

## 1 Learning Outcomes

Students who successfully complete this course will be able to:

- Identify the concepts appropriate to analyzing situations involving physics.
- Demonstrate grasp of basic laws of classical mechanics and its implications on nature and reality.
- Demonstrate application of physical laws to solve quantitative problems in areas of kinematics and dynamics of linear and circular motion, gravitation, conservation of momentum and energy.
- Apply these concepts to a wide range of phenomena and examples from everyday life - friction, speed, acceleration, forces and conservation of energy and momenta, mechanical advantage, equilibrium etc.
- Use scientific methods to solve problems following the techniques modeled by the instructor.
- Cultivate skills in using mathematics as tool of theoretical modeling and prediction and of measurement.
- View mathematics as a formal language in solving problems with successive degrees of approximation.
- Understand estimation, numerical uncertainty, orders of magnitude and problem solving.

## 2 Timetable

	Lectures	Office Hours	Recitation (CAPA)
Day	Tue/Thu	Tue/Thu	Mon
Hours	6:00 - 7:15 PM	5:00 - 6:00 PM	7:00 - 7:50 PM
Location	Jones 205	Jones 702A	Jones 208

## 3 Communication

- **EMAIL:** Check your e-mail at least once a day for any announcements. I expect a courtesy e-mail 24 hours before scheduled office hour visit.
- **FACE TIME:** is important if you expect to get most out of this course. I will see students on a “first come first served” basis. I encourage all students to come prepared with the questions and your own work.
- **WEBSITE:** <http://boson.physics.sc.edu/~venkat> for lecture slides, CAPA/test solutions.
- **BLACKBOARD:** <https://blackboard.sc.edu/> will be for and course information and announcements.
- **LONCAPA:** <https://loncapa3.physics.sc.edu> portal to post all course information.
- **FINAL-EXAM SCHEDULE:** [http://registrar.sc.edu/html/calendar/exam\\_1508.stm](http://registrar.sc.edu/html/calendar/exam_1508.stm)
- **ACADEMIC CALENDAR:** <http://registrar.sc.edu/html/calendar/5YrCalendar3.stm#fall15>

I will assess your grasp of the subject by asking you questions and it is NOT to judge you or NOT make you feel dumb. Asking the right questions to arrive at a solution to a problem is an essential skill.

## 4 Essentials

- **TEXT BOOK:** Fundamentals of Physics (10th Edition), Halliday, Resnick, Walker (John Wiley and Sons, Inc., New York). ISBN - 978-1-118-23071-8
- **PREREQUISITES:** Grade of C or better in MATH 142.
- **READING:** Chapters are designated on the syllabus and should be read prior to the class period.

## 5 Attendance

**Required.** I adhere to the University policy (see <http://www.sc.edu/bulletin/ugrad/acadregs.html>). You will lose a full letter grade if you have “excessive” absences as defined by the policy. If you must miss a class due to official reasons, see me in advance. **Reminder: there is no makeup for a missed exam.** The iClicker system will take attendance and you will receive 0.5 clicker points for each class attended where you attempt 50% of the questions posed.

## 6 Cheating

Highly discouraged. Cheating is the wrong thing to do and will result in the maximum penalty. See <http://www.sc.edu/academicintegrity/honorcode.html> for the University Honor Code.

I consider bringing a fellow student's iClicker to class to be cheating and a violation of the University Honor Code. If you are caught with a remote other than your own or have votes in a class that you did not attend, you will forfeit all clicker points and may face additional disciplinary action.

I consider having someone else solve your homework problems (like chegg.com, etc) as cheating. In my experience, such students do not do well on the tests. Please refrain from short-cuts like these that may hamper you from learning the subject matter that is essential for upper level courses.

## 7 Electronics

Cell Phones, iPods, LapTops, etc. must be turned off and stowed away during class time. Use of unauthorized electronics during quizzes, tests, and exams will be considered cheating.

## 8 Class Participation

**In-class participation will be scored by the iClicker system and will count toward 15% of your grade.** In order to receive this credit, you will need to register your iClicker2 remote using BLACKBOARD within the first week of class. iClicker2's are required for this class and will be employed during each lecture. They can be purchased new from the bookstore or used from students. The interactive lectures will contain questions from your reading, previous lectures, and homework problems.

## 9 Homework

**Your homework grade will count towards 20% of your course score.** Problem sets are to be completed each week as designated on the course timetable and are due by 11:00 PM on the day of deadline. Answers will be made available the next day. The LONCAPA homework system will be used. Since the computer records when you submit your answers, **NO LATE HOMEWORK WILL BE ACCEPTED.** Occasionally, the network is slow or disabled, or one of the servers is down; so plan ahead (and try another server). Deadlines will not be changed due to network latency.

You can login to the CAPA system using your USC network name (all lowercase) and password. Once you select 2015 Spring, PHYS 212 as your course, you will see the homework assignments. The available CAPA servers are: <http://loncapa2.physics.sc.edu>, <http://loncapa3.physics.sc.edu>, and <http://loncapa4.physics.sc.edu>. If you have a technical problem with CAPA login, contact James Clawson at [clawsonj@mailbox.sc.edu](mailto:clawsonj@mailbox.sc.edu), 777-8994.

## 10 Tests

**The average of all exams is worth 40% of your course score.** Three CAPA-style tests will be given. You will need your VIP number to take the exams. Note that this is an 8-digit number that is different from your USC student ID. Tests will consist of a combination of conceptual and problem solving questions. **Test days are all scheduled in advance and therefore there is NO makeup for a missed test.**

## 11 Final Exam

**The final is 25% of your course score.** Final exam is comprehensive and will cover all material covered in class. If you have an “A” going into final, I may consider exempting you from taking the final, but I reserve the right to make that decision.

## 12 Grading

Grading is based on the following formula that includes your clicker question score (Q), homework score (H), test average (T), and final exam score (F). 
$$\text{Course score} = 0.15 * Q + 0.20 * H + 0.40 * T + 0.25 * F$$

### 12.1 iClicker Grading

Your iClicker score is the percent of questions that you get correct. The Q-value (see table below) is then factored in to the course formula to calculate your course score. For example: if you get 70% or better on clicker questions, you will get full credit (Q = 100) when computing your course score.

iClicker Score	Q-value
70 - 100 %	100
50 - 70 %	75
25 - 50 %	50
0 - 25 %	0

Your clicker, homework, and test scores will be periodically posted on blackboard and the loncapa system to allow you to assess your course progress and project your final course score. Letter grades are assigned after the final course score is computed using the table below.

### 12.2 Grading Example

- iClicker: You get 29 out of 35 questions correct throughout the semester. Thus your iClicker score is  $29/35=0.82$  or 82%. Your Q value is 100.
- Homework: You get 400 out of 430 questions throughout the semester. You would then have a homework score of  $400/430=0.93$  or 93%.
- Tests: You score a 56 out of 67 on test 1, 78 out of 83 on test 2, and 0 out of 57 on test 3 because you missed it. Your test average would be  $(56/67 + 78/83 + 0/57) / 3 = 0.592$  or 59.2%.

- Final exam: You made a perfect score of 96 out of a possible 96 points. Your score is  $96/96=1.0$  or 100%.

Course Score:  $C=0.15*(100)+0.20*(93)+0.40*(59.2)+0.25*(100)=82.3$  (B+)

Q	HW	T1	T2	T3	Final	Score	Grade
29/35	400/430	56/67	78/83	0/57	96/96	82.3	B+

### 12.3 Letter Grade

Grade	A	B+	B	C+	C	D+	D	F
Points (%)	$\geq 90$	$\geq 80$	$\geq 70$	$\geq 65$	$\geq 55$	$\geq 45$	$\geq 35$	$< 35$

## 13 Student Disability Services

The University of South Carolina provides high-quality services to students with disabilities, and I encourage you to take advantage of them. Students with disabilities needing academic accommodations should: (1) Register with and provide documentation to the Office of Student Disability Services (777-6142) in LeConte College Room 112A, and (2) Discuss with the instructor the type of academic or physical accommodations you need. Please do this as soon as possible.

## 14 Peer Tutoring

Tutoring is available for this course to assist you in better understanding the course material. The Peer Tutoring Program at the Student Success Center provides free peer-facilitated study sessions led by qualified and trained undergraduate tutors who have previously taken and excelled in this course. Sessions are open to all students who want to improve their understanding of the material. Tutoring is offered Sunday 6-10pm and Monday through Thursday 2-9pm. All tutoring sessions will take place on the Mezzanine Level of the Thomas Copper Library. In addition, drop-in tutoring may also be available for this course either in Bates House, Columbia Hall, Sims Hall, or through the Virtual Student Success Center. Please visit <http://www.sc.edu/tutoring> to find the complete tutoring schedule and make an appointment. You may also contact the Student Success Center at 803-777-1000 and [tutoring@sc.edu](mailto:tutoring@sc.edu) with additional questions.

## 15 Lecture, Homework, Recitation and Exam Schedule

- Homeworks are due no later 11:00 PM on the deadline days. Plan your work ahead of time. NO EXCUSES.
- Recitation: We solve problems in recitation sessions. If you signed up for the course, you knew about the recitation (or CAPA) sessions which are on Mondays.
- Do not complain about me not solving problems. I use lectures to focus on concepts and CAPA primarily to solve problems. Those who attend recitation tend to do better over the course of the semester.

Please turn over for the full schedule.

Lecture	Date	Topic	Chapter	Homework	Recitation
01	08/20 Thu	Measurement	01		RE01 (08/24)
02	08/25 Tue	Vectors	03		
03	08/27 Thu	Linear 1D Motion	02	HW01 (08/30)	RE02 (08/31)
04	09/01 Tue	Linear 2D Motion	02		
05	09/03 Thu	Circular/Relative Motion	04	HW02 (09/06)	
06	09/08 Tue	Force and Motion I	05		
07	09/10 Thu	Force and Motion I	05	HW03 (09/16)	RE03 (09/14)
	09/15 Tue	<b>Test #1 Preparation</b>			
	<b>09/17 Thu</b>	<b>Test #1</b>	<b>01 - 05</b>	<b>6 - 7:15 PM</b>	
08	09/22 Tue	Force and Motion II	06		RE04 (09/21)
09	09/24 Thu	Force and Motion II	06		
10	09/29 Tue	Kinetic Energy & Work	07	HW04 (09/30)	RE05 (09/28)
11	10/01 Thu	Potential Energy	08		
12	10/06 Tue	Energy Conservation	08		RE06 (10/05)
13	10/08 Thu	Linear Momentum	09	HW05 (10/11)	RE07 (10/12)
	10/13 Tue	<b>Test #2 Preparation</b>			
	<b>10/15 Thu</b>	<b>Test #2</b>	<b>06 - 09</b>	<b>6 - 7:15 PM</b>	
14	10/20 Tue	Impulse and Collisions	09		RE08 (10/19)
	10/22 Thu	<b>Fall Break</b>			
15	10/27 Tue	Rotational Inertia	10		RE09 (10/26)
16	10/29 Thu	Torque, Rotational Energy	10	HW06 (10/30)	
17	11/03 Tue	Rolling, Angular Momentum	11		RE10 (11/02)
18	11/05 Thu	Momentum Conservation	11	HW07 (11/08)	
19	11/10 Tue	Gravitation	13		RE11 (11/09)
20	11/12 Thu	Gravitation	13		RE12 (11/16)
	11/17 Tue	<b>Test #3 Preparation</b>		HW08 (11/18)	
	<b>11/19 Thu</b>	<b>Test #3</b>	<b>09 - 11,13</b>	<b>6 - 7:15 PM</b>	
21	11/24 Tue	Static Equilibrium	12		RE13 (11/23)
	11/26 Thu	<b>Thanksgiving Break</b>			
22	12/01 Tue	Oscillations	15	HW09 (11/29)	RE14 (11/30)
	12/03 Thu	<b>Finals Preparation</b>			
	<b>12/08 Tue</b>	<b>Final Exam</b>	<b>01 - 13</b>	<b>7:30 - 10 PM</b>	