

PHYSICS 300: MODERN PHYSICS

Spring 2021

This online course is managed via [Canvas](#) and [email](#).

| |
|--|
| <p>Instructor: Chris Verzani E-mail: cverzani@uwsp.edu Phone: 715-346-4764 Office: SCI B103 Office Hours: Send me an email, and we can arrange Zoom meeting (or phone call). Text: Modern Physics for Scientists and Engineers 4th edition, by Thornton and Rex</p> |
|--|

Course Overview: In a general way, *Modern Physics* can be thought of as the advances that have taken place in physics since around 1900. Two revolutionary theories, namely relativity and quantum mechanics, have shaped much of modern physics, contrasting Newtonian (or *classical*) mechanics. Chapter 1 of the textbook for this course is written to help put this all into historical context. A primary objective of this course is to develop an ability to analyze and solve physical problems from the perspective of these theories. Understanding modern physics requires adopting many new physical ideas, beyond what you've already seen with classical mechanics, and in some instances replacing conceptual Newtonian knowledge with more contemporary constructs.

[Tentative Course Schedule: Physics 300: Modern Physics, Spring 2021](#)

This is a rough outline of the material being covered. More detailed reading and homework assignments will be posted on Canvas and also emailed to you.

| Chapter(s) | Subjects(s) |
|------------|--------------------------------------|
| 2 | Introduction and Special Relativity, |
| 3 and 4 | Quantization and Atomic Physics |
| 5 and 6 | Atomic/Quantum Intro. |
| 6 and 14 | More Quantum / Particle Physics |

Final Grade Evaluation: Your final percentage grade in the course will be based on performance on your homework (20%) and exams (80%). Final grades will be determined from your overall percentage grade as follows:

| A | A- | B+ | B | B- | C+ | C | C- | D+ | D | F |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|
| 90-100% | 87-90% | 84-87% | 78-84% | 75-78% | 71-75% | 65-71% | 62-65% | 59-62% | 50-59% | Below 50% |

Your grades will be updated on Canvas. If you have any questions about your grade at any point during the semester, please feel free to contact me.

Exams: Exam questions will be provided on Canvas, and will be assigned in a similar way as homework. Exam questions will be given frequently throughout the semester. Rather than a traditional format, where exams cover an extensive amount of material, separated by several weeks, exam questions will only cover smaller sections of material, but given more often. Each question will have a certain number of points assigned to it. At the end of the semester, all of your exam points tallied divided by all possible exam points will be used to give a fraction that is weighted at 80% of your final percentage grade in the class. You are not allowed to work with others on exam questions.

Homework: Homework will be assigned in class approximately once a week.

Your total score on your homework assignments (calculated the same way as exam points) will count toward 20% of your final grade in the class. Three selected problems from each assignment will be graded. The graded problems will be chosen at random after the due date. Homework must be submitted at or before the deadline to receive full credit. Homework may be turned in after the deadline but will incur a late penalty. Late homework will not be accepted for credit after that assignment has been graded and turned back for the class. Assignments due in a week concurrent with an exam will not count toward your homework grade, and do not need to be turned in.

Discussing strategies for homework problems with your classmates should strengthen your understanding of the material and is encouraged. However, you should only turn in work that is your own, representing your own understanding of the material. In order to receive full credit for a homework problem, you should show all your work, including explanations for your approach when appropriate.

Attendance: No face-to-face classroom meetings will be held. You will need to stay self-motivated to keep up with the pace of the course. Usually, deadlines for course work will be at the end of each week. Deadlines will be posted on Canvas and/or sent to you via email.