

**PHYSICS 2620: Modern Physics****Syllabus**

August 25, 2016

Lecture Sessions:	MWF 12:00-12:50 pm	Rm. 204, Physics Building
Instructor:	Xiaochao Zheng	email: xz5y@virginia.edu
Instructor	M 2:00-4:00 pm	Rm. 134, Physics Building
Office Hours:	Th 2:00-4:00 pm and by appointment	
Discussion Sessions	W 2:00-2:50pm Th 3:00-3:50pm	Rm.103, Dell 2 Building Rm.179, Ruffner Hall
Teaching Assistant	Brandon Kriesten	email: btk8bh@virginia.edu
TA Office Hours:	W 3:00-5:00pm Th 4:00-6:00pm	Rm.220, Physics Building same
Grader	Jonathan Colen	jc8kf@virginia.edu

Prerequisites: PHYS2415 or 2610 and MATH2310, or instructor permission.

**Course Organization**

The student is expected to achieve a quantitative understanding of the foundations of modern physics, and a working knowledge of the subject in solving practical problems.

The course comprises lecture sessions, discussion sessions, weekly homework assignments, two in-class midterm exams, and one final exam. Each lecture session will start with 1-2 reading assignment quizzes, followed by introduction and explanation of new concepts, working examples, and problems for discussions if time allows. The separate discussion session will provide more training opportunity for the ability of realizing and solving problems.

Iclickers are required to complete in-class reading quizzes as well as in-lecture discussions. Iclicker quizzes will start on Friday, August 26 and will be counted towards the final grade starting Monday, August 29.

Homework assignments will be handed out every Friday and due the following Friday. Students may turn in homework during the Friday lecture or to the grader's box after the lecture, but no later than the due time shown on the homework. No late homework will be accepted unless a prior arrangement is made with the instructor. Students are encouraged to discuss problems with others while completing homework assignments. However, it is unlikely the student will gain a passing proficiency on the course material without working out most or all of the homework problems. Thus, each student is required to work out the final solution on their own. Copying homework solutions without thinking is prohibited.

**Important:** In previous years, different textbooks were used and different sub-fields of physics were emphasized. Similarly, this time we will not be able to cover all chapters of the textbook (see next page for textbook information), but the students will be given a chance to express their interest in specific chapters of the textbook for instructor's consideration.

### Textbook and Material

The **textbook** for the course is “Modern Physics”, by Kenneth Krane, third edition, published by John Wiley & Sons, Inc.. A custom version has been created specifically for this course. The contents are identical to the standard version but the custom version allows a lower cost to be available to students. The custom version includes two formats:

- E-book format, ISBN 978-1119360490, available for \$59.20 at <https://www.vitalsource.com/products/modern-physics-3e-custom-etext-for-university-of-kenneth-s-krane-v9781119360490>.
- Black & white print on 3-hole punch papers, ISBN 978-1119360247, available for purchase at the UVa bookstore for about \$80.

Alternatively students can purchase the third edition standard (non-custom) version through Wiley or other websites, although the cost may be higher.

The e-book for custom version is available for purchase immediately. The b/w print version will become available in the bookstore starting August ??? (TBA). If the print version is not available at the beginning of the semester, hard copies of the first 40 pages of the book will be provided by the instructor for those who wish to wait for the b/w print version.

For each chapter there may be extra reading materials. These materials, as well as weekly assignments, will be posted on Collab. Some homework problems may be based on the reading material. Hard copies of problem set solutions will be provided in-class but not posted online.

### Exams

There will be two midterm exams during class hours and one final exam. All exams will be close-book with a formula sheet provided by the instructor. This means you will not be able to prepare your own formula sheet. However, the formula sheet will be provided one week in advance of each exam and you may suggest additional equations or information that should be added to the formula sheet. Whether your suggestion can be accommodated will be decided by the instructor.

### Grading

The final grade will be determined as follows:

- Iclicker questions, in lecture: 5%
- Homework assignments: 25%
- Two in-class midterm: 15% each
- Final Exam: 40%

Homeworks and exams will be graded based on clarity, logical structure, physical insight, in addition to mathematical manipulation. Spelling, grammar, and neatness contribute to the overall assessment. Please use this opportunity to practice scientific writing. Typically, every solution should include at least:

- a diagram or figure to illustrate the problem or your solution
- definitions of variables
- physical laws applied and relevant equations
- clear statements of any assumptions made
- (for numerical answers) a clearly boxed answer with appropriate significant figures and units

Keep in mind that solutions of too short or too long lengths are both detrimental to the clarity of expressing your ideas. In other words, explain clearly, not repeatedly.

For those who fill out the course evaluation towards the end of the semester, the lowest HW score will be exempt from the final grade. Do not use this opportunity too early.

### **Important Dates**

- first lecture: Wednesday August 24;
- first discussion sessions: Wednesday August 31 and Thursday September 1;
- last day to add a course (College of A&S): Tuesday, September 6;
- last Day to drop a course (College of A&S): Wednesday, September 7;
- **first midterm exam will be held in class on Friday, September 30;**
- no lecture on Monday October 3 (reading day);
- last Day to withdraw from a course (College of A&S): Tuesday, October 18
- **second midterm exam will be held in class on Friday, November 4;**
- no lecture on Wednesday November 23 and Friday November 25 (Thanksgiving recess);
- last discussion sessions: Wednesday November 30 and Thursday December 1;
- last lecture: Monday December 5;
- **final exam: Thursday, December 8, 2-4pm.**

### **Class Calendar**

The course calendar will be provided in a separate document.