

# Modern Physics 2311 [old 207]

Meeting time:

M/W/F: 9:00am – 9:50am

Room:

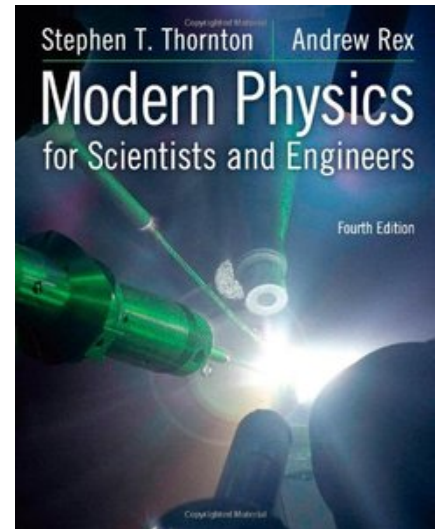
Physics 127

Textbook:

“*Modern Physics for Scientists and Engineers*”

S. T. Thornton and A. Rex, 4th ed., ISBN: 1-133-10372-3

Occasionally, additional reading materials may be distributed



Instructor:

Dr. A. Yamilov, Email: [yamilov@mst.edu](mailto:yamilov@mst.edu) Tel: x6793 Office: Physics 116

Office hours: Monday 3:00-5:00pm or by appointment in Phys 116 or 127

Topics to be covered in the course:

Chapter 1: The birth of modern physics

Chapter 2: Special theory of relativity

Chapter 3: The experimental basis of quantum theory

Chapter 4: Structure of the atom

Chapter 5: Wave properties of matter and quantum mechanics

Chapter 6: Quantum mechanics

Chapter 7: The hydrogen atom

Chapter 8: Atomic physics

Chapter 9: Statistical physics

Chapter 10: Molecules and solids

Chapter 11: Semiconductor theory and devices

Final grade makeup:

Homework	40% (Two lowest out of the total twelve will be dropped)
Presentation	10%
Presentation review	5%
Two midterm exams	15% each
Final exam	15% (Not cumulative)

# Course policies

## Lectures:

- All lectures will be broadcast live online via BlackBoard Tegrity – navigate to Tegrity Classes/ Live Now to participate remotely.
- Recordings of all lectures will be posted on BlackBoard – navigate to Tegrity Classes to re-watch a lecture.
- You can choose to attend a lecture (i) in person at our meeting room Physics 127 or (ii) watch the lecture live online from any location on your computer or (iii) watch the recording at a later time.
- Certain lectures can only be watched online (I will not be physically present at the classroom). For list of the online-only lectures, see Class Schedule below.

## Homework:

- During each Friday class (excluding the weeks before the midterms and the final exam) you will be assigned a problem set, which will consist of the end-of-the-chapter problem(s), and questions based on the chapter objectives.
- Neatly handwritten or typed solutions are *due on Wednesday* of the following week.
- Homework will be accepted only until the end of the class on the Friday of the due week (with 20% penalty for turning the assignment after the deadline).
- There will be twelve homework assignments during semester.
- At the end of the course *two lowest homework grades will be dropped*.

## Presentation:

- Every student will be asked to prepare one 15 minute *narrated* PowerPoint presentation about a scientist who made a significant contribution to the development of modern physics, see e.g. [http://nobelprize.org/nobel\\_prizes/physics/laureates/](http://nobelprize.org/nobel_prizes/physics/laureates/)
- You are free to suggest a name based on your interest. Your presentation should be related to the material discussed in this course and it has to be approved by me before you start preparing it.
- If you cannot make a selection by Wednesday of the second week of classes, I will make an assignment
- If you have not made your presentation by then, you will be notified by Wednesday of the second week of classes when your presentation is due.
- *Narrated* (after composing the slides, practice your narrative and then choose Slide Show/Record Narration) PowerPoint presentations will be made available to all students via Blackboard.
- Your presentation should contain the following parts:
  - (i) Brief biography of the researcher: when and where (s)he was born; what kind of education/training (s)he received.
  - (ii) What made this researcher famous? Describe one (or more) of his/her discoveries that are relevant to this course.
  - (iii) How the above discoveries contributed to the advancements in physics/science?
  - (iv) Bibliography used in preparing your presentation.
- You may use Internet as a helpful source of information.
- You are encouraged to consult with me before finalizing your presentation.
- Your grade for the presentation will be determined based on:
  - (i) Quality of your PowerPoint presentation. Correctness, completeness and appearance will be considered – 50% of the grade
  - (ii) Your oral presentation – 30% of the grade
  - (iii) Your ability to answer questions related to the topic of your discussion – 20% of the grade

# Course policies (continued)

## Presentation review:

- For every presentation two student reviewers will be assigned.
- Within three days after the presentation has been made available, each reviewer is expected to listen carefully the presentation being reviewed and make a comment/addition/question through Blackboard discussion board.
- The student in charge of the presentation will have additional four days to post his/her replies.
- Your grade for the presentation review will be determined by your participation in the discussion board.
- Each student is expected to participate in *two* reviews.

## Midterm and final exams:

- Midterm exams will be given on Monday, February 23 and April 6 during a regular class.
- Final exam will be given on Tuesday, May 12, 10:30-12:30pm in our regular room.
- Final exam will only include the material covered after the second midterm.
- Both the midterms and the final will consist of *one homework problem and three questions based on the chapter objectives*.
- Tests are in closed-booked, closed-notes format. Equation sheet will be provided.

## Test makeup policy:

- In exceptional cases of documented medical or personal emergencies, a makeup test will be provided.
- I have to be notified of such an emergency *prior* to the test.
- A makeup test will be composed using the same guidelines as the test missed.

## Final grade:

- The letter grades will be assigned according to the following rules:
  - A – 89.5% of total possible points
  - B – 79.5% of total possible points
  - C – 69.5% of total possible points
  - D – 59.5% of total possible points
  - F – below 59.5% of total possible points

## Disability:

- If you have a documented disability, please, provide me with the letter from Disability Support Services by the end of the second week of classes.
- I will be happy to work with DSS to accommodate you in this course.
- More resources for students with disabilities are available at <http://dss.mst.edu>

## Academic Dishonesty:

- Academic dishonesty will be dealt with according the Student Academic Regulations guidelines found at <http://registrar.mst.edu/academicregs/index.html>

## Excessive absence:

- If you miss 3 assignments of any kind, I will issue an academic alert
- If you miss 5 assignments and/or 1 exam you will be dropped from the course for excessive absence

# Class Schedule

## January (5 lectures)

Su Mo Tu We Th Fr Sa  
1 2 3  
4 5 6 7 8 9 10  
11 12 13 14 15 16 17  
18 19 20 **21** 22 **23** 24  
25 **26** 27 **28** 29 **30** 31

Homework #1 is due on Wednesday in class

## February (11 lectures)

Su Mo Tu We Th Fr Sa  
1 **2** 3 **4** 5 **6** 7  
8 **9** 10 **11** 12 **13** 14  
15 **16** 17 **18** 19 **20** 21  
22 **23** 24 **25** 26 **27** 28

Homework #2 is due on Wednesday in class

Homework #3 is due on Wednesday in class

Homework #4 is due on Wednesday in class

**Midterm #1 (14 Lectures)**

## March (9 lectures)

Su Mo Tu We Th Fr Sa  
1 **2** 3 **4** 5 **6** 7  
8 **9** 10 **11** 12 13 14  
15 **16** 17 **18** 19 **20** 21  
22 23 24 25 26 27 28  
29 **30** 31

Homework #5 is due on Wednesday in class

Homework #6 is due on Wednesday in class

Homework #7 is due on Wednesday in class

## April (12 lectures)

Su Mo Tu We Th Fr Sa  
1 2 **3** 4  
5 **6** 7 **8** 9 **10** 11  
12 **13** 14 **15** 16 **17** 18  
19 **20** 21 **22** 23 **24** 25  
26 **27** 28 **29** 30

Homework #8 is due on Wednesday in class

**Midterm #2 (13 Lectures)**

Homework #9 is due on Wednesday in class

Homework #10 is due on Wednesday in class

Homework #11 is due on Wednesday in class

## May (4 lectures)

Su Mo Tu We Th Fr Sa  
1 2  
3 **4** 5 **6** 7 **8** 9  
10 11 **12** 13 14 15 16  
17 18 19 20 21 22 23  
24 25 26 27 28 29 30

Homework #12 is due on Wednesday in class

**Final (14 Lectures) @10:30am**

Key: **Hybrid lectures**, **Online-only lectures**, **Tests**, **Homeworks**