

SYLLABUS
Physics 118 *Mechanics and Relativity*
Spring 2018

Location:

Lecture: Carroll 0111

MWF 8:00 – 8:50 AM

Note: Friday lecture times are reserved for Q&A and mid-term exams.

Studio: Phillips 208, 110 minutes, twice per week as scheduled in Connect Carolina

Lead Instructor of Record: Dr. Laurie McNeil, mcneil@physics.unc.edu, Chapman 347

Course Coordinator: Dr. Stefan Jeglinski, jeglin@physics.unc.edu, Phillips 174

Studio Instructor information, and office hours for ALL personnel, are posted on Sakai.

Required Materials:

- Textbook: "*Physics for Scientists and Engineers: A Strategic Approach*" 4th ed. (with Modern Physics) by Randall Knight (*eBook is acceptable*)
 - ISBN-13: 978-0-133-94265-1
 - ISBN-10: 0-133-94265-1
 - The Student Workbook that accompanies the textbook is a useful and recommended study aid for this course, but is not required.
 - While you may use older editions of the textbook, it will be your responsibility to determine how to map the reading assignments with your text.
- Sakai: at <http://sakai.unc.edu>; look for the tab labeled **PHYS118.ALL.SP18**
- MasteringPhysics: for homework and warm-up assignments, online access available at <http://www.masteringphysics.com>. Course ID: **PHYS118SP18**. Sign-up instructions for MasteringPhysics are posted on Sakai.
- i>clicker+ or i>clicker2:
 - <https://www1.iclicker.com/students/apps-and-remotes/remotes>
 - Instructions for registering i>clicker are posted on Sakai.
- Scientific calculator: for studio activities and exams. Smartphones are **not** allowed during exams – students **must** have a scientific calculator. Graphing calculators are allowed.
- Wireless-enabled laptop: for studio.
- Quad-ruled notebook: for studio. Details are posted on Sakai.

Pre or Co-requisite: Mathematics 231/232 or permission of the instructor

Course Content: Motion and Kinematics in One and Two Dimensions
Force and Newton's Laws of Motion
Work, Energy, and Conservation Laws
Frames of Reference and Einstein's Theory of Special Relativity
Rotation, Rigid Body motion, and Static Equilibrium
Oscillations and Waves

Course Schedule: A detailed schedule with course content and reading assignments can be found on the Sakai home page.

Course Format: Lecture-studio is administered via numbered *modules*. Each module is composed of a 1-hour lecture followed by a 2-hour studio, typically on the same day. Lectures conceptually introduce the most important topics for each module, but are not comprehensive, while the studios provide an interactive environment for learning the same material in more detail. This instructional format has been shown to be more effective for improving student learning than the traditional lecture/lab/recitation format (see references on the Sakai course site).

Lectures. There are two 50-minute lectures per week, consisting of traditional instruction, demonstrations, discussions, and in-class “clicker” questions. Students are expected to bring their i>clicker (i>clicker+ or i>clicker2) to all lectures and to finish reading assignments and warm-up exercises in advance of each lecture. Information about acquiring and registering clickers is on the home page of the Sakai site. Instructors will **not** allow the use of i>clicker GO for smartphones or laptops during lecture. Lecture attendance will be tracked via responses to clicker questions – students must answer the clicker questions to get credit for lecture attendance, but will not be penalized for incorrect answers. The instructors do not have spare i>clicker units, and students who do not bring their i>clickers to class will not receive credit for attendance that day. At least one lecture attendance score will be posted to Sakai as soon as possible in the term so that you can verify that your lecture attendance is being logged. Each student is granted two “free” missed clicker days per semester (in case you forget your i>clicker or it malfunctions).

The Friday lecture times are optional Q&A sessions (attendance is not required), **except when exams are held at these times**. Students are strongly encouraged to attend these Q&A sessions. The Q&A is dedicated to clarifying the week’s material, investigating learning and problem-solving strategies, answering general questions about the course, and soliciting informal feedback about the course.

Studios consist of two 2-hour meetings per week. Students are divided into groups of three, and almost all activities will be performed in these groups. In studio, students will complete laboratory-like activities (tangibles), problem-solving activities (ponderables), and conceptual questions. Data, results, and conclusions of the studio activities are to be recorded in a quad-ruled notebook, and lab reports of various kinds will be submitted via Sakai for credit. Specific instructions will be provided for each studio in class and will be also posted on Sakai. For some studios, application problems may be assigned via MasteringPhysics. Studio attendance is required for all students, and will be recorded as part of the course grade. *Studio attendance may be marked higher or lower each day based on the individual participation of students.*

Attendance and Make-Up policy:

Students who miss a lecture, studio, or exam and wish to request an excused absence must fill out a printed excused absence request (EAR) form posted on the Sakai home page and deliver it to the Course Coordinator (NOT the studio TA and NOT the lecturer) with supporting documentation. Students should contact the lecturer or coordinator before the absence if at all possible, or as soon as possible after. *There is a two-week limit on submitting an EAR after the fact.*

Students who submit the required documentation and are excused from lecture, studio, or exam by the Course Coordinator will not be penalized; however, **there are no make-up lectures or studios**, so the student is responsible for reviewing and understanding any missed material. If an assignment is excused, the weights of the other assignments will shift UP to compensate. Unexcused absences will result in a score of zero for the lecture attendance, studio activities, or exams. Valid excuses include:

- Illness with doctor's note
- Grave family circumstances
- Participating in university-sanctioned sporting events with supporting documentation
- Job interviews or conferences with supporting documentation
- Travel for other classes with supporting documentation

Note: Personal trips or family vacations are not valid excuses, even if pre-planned.

Note about makeup exams: Makeup exams are held on the Monday following the Friday midterm exam, at 7am, at a location to be announced. Only students with a pre-approved excused absence are allowed to take the makeup exam. There are no practicum makeups.

Note about studio attendance: If you are excused for an absence on a studio day on which a deliverable is due, you are NOT excused from that deliverable. You are only excused from a deliverable if you have an excused absence for the day on which the work was performed. Excused absences of this nature will be scrutinized carefully. If you are excused from a deliverable, other studio deliverables will be weighted higher than they normally would.

Note about lecture attendance: Responses recorded in lecture via i>clicker also represent your attendance. Each student is granted two "free" missed clicker days per semester. Your final exam score will be substituted for your semester lecture attendance score if the final exam score is higher.

Note about over-sleeping an exam: If this or something similar happens to you that would normally NOT be excused, immediately notify the instructor *and* coordinator via email and present yourself to the examination room and/or instructor's office. Depending on the nature of the situation, the promptness of your email, and the availability of a suitable location, the instructors have the discretion to allow you to take a missed exam, albeit with a large (typically 20%) penalty.

Grading weights:

Lecture participation/attendance:	5%
Warmups (<i>Mastering Physics</i>):	5%
Homework (<i>Mastering Physics</i>):	15%
Studio participation/attendance:	5%
Studio deliverables:	20%
Mid-term exams (3):	30% (10% each)
Final exam:	20% (equivalent to two midterms)

Grading Policy:

The median or average of the final scores for all of the PHYS 118 sections typically constitutes the approximate B-/C+ boundary when letter grades are assigned at the end of the semester. However, student grades are determined based on individual student performance and not on a competitive basis.

Grading Scale:

The following correspondence of scores to FINAL letter grades will be applied:

A	93–100	C+	77-79	
A–	90-92	C	73-76	
B+	87-89	C–	70-72	
B	83-86	D+	67-69	
B–	80-82	D	60-66	F 59 or below

Homework:

Homework will be assigned for each module. Students will submit their work via MasteringPhysics, a web-based program designed to deliver individualized assignments and provide immediate feedback. Unless otherwise noted, each homework assignment is due one week after each module. The MasteringPhysics website also includes additional exam study material to aid students in understanding physics concepts. *Due dates for homework assignments are posted only on the MasteringPhysics site* (not Sakai), and no credit will be given for late submissions. The MasteringPhysics ID for this course is given on the first page of this syllabus. Instructions for how to sign up for MasteringPhysics are posted to the Sakai home page.

Warm-ups and Reading Assignments:

Reading of relevant textbook material is expected before each module, and is listed in the course schedule. A warm-up will be assigned for virtually every module and will be open 4 days before each module; students will submit these warm-ups via MasteringPhysics in the same way as homework. Warm-ups include brief and simple questions designed to assess the reading assignment for the day, and also encourage the student to consider the type of problems that will be encountered in the lecture and/or the studio for that day. **Warm-ups are due before the posted lecture time**; deadlines are posted on the MasteringPhysics site, and no credit will be given for late submissions. Warm-up materials can cover lecture or studio or both.

Note: *MasteringPhysics homework and warm-up assignments are **NOT** waived if you have an excused absence – if you have an excused absence, contact the Course Coordinator about receiving extra time for the homework, if needed.*

Examinations:

There will be three mid-term examinations and a final exam. The dates are:

- **Mid-term 1: Friday, Feb 09**
 - **Mid-term 2: Friday, Mar 02**
 - **Mid-term 3: Friday, Apr 06**
 - **FINAL: 4:00-7:00 PM, Friday, May 04**
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- The three mid-terms will be common to all sections of the course and will take place during the regularly scheduled Friday lecture time.
 - All mid-terms and the final exam will be closed-book. For mid-terms, each student will be allowed to bring a single 3"x5" note card with information of any kind on both sides of the card. For the final, four index cards are allowed (the original three for midterms, plus one).
 - As part of each mid-term, a 30-minute practicum will be administered in studio, typically on the Wednesday before each midterm (check the course schedule). The practicum will cover aspects of experimental techniques learned in studio, and will be worth 20-25% of the total midterm exam grade.
 - Use of calculators is permitted during all examinations; however, cell phone calculators (or internet-capable devices) will **not** be permitted. All students must bring their own scientific calculator that is not part of a cell phone or internet-capable device.
 - The mid-terms will only cover material specified by the instructors; however, note that physics is an integrated science – certain concepts will be introduced early and used repeatedly throughout the semester. The final exam will be cumulative.

Honor Code:

The Honor code and the Campus Code, embodying the ideals of academic honesty, integrity and responsible citizenship, have for over 100 years governed the performance of all academic work and student conduct at the University. Acceptance by a student of enrollment in the University presupposes a commitment to the principles embodied in these codes and a respect for this significant University tradition. Your participation in this course is with the expectation that your work will be completed in full observance of the Honor Code, which can be found at <http://studentconduct.unc.edu/students/rights-responsibilities>.

In this course you will often be collaborating with other students, so you will be sharing data, results, and ideas. In addition, you are strongly encouraged to study together outside of class. However, you are also encouraged to think independently before comparing results, and any written conclusions that are submitted independently and not as a group, or any work submitted for an individual grade, must be in your own words and not copied from someone or somewhere else. In particular in this course, note the following:

- MasteringPhysics assignments may be worked on collaboratively, but answers must be entered by each student into his/her own account only.
- Other assignments may be worked on collaboratively, but must be written up by each student in his or her own wording. Group assignments (typically done in studio) are fully collaborative, and will receive a group grade. *Please note: the graders **will** check for duplicate wording and style in submitted lab reports – be very careful when collaborating, especially if a tool such as Google Docs is used.*
- Exams will be solely the work of each individual student.
- i>clickers will only be operated by the student to whom the clicker is registered.
- The distribution or use of solution manuals for the textbook is forbidden and will be considered an Honor Code violation.
- The use or distribution of online solutions or manuals for the MasteringPhysics assignments, or any solutions for graded parts of the studio (e.g. from previous semesters) is forbidden and will be considered an Honor Code violation.

Academic dishonesty in any form is unacceptable, because any breach in academic integrity, however small, strikes destructively at the University's life and work. If you have any questions about the Honor Code, please consult with someone in the Office of the Student Attorney General or the Office of the Dean of Students. Any issues that students encounter related to fairness or inappropriate conduct should be brought to the immediate attention of an instructor.