## Physics 201: Physics Toolbox, Fall 2022

Instructor: Dr. Jake Bennett (jvbennet@olemiss.edu) Web: https://physics.olemiss.edu/bennett/ Office: Lewis 105 Office Hours: MW 1:00-2:00 pm, Th 11:00 am-noon and by appointment

Class Time: T 5:30-6:20 pm

Class Location: Lewis 109

#### **Course Description**

This course is an introduction to problem solving in physics. The physical meaning of the mathematical concepts students encounter in introductory calculus-based physics courses is discussed, and the corresponding analytical methods applied to problems on the kinematics and dynamics of particles in three dimensions, work and energy, and other physics topics.

### **Course Objectives**

On completion of this course, students should be able to do the following:

- Analyze a problem and identify the key concepts and techniques required to solve it,
- Methodically work through the intermediate steps required to solve a problem, and
- Consider the reasonableness of an answer and identify potential missteps.

#### **Required Text**

*Calculus* and *University Physics* Volumes 1, 2 and 3 and by OpenStax. https://openstax.org/details/books/calculus-volume-1 https://openstax.org/details/books/university-physics-volume-1 https://openstax.org/details/books/university-physics-volume-2 https://openstax.org/details/books/university-physics-volume-3

These are open source textbooks from OpenStax at Rice University. They are available for free online in a variety of formats, including html, pdf, Apple iBooks, and Amazon Kindle. If you prefer, you can also purchase a print version via OpenStax on Amazon.com. If you do choose to buy from Amazon, be sure to use the link on the textbook page at openstax.org to ensure that you get the official OpenStax print version.

#### **Expectations**

*Pre-class assignments*: Students should expect to spend about 2 hours per week reading, doing homework, and otherwise preparing for class. Reviewing class material and finishing the assigned readings promptly, rather than waiting until just before homework is due or a test is imminent will be of great benefit. Many students will be using the material directly in other classes, so study time will be well spent. When reading the assigned textbook sections, complete the "Check your understanding" problems interspersed in the text, identify concepts or reasoning that was not clear to you and complete the Reading Guides. Answer all questions on the Reading Guide and take note of any material that is not clear to you.

Attendance and in class participation Students are expected to attend all classes and participate in all inclass activities. Students who miss class are still expected to understand the material that is covered and complete the in-class assignments. Class attendance will be verified for university purposes during the first two weeks of class.

*A few words of advice*: Get a notebook to use for the course (homework, in-class problems, etc) and take notes in the margins about your approach to problems. Make notes about questions and in-class assignments. This will be very helpful for later review.

section\*Assessments

- Homework (40%) Homework sets will be assigned weekly. It is very important to start early and finish homework on time.
  - As scientists and engineers normally work in groups, students are encouraged to work together on homework to teach and learn from each other. However, each student is responsible for understanding all details of each solution.
  - Homework help sites such as Chegg are a liability, not a resource. Depending on sites like these are a sure way to do poorly on a quiz or exam. It is also cheating and a great way to fail the course. Instead, work with peers or the instructor. Teaching peers is a great way to solidify your understanding!
  - As is true for most physics classes, you must show your work to get full credit. Solutions alone will receive no credit. You work must be clear and include text notations as needed.
  - There is no penalty for extensions past the due date during the first two weeks of class. After the first two weeks, there will be a 20% penalty per week the assignment is late.
- In-class activities (30%) In-class activities will include whiteboard activities and group problem solving work. If insufficient time is available to complete an in-class activity, it will be extended, as announced by the instructor. Students are expected to attend all classes. **Every three unexcused absences will result in a drop of one letter grade for the course, according to the grading scale below.**
- Final exam (30%) The comprehensive final exam will be held on **Tuesday**, **December 6**, at 7:30 pm.

## **Grading Scale**

- 92%  $\leq A \leq 100\%$
- 88% ≤ A- < 92%
- $84\% \le B+ < 88\%$
- $80\% \le B < 84\%$
- 76% ≤ B- < 80%
- $72\% \le C + < 76\%$
- $68\% \le C < 72\%$
- $64\% \le C < 68\%$
- $50\% \le D < 64\%$
- F < 50%

### Policies

#### Academic Integrity

Every student of the University of Mississippi, by virtue of choosing to be part of the university community agrees to abide by the University of Mississippi Creed and the UM Academic Integrity Policy which covers academic integrity. Please consult the M-Book, Academic Integrity document for details on university policy and the academic creed.

# Cheating is forbidden and will result in a zero grade on the assignment. If a second case of cheating occurs, this will result in an F for the entire course.

*UM Creed* The University of Mississippi is a community of learning dedicated to nurturing excellence in intellectual inquiry and personal character in an open and diverse environment. As a voluntary member of this community:

- I believe in respect for the dignity of each person
- I believe in fairness and civility
- I believe in personal and professional integrity
- I believe in academic honesty
- I believe in academic freedom
- I believe in good stewardship of our resources
- I pledge to uphold these values and encourage others to follow my example

All materials distributed electronically and in hard copy in this class are protected under intellectual copyright. Any attempt to upload these documents onto the Internet (or to distribute them by some other means) or to profit from the distribution (by Internet or other means) of these documents constitutes theft and will be in violation of intellectual property law and the UM Academic Conduct Code unless expressly permitted for by the instructor. Accessing such materials for your own use is also in violation of the UM Academic Conduct Code.

#### Disability Access and Inclusion:

The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at https://sds.olemiss.edu to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at 662-915-7128 so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

#### Audio and video recording

Audio and/or video recording of class lectures is not allowed unless explicit permission is given by the instructor. Permission will only be given if the student has a Student Disability Services request. In such cases, recordings may only be used by the student to whom permission is given and all recordings must be deleted at the end of the semester. Recordings may not be distributed online or elsewhere.

## **Important Dates**

See the academic calendar (http://registrar.olemiss.edu/spring-2021)