

# Northern Illinois University

## Course Syllabus for Physics 283 --- Modern Physics

Spring Semester, 2025

**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](http://www.niu.edu/brown)

**Course Textbook:** Modern Physics, 4<sup>th</sup> 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
<b>Quiz #1</b>		
The Schrodinger Equation:	Chapter 5 / Diffraction	Unit 4
The Hydrogen Atom:	Chapter 7 / Reflection	Unit 1
<b>Quiz #2</b>		
The Hydrogen Atom (spin):	Chapter 7 / Refraction	Unit 1
Many-Electron Atoms:	Chapter 8 / Polarization	Unit 2
<b>Quiz #3</b>		
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, May 6, 2-3:50 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 pdf file. Homework should have the following format (or you will be penalized):

The diagram illustrates the required format for homework. It features a rectangular box divided into sections. At the top right, a list of fields is provided: 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. Below this list, the text 'Homework #1' is centered. To the left of the main content area, there is a vertical line. To the left of this line, the text 'Put # of problem to the left of the vertical line. If you use graph or blank paper, draw the vertical line.' is present, with a red arrow pointing to the vertical line. The main content area is divided into two rows by a horizontal line. The first row is labeled '1' in a circle and contains the text 'Elegant Solution to Problem #1 goes here along with a figure (or picture)...'. The second row is labeled '2' in a circle and contains the text 'Elegant Solution to Problem #1 goes here along with a figure (or picture)...'. A red arrow points from the text 'Make certain the Title is given.' to the top left corner of the box. A red circle on the right side of the diagram contains the text 'Homework must be written in on a separate sheet of paper, *not on the Problem Set handout.*'.

		Codename Course Date Instructor's Name
		Homework #1
1	Elegant Solution to Problem #1 goes here along with a figure (or picture)...	
2	Elegant Solution to Problem #1 goes here along with a figure (or picture)...	

**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](mailto: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](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.