

50:750:232- Elements of Modern Physics

Instructor	J.J. Naddeo	E-mail	jnaddeo@gmail.com
Phone	856-225-6294	Office Hours	By appointment
Office	Lab(s): BSB 405-406, 416-417, 420	Final Exam	TBD

Class meeting time: M,W 2:50 p. m. – 4:10 p.m.

Location: BSB 109

Text: Modern Physics, Serway, Moses, and Moyer, Brooks/Cole 3rd Ed. (2005). Print ISBN-10: 0534493394, ISBN-13: 9780534493394.

Description: We will attempt to cover Chapters 1,3-12, and 15 in the assigned text which includes topics from Quantum Mechanics, Statistical Physics, Particle Physics and Condensed Matter Physics.

Details:

- 1) Office hours are just a formality – I will try to help you any time I can. Call or come by.
- 2) ***Make-up exams are only given in extreme circumstances.*** If you miss an exam, you must provide a written medical excuse (or the equivalent). If the excuse is accepted and a make-up is not given, you receive the average of the other three exams that you will have completed. If you miss the final exam, you will need a medical excuse ***and*** must contact me within 48 hours of the final to discuss your options (not taking the final exam is not an option).
- 3) Homework will be assigned for each chapter. You are strongly advised to finish the problems, as the exams will be based on the homework. Solutions will be posted on Sakai under “Resources.”

Grading:

3 Hourly Examinations – each 25 % of grade Dates – (9/28, 10/26, 12/9)

Class Participation/HW – 25%. This will be determined through your willingness to answer questions and you will be asked to complete HW throughout the class.

Grading Scale

- "A" – 90 and above
- "B+" – 85-89
- "B" – 80-84
- "C+" – 75-79
- "C" – 70-74
- "D" – 60-69
- "F" – anything less than 59

Online Resources:

- 1) <http://sakai.rutgers.edu>
 - a. I will post lecture style videos of example problems that you will be expected to watch
- 2) <http://phet.colorado.edu/index.php>

Specific Student Learning Outcomes (SLOs) Objectives for Modern Physics are:

- a. To develop critical thinking skills and build upon problem solving skills learned in Introductory Physics including the application of calculus, geometry, algebra and trigonometry.
- b. To understand basic principles of Quantum Mechanics and to apply these to the particle in a box problem, the hydrogen atom, and barrier problems.
- c. To understand how multielectron atoms are modeled and use this knowledge along with Hund's rule, the Pauli Exclusion Principle, the Aufbau rule to understand the structure of the periodic table.
- d. To understand basic principles of Statistical Physics and to apply them in problems involving gases of atoms and electrons in metals.
- e. To apply knowledge learned in 2-4 above to application-related devices such as CCDs and transistors.

Instructor's Statement:

Do not engage in any form of academic dishonesty in my class. If you do not know what academic dishonesty is, please consult this statement: <http://www.camden.rutgers.edu/RUCAM/info/Academic-Integrity-Policy.html>.

I will report any violations of this policy to the campus Judicial Officer.

Please note that it is necessary to explain all steps that you take on exams – make an effort to *clearly* show your work. Answers without justification will not be accepted! You may be asked to explain your reasoning.

Do not bring cellphones to class or disrupt class in any way. If you do so, you will be asked to leave and will not be welcome back for the rest of the class period. The use of computers will be at my discretion – in general they will not be necessary/welcome.

Attendance is strongly suggested at all class meetings in accordance with the policies and guidelines set forth in the student manual. Your class participation grade obviously is very strongly dependent on your attendance.

List of Topics and Tentative Class Schedule:

Week 1 (9/2-9/9): Ch.1, Ch.3

Week 2 (9/14): Ch.3, Ch.4

Week 3 (9/21): Ch.4, Ch.5 Review for test

Week 4 (9/28): 1st Test, Ch.6

Week 5 (10/5): Ch.6, Ch.7, Ch.8

Week 6 (10/12): Ch.8

Week 7 (10/19): Ch.9

Week 8 (10/26): 2nd Test, Ch.10

Week 9 (11/2): Ch.10

Week 10 (11/9): Ch.11

Week 11 (11/16 and 11/23): Ch.12

Week 12 (11/30): Ch.15