Syllabus for Physics 131: Classical Physics II (Spring 2018) at Stony Brook University

Date of this version of the Syllabus: 01/08/2018 (future revisions will be in green)

PHY 131: Classical Physics I (taken verbatim from the Undergraduate Course Bulletin)

First part of a two-semester physics sequence for physical-sciences or engineering majors who have a strong mathematics background and are ready for a fast learning pace. It covers mechanics, wave motion, kinetic theory, and thermodynamics. Calculus is used concurrently with its development in MAT 131. Three lecture hours and one recitation hour per week. The Laboratory component, PHY 133 (Lab 1), could be taken concurrently. Not for credit in addition to PHY 121/123, PHY 125, or PHY 141. Advanced Placement Physics or a very strong course in high school Physics is recommended. This course has been designated as a High Demand/Controlled Access (HD/CA) course. Students registering for HD/CA courses for the first time will have priority to do so.
Prerequisite: MAT 123 or level 5 on the mathematics placement examination
Corequisite: MAT 125 or MAT 131 or MAT 141 or AMS 151
DEC: E
SBC: SNW
3 credits

Learning Outcome

Students will use calculus and algebra to study motion in one and two dimensions, Newton's laws of motion and gravity, energy, momentum, angular momentum, rigid body motion, wave motion, heat, kinetic theory and thermodynamics.

Academic Integrity (individual responsibility of each student)

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic integrity website at http://www.stonybrook.edu/commcms/academic_integrity/index.html .

Academic dishonesty will not be tolerated. In this course, the standards are as follows: In lecture, whenever a ``clicker" question is posed, you may discuss it with your neighbors. **However, one person operating two or more clickers is cheating and will result in an Academic Dishonesty complaint being submitted by the instructor(s) to the Academic Judiciary against the owners of all involved clickers.** You may discuss with your colleagues (other students or Help Room personnel) the ``physics" of assigned homework problems, but you should not ask to be given nor give to others actual solutions to those problems. Such collusion hurts both parties by answers being submitted that at least one (or both) student(s) do(es) not understand. In an exam in a lecture hall or a quiz in a recitation section, copying answers from another person or use of materials or communication other than what is allowed by the instructors will result in a claim of Academic Dishonesty being filed against you with a recommendation that the penalty be a final grade of **F** in PHY 131.

Instructors

For the Lectures

Peter Koch: Peter.Koch@stonybrook.edu. Office: D-144 (on the ``bridge" between the D-level of the physics building and the 5th/6th floors of the math tower). Phone 632-8142 (no voice mail: always try email first).

For the Recitation sections (starting 2nd week of classes)

R01 (Mon, 10:00-10:53 am, ESS 69): Recitation instructor Vladimir.Korepin@stonybrook.edu
R02 (Tue, 8:30-9:23 am in Harriman 111): Recitation instructor Peter.Koch@stonybrook.edu
R03 (Wed, 10:00-10:53 am, in Harriman 116): Recitation instructor Bent.Nielsen@stonybrook.edu
R04 (Thu, 8:30-9:23 am, in Harriman 111): Recitation instructor Vladimir.Korepin@stonybrook.edu
R05 (Mon, 11:00-11:53 am, Physic P-112): Recitation instructor Peter.Stpehens@stonybrook.edu
R06 (Mon, 10:00-10:53 am, Physics P-112): Recitation instructor Peter.Stephens@stonybrook.edu

Course Organization

Preparation by you (individual responsibility of each student)

This is crucial for success. The Schedule Calendar attached to this Syllabus, which is also available via a link in the upper-left ``gray" area of the Blackboard PHY 131.01 home page, shows that in 14 weeks [42 lectures plus 2 midterm exams] the course will span material from Chapters 1-11 and 12-20 of the textbook. (Chapters with ``(abbreviated)" after their numbers will be more lightly covered.) The fast pace means it is in your best interest to read the material from each chapter carefully before you attend the lectures covering it. Reading a chapter carefully takes hours, not minutes. Online homework problems from each chapter will be presented via MasteringPhysics servers with the usual deadline of 10:00 pm on Saturday of the week when coverage of that chapter was completed in lecture. Do not wait until the last minute to work on the homework problems. ``But I didn't have enough time to do them!" will not gain you an extension. Planning ahead and time-management are crucial for success in this fast-paced course.

Very important: Doing all the homework yourself is crucial for success in PHY 131. If you copy solutions (from friends, the internet, wherever), you will not learn the material. We know from past semesters that not doing homework yourself is the main ingredient in a recipe for getting a poor grade! You cannot master the course material if you do not do the homework yourself.

Lecture

Attendance is required and will be enforced with clicker questions that contribute to your final grade.

Lectures starts **promptly** at 9:00 AM in Simons Center room 103 and end at 9:53 AM. They will be a mixture of projected slides, short videos and/or live demonstrations. "Example Problems", many of which are chosen from the textbook (highlighted in red there), will be presented in lecture in step-by-step fashion to emphasize both physical concepts and problem-solving techniques. Our textbook is very strong in this regard; every chapter has such example problems highlighted in red. Some exam problems have been and will be based on them.

Each lecture in Simons 103 will be recorded as an audio-visual "screencast" using an iPad tablet paired with a laptop computer. Together they record the lecturer's voice (audio) and the projected images (video). Within, typically, a few hours after a lecture, the screencast of the lecture will be uploaded into the "Echo Center" (and the pdf files of projected slides for the lecture into the "Documents" section) of our course's Blackboard website.

An important plea: Since pairing the iPad and computer **requires** a wi-fi link, all students in the lecture must – **before** the lecture starts -- **turn off ("power down") their smartphones and other electronic devices that can "rob" bandwidth during the lecture; this has crashed screencasts in the past. None of us want that to happen!**

Recitation sections (R01, R02, R03, R04, R05, R06)

Since $\sim 10^2$ enrolled students cannot receive significant individual attention during lectures in Simons 103, PHY 131 includes six recitation sections taught by faculty. Typically they focus on helping students learn how to solve homework problems. Quizzes will be given in most recitation-section meetings and contribute to each student's recitation grade. **Note: there are no recitations in the first week of classes.**

Help Room (A-129 physics building)

Course instructors (including recitation instructors) will have scheduled office hours in room A-129 in the physics building. ``Your" Help Room, A-129, serves students in the courses PHY 131, 132, 133, and 134, and PHY 125, 126, and 127. (The other Help Room, A-131, serves students in PHY 121 + 123, PHY 122 + 124.) The schedule (Monday-Friday during most workday hours) for the A-129 Help Room will be posted electronically on the PHY 131.01 Blackboard area and physically on the A-129 door by the second week of classes. Make sure you take advantage of the **free** assistance the Help Room provides before you find yourself getting into trouble in PHY 131 and then, maybe, are considering hiring a tutor. **Take the textbook with you to Help Room! Do not come**

to the Help Room unprepared. Expect the Help Room staff to start out by asking you to explain, in detail, the ``preparation by you" (see above!) that you did before coming to the Help Room to seek help. Do not expect them to help you on homework problems that you have neither looked at nor attempted. It's your job to be prepared by ``knowing what you don`t understand`` before you come for help. If you arrive unprepared you will be wasting both your time and the time of the faculty and other helpers in the Help Room.

Required Material (individual responsibility of each student)

1. Go to http://stonybrooku.amazon.com/DP/1323472398/REF=SBU_COURSECATALOG t o purchase the "bundle" (i.e., combination costing about $68) of the digital (etext) version of the textbook *Physics for Scientists and Engineers*, 4th edition, by D. Giancoli and the "Access Card" that gives you the license to use the MasteringPhysics online homework system. You must set up your online Mastering Physics account to register your access code. See http://help.pearsoncmg.com/mylabmastering/bbi/student/en/index.html. Connect to the MasteringPhysics assignments for this course via the Link to Pearson's MyLab & MasteringPhysics in our Blackboard website.
2. Also available is a looseleaf (3-hole paper) form of the textbook. The pages in both the etext and looseleaf forms are identical to those in the hardcopy textbook.
3. Most course Information is distributed via Blackboard (e.g., this Syllabus). Check our PHY 131.01(R01-R06) Blackboard website daily! PHY 131-related information posted on Blackboard as ``Announcements" will also be sent verbatim via email from within Blackboard to all enrolled students and to faculty teaching the course (lecture and recitation sections). It is University policy (http://it.stonybrook.edu/news/articles/use-of-email-for-official-communication-policy-coming-this-fall) that all course-related and other University email be sent to students at their official University email address: firstname.lastname@stonybrook.edu . It is your responsibility as a student to check your email at least once per day at this address. If you send email to your (lecture and/or recitation) instructor, you must use your University email address not some other ``personal" email address.
4. You need to have calculator that you know how to use well and is able to store forumlas is ok, but all memories must be cleared before you bring such a calculator into an exam room. You use your calculator to calculate, **not** as an electronic formula sheet during exams. Your calculator should have the normal array of mathematical operations used in physics problems. Use the same calculator for homework, exams, and recitation-section quizzes. Use of a smart-phone calculator for an exam or recitation-section quiz is **not** allowed. Violation of this rule will lead to a reduction in grade of the exam or quiz.
5. You must obtain (purchase) and register a so-called *response-pad* (colloquially called a ``clicker") directly from Turning Technologies (TT) or from other online vendors; see the link https://it.stonybrook.edu/help/kb/buying-clickers ; it **must** be a TT clicker. Be sure you check to see if your purchase is a "bundle" of a TT clicker (response pad) with a TT license code to use it in the course, or if it is just a TT clicker. If you need to purchase a TT license code to use the TT clicker you already have, see the link https://it.stonybrook.edu/help/kb/purchasing-a-license-code-for-clickers . (If you need the TT clicker for another course, you need to register it for that course, too, but you do NOT need to pay more.) We will **NOT** use smartphones with the TT "browser/app" (so-called "ResponseWare") because this will rob too much wi-fi bandwidth in Simons 103; see the last sentence of the "Lecture" section of this Syllabus. The TT clicker P/N RCXR-02 provided to Prof. Koch in 2015 still works fine. It is possible to find this TT model (used, not new) being sold online (not by TT) for for less than $15, but this does not include the license code to use it. Do NOT buy a TT clicker with "IR" in its model name; the IR means "infra-red", which is not what we use because it requires "line of sight" access to the instructor's receiver. The TT clicker used in this course operates on a "radio frequency" (RF) part of the electromagnetic spectrum, which does not require "line of sight" access to the receiver on the lecturer's laptop computer. Students do NOT buy receivers; only the instructor has the a receiver. **It is each student's responsibility get a license code at his/her expense and use it to register his/her clicker via Blackboard; see the TurningTechnologies icon in the "Tools" section of Blackboard for our course.** This link https://store.turningtechnologies.com/ may also be helpful for the clicker-registration process. The "school code" 4SBU is the one you need to enter into the web form. It is your responsibility to obtain the proper clicker and to register it properly before the first PHY 131 lecture you attend.

The course faculty cannot do this for you.

Make sure you register your TT clicker for PHY 131 before the first lecture and take it with you to all lectures.

Clickers (some operational details)

Clicker questions will be an important part of most of the lectures. The second projected slide for all lectures will be the attendance clicker question: "Are you here?" If you arrive late to a lecture and miss that question, you won't get it credited to your total clicker score for that lecture. Some clicker questions, particularly those on the first day of class, will be used for the instructor to learn more about you as students, your backgrounds, your academic strengths and weaknesses at this point of your career, and other such information. That is why you must come to the first lecture with your clicker properly registered. All answers (but not absent ones) to ``**first-day**" questions will count toward your overall clicker score.

Unless you are explicitly told otherwise, expect that all ``physics-based" clicker questions **during the rest of the semester** will be ``for credit", with credit given only for correct answers. For each student the **lowest five clicker scores**, in their respective lectures, will be dropped. That's the good news. The bad news is that no excuse will allow any student to have more than five scores dropped – not forgetting to take your clicker to lecture, not having a weak battery in it, not arriving late nor leaving early or not attending at all for whatever reason: nothing. It's up to you to make sure that your clicker is properly registered and is functioning properly. Please do this right away, before the first lecture! Remember, clicker scores contribute 10% toward your final grade. Be sure to read **carefully** the section on p. 1 of this Syllabus called **Academic Integrity** : both paragraphs!

Grades

Final grades will be calculated based upon contributions (MT = midterm exam; FE = final exam; Rec = recitation section; HW = homework) weighted by the following percentages:

	MT 1	MT2	FE	Rec	HW	Clickers
Percentage	15	15	30	15	15	10

Your overall numerical score (ONS) for the semester, based upon the percentages listed above, will be compared to the following scale to determine the letter grades. Note (i) that grades are not ``curved" in PHY 131 and (ii), below, that, e.g., $90^-$ (``ninety-superscript-minus") means just below 90.00 (to 4 significant figures, e.g., no higher than 89.99), etc.

	A	A-	B+	B	B-	C+	C	D+	D	F
Percentage	90-100	$85\text{-}90^-$	$80\text{-}85^-$	$75\text{-}80^-$	$70\text{-}75^-$	$65\text{-}70^-$	$55\text{-}65^-$	$50\text{-}55^-$	$45\text{-}50^-$	< 45

You will be able to monitor your progress in the course via Blackboard and the MasteringPhysics website.

Recitations

Each student should be sure that s/he understands how the recitation instructor will determine the ``recitation grades". The lowest two quiz grades for each student will be dropped, i.e., not used in the calculations of quiz-grade averages. Average quiz scores will be compared among the recitation sections and *normalized* if they are found to have inconsistent means. Normalization is not ``curving" since the average scores will be brought to the same mean as one another without an overall shift to the class as a whole.

Exams

The two midterm exams (both 8:45-10:15 pm: MT1 on 2/20/18; MT2 on 3/27/18) and the final exam (8:30-11:00 pm on 5/9/18) – see the ``Schedule Calendar" on Blackboard – are ``closed book" but ``limited notes". Each student should prepare his/her own handwritten formula sheet. For each midterm exam it must be no bigger than a

3" x 5" ``index card" and for the final exam no bigger than an 8.5" x 11" sheet of paper. Both sides may be used in each case. Proctors will check them as students enter the exam room and during the exam. Exams will emphasize testing your ability to think ``physically" (understanding concepts) and to do reasonable calculations (solve problems). We do not expect you to memorize formulas, but we do expect you to know how to use them and what all their math symbols mean and what their units are.

You are responsible for insuring that you can attend all exams at the scheduled days and times. No excuses will be allowed for any foreseeable circumstance. An important part of your ``Preparation by you" duties at the beginning of the semester is to make sure your own life schedule will allow for an orderly adherence to the Schedule Calendar for PHY 131. If you miss an exam without a valid excuse that must be **documented in writing**, you will NOT be allowed to make up that missed exam. Your grade on it will be zero.

Drop-down deadline

Midterm exam 1 on **20** February is, on purpose, well before the Registrar's deadline (4:00 pm, Friday, **2** March) for PHY 131 students to submit an approved adjustment form to ``drop down" into PHY 125, which uses the same textbook but moves at a significantly slower pace than PHY 131 . Dropping down is possible logistically because lectures in PHY 131 and PHY 125 are scheduled for the same days and times. Students who are struggling in PHY 131, evidence for which is a low grade on midterm 1, will be encouraged to drop down into PHY 125. All students will know their exam grades well before the 2 March drop-down deadline. In previous Spring semesters, as many as 35 of the approximately 135-200 students enrolled in PHY 131 did choose to drop down from PHY 131 into PHY 125 by the deadline.

Warnings about final grades

If your academic program requires that you pass PHY 131 with a ``C or better", you should not expect that a D+ final grade will be ``rounded up" to a C grade. By extension, this policy will apply at other grade boundaries, too. It's up to you to monitor your progress during the semester and, with the best work of which you are capable, to raise your own grade as high as you can.

If, for whatever reason, you end up below some final grade boundary, do not ask if there is ``extra work" you could do to raise your grade after the course has ended. Such a question will not be answered because you know now, at the beginning of the course, the answer is ``no".

Getting Help

Since PHY131 (and its follow-on course PHY132) are fast-paced and difficult courses, most students require help from time to time. Don't fall behind; you can and should get the help you need to stay with the course.

Help Room

See the section ``Help Room (A-129 physics building)" on pp. 2-3 of this Syllabus.

Review before exams

Some brief review will be done during each recitation section meeting, especially in the one preceding each course-wide exam. As shown in the Schedule Calendar, there are two midterms that will be given (at a location to be announced) at the so-called "common exam" times in the evening for large-enrollment courses. The Final Exam is 8:30-11:00 pm, Wednesday, 5/9/18. For each exam additional ``not-for-credit practice problems" that cover the material in chapters being examined will be made available via Mastering Physics at least several days before the exam. These practice problems will be similar to the for-credit problems previously assigned via Mastering Physics. All these problems, plus ``clicker questions" from the lectures, plus **``worked-example" textbook problems, which are especially good in this regard**, plus what was emphasized in the lectures in Simons room 103 (don't forget the pdf's and screencasts of each lecture!) will provide useful, reasonable indicators for the kinds of problems that will be on the exams. Some will be mostly conceptual; others will require numerical solutions. Exam problems will cover a range from ``easy" to ``difficult".

Recordings of lectures

Though the lecture hall, Simons Center 103, is not equipped with the ``smart podium" and ``Echo 360 video capture" equipment used in some lecture halls on campus, the lecture instructor will use commercial software that ``pairs" his iPad and laptop computer in the lecture room. This enables the iPad to record a ``screencast" (digital movie of all that appears on the projected screen images along with the audio track of the lecturer's voice). This ``pairing" operation uses wireless connections. Knowing that wifi connections are not always reliable, we also know that the more ``load" that is put on the wifi network, the less reliable it becomes.

Because of the above, students should **NOT** connect any electronic device to the internet during the lecture meeting. This prohibition applies not only to connection via the campus ``WolfieNet" wifi networks but also to connection via a (commercial) cellular network. Your attention in the lecture hall must be focused on the physics being covered in PHY 131, not on some digital/electronic world elsewhere.

After a processing delay of several hours or less, the screencast of each lecture will be uploaded into the Echo 360 system on Blackboard so that PHY 131 students will be able to access it and the videos from lectures earlier in the semester. Pdf files of the slides shown by the instructor in each lecture will also be posted in the "Documents" section of Blackboard. Recitation section meetings will not be recorded.

Religious Observances

Note that the academic calendar does not have any religious holidays; this is a significant change from previous years at Stony Brook. See the List of Religious and Other Holidays and other relevant links at http://www.stonybrook.edu/commcms/provost/faculty/handbook/employment/list_of_religious_and_university_holidays#view-s2018 . Students will be expected to notify the lecture- and/or recitation-instructor(s) by email, in advance, definitely before the ``add/drop/withdraw" deadline of 4:00 pm on 2/2/18, of their intention to be out for any religious observance during the semester. They can discuss with their instructor(s) at that time how they will be able to secure the work covered.

Academic Integrity

Look again at page 1 of this Syllabus.

Americans with Disabilities Act

If you have a physical, psychiatric/emotional, medical or learning disability that may impact on your ability to carry out assigned course work, you should contact the staff in the Disability Support Services office [DSS], ECC (Educational Communications Center) Building, Room 128, (631)632-6748. For procedures and information see the link http://www.stonybrook.edu/commcms/studentaffairs/dss/ .
They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services.

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.

Posting and Updating of This Syllabus and the Schedule Calendar

This Syllabus and the Schedule Calendar are both posted on Blackboard. When, from time to time, they are updated, all students will be notified by an Announcement posted in Blackboard and sent via email to your official University email address. Make sure you check to see if the date of the version you're looking at is the most recent one!

(Spring 2018 PHY 131 Calendar updated on **1/8/18: future corrections/additions will be in green and underlined**)

WinCalendar.com

◄ Dec 2017 **January 2018** Feb 2018 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21 THIS WEEK → 22-26 Jan NO RECITATIONS in PHY 131	22 PHY 131 Lec 1 Course Admin; begin Chap 1: Intro, Measurement, Estimating	23	24 PHY 131 Lec 2 finish Chap 1; begin Chap 2: Describing Motion; 1d Kinematics	25	26 PHY 131 Lec 3 Chap 2: Describing Motion; 1d Kinematics	27 MasteringPhysics homework deadline for Chap 1: 10:00 pm
28 THIS WEEK → ALL RECITATION SECTIONS MEET AT THEIR SCHEDULED TIMES	29 PHY 131 Lec 4 Chap 2: Describing Motion; 1d Kinematics	30	31 PHY 131 Lec 5 Chap 2: Describing Motion; 1d Kinematics			

Notes: PHY 131 lectures are in Simons Center, room 103: M,W,F at 9:00 – 9:53 am. Arrive on time with your student ID and calculator. If you have a copy of the full textbook (D. Giancoli, *Physics for Scientists and Engineers,* 4th edition or the "looseleaf binder" version by chapter), take that with you to lecture.

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◄ Jan 2018 **February 2018** Mar 2018 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 **PHY 131 Lec 6** finish Chap 2: Describing Motion; 1d Kinematics	3 **MasteringPhysics homework deadline for Chap 2: 10:00 pm**
4 **THIS WEEK → ALL RECITATION SECTIONS MEET AT THEIR SCHEDULED TIMES**	5 **PHY 131 Lec 7** begin Chap 3: 2d, 3d Kinematics; Vectors	6	7 **PHY 131 Lec 8** Chap 3: 2d, 3d Kinematics; Vectors	8	9 **PHY 131 Lec 9** finish Chap 3: 2d, 3d Kinematics; Vectors	10 **MasteringPhysics homework deadline for Chap 3: 10:00 pm**
11 **THIS WEEK → ALL RECITATION SECTIONS MEET AT THEIR SCHEDULED TIMES**	12 **PHY 131 Lec 10** begin Chap 4: Dynamics; Newton's Laws of Motion	13	14 (A.W.) **PHY 131 Lec 11** begin Chap 4: Dynamics; Newton's Laws of Motion	15	16 **PHY 131 Lec 12** end Chap 4: Dynamics; Newton's Laws of Motion	17 **MasteringPhysics homework deadline for Chap 4: 10:00 pm**
18 **THIS WEEK → ALL RECITATION SECTIONS MEET AT THEIR SCHEDULED TIMES**	19 **PHY 131 Lec 13** begin Chap 5: Using Newton's Laws; Friction, Circ. Motion; Drag Forces	20 **Midterm Exam 1: 8:45 pm to 10:15 pm Chaps. 1-4 Room to be announced.**	21 **PHY 131 Lec 14** Chap 5: Using Newton's Laws; Friction, Circ. Motion; Drag Forces	22	23 **PHY 131 Lec 15** finish Chap 5: Using Newton's Laws; Friction, Circ. Motion; Drag Forces	24 **MasteringPhysics homework deadline for Chap 5: 10:00 pm**
25 **THIS WEEK → ALL RECITATION SECTIONS MEET AT THEIR SCHEDULED TIMES**	26 **PHY 131 Lec 16** Chap 6: Gravitation & Newton's Synthesis	27	28 **PHY 131 Lec 17** begin Chap 7: Work and Energy			

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March 2018

◄ Feb 2018 | Apr 2018 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2 **PHY 131 Lec 18** finish Chap 7: Work and Energy **4:00 pm deadline** to submit approved adjustment form to drop down from PHY 131 to PHY 125.	3 **MasteringPhysics homework deadline for Chaps 6 and 7 10:00 pm**
4	5 **PHY 131 Lec 19** begin Chap 8: Conservation of Energy	6	7 **PHY 131 Lec 20** Chap 8: Conservation of Energy	8	9 **PHY 131 Lec 21** finish Chap 8: Conservation of Energy	10 **MasteringPhysics homework deadline for Chap 8: 10:00 pm**
11 **Spring Break**	12 **Spring Break**	13 **Spring Break**	14 **Spring Break**	15 **Spring Break**	16 **Spring Break**	17 **Spring Break**
18 **Spring Break**	19 **PHY 131 Lec 22** begin Chap 9: Linear Momentum	20	21 **PHY 131 Lec 23** Chap 9: Linear Momentum	22	23 **PHY 131 Lec 24** finish Chap 9: Linear Momentum	24 **MasteringPhysics homework deadline for Chap 9: 10:00 pm**
25 (R)	26 **PHY 131 Lec 25** begin Chap 10: Rotational Motion	27 **Midterm Exam 2: 8:45 pm to 10:15 pm Chaps. 5-9 Room to be announced.**	28 **PHY 131 Lec 26** Chap 10: Rotational Motion	29	30 (G.F.) **PHY 131 Lec 27** finish Chap 10: Rotational Motion	31 (P.Ov.) **MasteringPhysics homework deadline for Chap 10 10:00 pm**

Notes: PHY 131 lectures are in Simons Center, room 103: M,W,F at 9:00 – 9:53 am. Arrive on time with your student ID and calculator. If you have a copy of the full textbook (D. Giancoli, *Physics for Scientists and Engineers,* 4th edition or the "looseleaf binder" version by chapter), take that with you to lecture.

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April 2018

◄ Mar 2018 | May 2018 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	**2** **PHY 131 Lec 28** begin Chap 11: Angular Momentum, General Rotation, Torque	**3**	**4** **PHY 131 Lec 29** Chap 11: Angular Momentum, General Rotation, Torque	**5**	**6** **PHY 131 Lec 30** ***Chap 12 is not covered*** begin Chap 13: Fluids	**7** **MasteringPhysics homework deadline for Chap 11 10:00 pm**
8	**9** **PHY 131 Lec 31** ***Chap 12 is not covered*** begin Chap 13: Fluids	**10**	**11** **PHY 131 Lec 32** Chap 13: Fluids	**12**	**13** **PHY 131 Lec 33** begin Chap 14: Oscillations and Resonance	**14** **MasteringPhysics homework deadline for Chap 13 10:00 pm**
15	**16** **PHY 131 Lec 34** Chap 14: Oscillations and Resonance	**17**	**18** **PHY 131 Lec 35** begin Chap 15: Wave Motion	**19**	**20** **PHY 131 Lec 36** finish Chap 15: Wave Motion (abbreviated) Chap 16: Sound (	**21** **MasteringPhysics homework deadline for Chaps 14, 15, 16 10:00 pm**
22	**23** **PHY 131 Lec 37** (abbreviated) Chap 17: Temperature, Thermal Expansion, Ideal Gas Law	**24**	**25** **PHY 131 Lec 38** (abbreviated) Chap 18: Kinetic Theory of Gases	**26**	**27** **PHY 131 Class 39** begin Chap 19: Heat and First Law of Thermodynamics	**28** **MasteringPhysics homework deadline for Chaps 17 and 18 10:00 pm**
29	**30** **PHY 131 Class 40** Chap 19: Heat and First Law of Thermodynamics					

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May 2018

◄ Apr 2018 | Jun 2018 ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2 **PHY 131 Lec 41** begin Ch 20: The Second Law of Thermodynamics	3	4 **PHY 131 Lec 42** finish Chap 20: The Second Law of Thermodynamics **Last day of classes**	5 **MasteringPhysics homework deadline for Chaps 19 and 20 10:00 pm**
6	7	8	9 **Final Exam : 8:30 pm - 11:00 pm Room to be announced.**	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Notes: PHY 131 lectures are in Simons Center, room 103: M,W,F at 9:00 – 9:53 am. Arrive on time with your student ID and calculator. If you have a copy of the full textbook (D. Giancoli, *Physics for Scientists and Engineers,* 4th edition or the "looseleaf binder" version by chapter), take that with you to lecture.