 2 / Electromagnetic Waves	Unit 16
Origins of Quantum Theory:	Chapter 3 / Interference	Unit 3
Particle Waves, Bohr Model:	Chapter 4,6 / Diffraction	Unit 4
Quiz #1		
The Schrodinger Equation:	Chapter 5 / Diffraction	Unit 4
The Hydrogen Atom:	Chapter 7 / Reflection	Unit 1
Quiz #2		
The Hydrogen Atom (spin):	Chapter 7 / Refraction	Unit 1
Many-Electron Atoms:	Chapter 8 / Polarization	Unit 2
Quiz #3		
Statistical Physics:	Chapter 10 / Thin Lenses	Unit 2
Solid State Physics I:	Chapter 11 / The Eye	Unit 2
Solid State Physics II:	Chapter 11 / Telescopes	Unit 2

Final Exam (Tuesday, December 8, 4-5:50 p.m.)

Problem Sets will be posted on www.niu.edu/brown every week, and they will be due one week later at the beginning of the class (**not at the end of class**). Late homework will be penalized 10% per day.

All quizzes & exams are closed book, no notes. Graphics Calculators and Cell Phones will not be allowed, only scientific calculators can be used.

Tentatively: All Problems Sets will make up 20% of the grade
Surprise short in-class quizzes make up 5% of the grade
Each quiz “ “ 15% ” ”
Final Exam “ “ 30% “ “

The lowest scoring Problem Set will not be counted towards the final grade.

There are Physics Tutors available in Faraday East Room 251

Additional Notes:

- (1) Late homework is penalized at 10% per school day.
- (2) *Do not put any homework in the box outside my door*—I may never see it, and it will get mixed up with graded work. If I am not in my office and you wish to turn in a problem set, *slide it under my door* or have it put in my office mailbox.
- (3) You will be asked for a codename at the beginning of class. Put this codename on your homework. Do not put your real name or ZID on homework (or you will be penalized).
- (4) Homework must be stapled (or you will be penalized). A scanned or cell phone copy must also be uploaded to Blackboard as a single pdf file (use either an app like CamScanner or see the tutorial on Blackboard on how to convert jpegs to a single pdf file. Homework should have the following format (or you will be penalized):
 - (a) OpenStax Problems: can be written on any paper according to the style shown below.
 - (b) Krane Problems: All homework problems are to be written on blank paper (computer paper—any color) with ***only one solution per page*** (6 problems would require a *minimum* of 3 pages using both front and back sides). You may also use an iPad or Android tablet. Always draw a vertical line (shown below) to separate the # label and letters for each problem from your “elegant” solutions (# label examples are 1, 1 (a), 2.b, 3c, 4, 5, 7[g], b, c, etc.)

The diagram illustrates the required format for a homework page. It features a large rectangular box representing the page layout. In the top right corner, there is a list of fields: 'Codename', 'Course', 'Date', and 'Instructor's Name'. A red arrow points from the text 'Put this info in the upper right hand corner.' to this list. On the left side of the box, there is a vertical line. To the left of this line, there are two circular labels containing the numbers '1' and '2'. A red arrow points from the text 'Put # label of problem to the left of the vertical line. If you use graph or blank paper, draw the vertical line.' to these labels. To the right of the vertical line, the text 'Homework #1' is centered. Below it, there are two rows of text: 'Elegant Solution to Problem #1 goes here along with a figure (or picture)...' and another identical line. A red arrow points from the text 'Make certain the Title is given.' to the top left of the box. To the right of the box, there is a red circle containing the text 'Homework must be written in on a separate sheet of paper, *not on the Problem Set handout.*'

Make certain the **Title** is given.

Put this info in the upper right hand corner.

Codename
Course
Date
Instructor's Name

Homework #1

Put # label of problem to the left of the vertical line. If you use graph or blank paper, draw the vertical line.

1
2

Elegant Solution to Problem #1 goes here along with a figure (or picture)...

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Homework must be written in on a separate sheet of paper, *not on the Problem Set handout.*

GED REQUIREMENTS: As part of the general education requirements, this course fulfills **0** credit hours in the *Knowledge Domain* of **Nature and Technology** towards the minimum of 21 hours across the three domains. For more information on General Education Requirements, please see your advisor or review the “General Education Requirements” for the appropriate undergraduate catalog.

ACCESSIBILITY: Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located in the Campus Life Building, Suite 180, and can be reached at 815-753-1303 or drc@niu.edu.

HONOR CODE: Be aware of the policies and procedures regarding your rights as well as responsibilities that are published in the NIU Student Code of Conduct, which is available on line at: https://www.niu.edu/conduct/_pdf/code-of-student-conduct.pdf.

Working with other students on homework is encouraged, but outright copying (plagiarism) of other student's work is strictly forbidden and will be reported to the NIU administration.

Good academic work must be based on honesty. The attempt of any student to present as his or her own work that which he or she has not produced is regarded by the faculty and administration as a serious offense. Students are considered to have cheated if they copy the work of another during an examination or turn in a paper or an assignment written, in whole or in part, by someone else. Students are guilty of plagiarism, intentional or not, if they copy material from books, magazines, or other sources without identifying and acknowledging those sources or if they paraphrase ideas from such sources without acknowledging them. Students guilty of, or assisting others in, either cheating or plagiarism on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university.