

Physics 10a: Introduction to Physical Laws and Phenomena
Brandeis University
Fall 2018

Instructor: Prof. Seth Fraden
email address: fraden@brandeis.edu
Office Location: Abelson 214
Office Hours: By appointment

Section time and place:

All sections meet in **Abelson 126**

Section 1: T,F 9:30 AM–10:50 AM, Kevin Skowronski
Section 2: T,F 11:00 AM–12:20 PM, Kevin Skowronski
Section 3: T,F 12:30 PM–1:50 PM, Bibi Najma
Section 4: M,W 3:30 PM–4:50 PM, Bibi Najma
Section 5: M,W 5:00 PM–6:20 PM, Francis Rivera
Section 6: T,Th 5:00 PM–6:20 PM, Francis Rivera

TA contact info:

Office hours in Abelson 121

Sections 1, 2.

Mr. Kevin Skowronski <kskowronski@brandeis.edu>

Office hours: Thursday, 11am, plus Friday, 2pm in Abelson 201.

Sections 3, 4.

Ms. Bibi Najma <bibinajma@brandeis.edu>

Office hours: Tuesday, 11am and 3pm

Sections 5, 6.

Mr. Francis Rivera <ffrivera@brandeis.edu>

Office hours: Wednesday, 11am and Friday, 11am

Required materials: *“College Physics: A Strategic Approach, 4th edition”* by Knight /Field / Jones, 2019 and Mastering Physics. Both are published by Pearson. **It is required to purchase Mastering Physics from Pearson and to register on the Pearson website.** Follow instructions on page 5 of this syllabus: “Required materials and registration instructions for Physics10a, F2018”.

Prerequisites:

- Mastery of high school mathematics, geometry, trigonometry and algebra.

Corequisites:

- Math10a. See academic bulletin.

- Very little calculus will be used, but a qualitative understanding of derivatives will be helpful at times.

Course Description:

- We will follow the “flipped” classroom method, which means that instead of the traditional large lecture format, you will be assigned to small sections. The majority of class time will be spent working collaboratively and individually on problems. The flipped classroom method allows students to learn course material in a more engaging and effective way. You may enter the classroom with a question, but you should never leave the classroom with a question—the recitation is a space where you can practice and learn with each other, ask questions and get support.

Although the majority of class time is devoted to working on problems, each class will begin with a short mini-lecture that will emphasize key concepts and be tailored to address your comments. A short quiz, taken from the same test bank that will be used to create the exams for the course, will be given each session in order to prepare you for the 3 graded midterm exams and the final exam. The daily quizzes will be turned in and counted for attendance, but will not otherwise be scored or graded. Class time will be spent on hands-on exercises similar to the homework problems and the exams. In addition to instruction, there will be 3 midterms given in class.

Attendance is required at each recitation session held 3 times per week. The sections will be taught by physics graduate teaching fellows, each class being part lecture, part solving problems. There will be a reading assignment from the textbook prior to each lecture. See Textbook and Reading Assignments below for details. Complementing the reading assignments will be weekly homeworks further discussed in the Homework and Mastering Physics section.

- The course will cover Newtonian mechanics, chapters one through eleven of *College Physics*.
- The teaching fellows will hold regular office hours.
- Students are expected to complete the reading assignments and be prepared to discuss relevant topics with the lecturer and their fellow students, to ask questions, to contribute when class time is devoted to problem solving, to finish homework assignments on time and to come to class ready to be engaged and challenged intellectually.
- You get no credit for participating in the classes, but can lose up to 5% of your grade if your teaching fellow determines your class activity was not up to par.
- Missing classes is a way to lose some of the five points just mentioned. Students are allowed three unexcused absences.
- There will be three one hour exams during the semester and a cumulative final scheduled by the registrar.

- Success in this 4-credit hour course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, homework, preparation for exams, etc.).

Textbook and Reading Assignments:

The textbook is *College Physics: A Strategic Approach, 4th edition* by Knight /Field / Jones, 2019. Instructions on exactly which version to purchase are provided below.

Homework and Mastering Physics:

- All homework assignments will be done online with MasteringPhysics, which must be purchased from Pearson (see instructions on last page). The solutions will also be posted on MasteringPhysics.
- There will be one, short homework assignment due in the beginning of each of the 11 chapters to introduce you to the upcoming material.
- There will be one, longer homework assignment due at the end of each 11 of the chapters, designed to increase your mastery of the material. There will be about ten problems in each problem set.
- The lowest 3 homework grades will be dropped.

Midterm Exams

3 exams, each of 1 hour duration. No grades will be dropped. Given in class.

1. **Chaps. 1, 2, 3.**
Sections 1,2,3,6; October 2, 2018.
Sections 4,5; October 3, 2018.
2. **Chaps. 4, 5, 6.**
Sections 4,5; October 29, 2018.
Sections 1,2,3,6; October 30, 2018.
3. **Chaps. 7, 8, 9.**
Sections 4,5; November 26, 2018.
Sections 1,2,3,6; November 27, 2018.

Final Exam

Cumulative in-class exam

Final date and time: December xx, 2018. (Date determined by registrar in September)
Covering Chapters 1 – 11.

Google calendar and MasteringPhysics Calendar

- A [Google calendar](#) has the lecture, homework, reading and exam schedules. A hard copy is included at the end of the syllabus.
 - A calendar on the MasteringPhysics website has the reading and homework assignments.
- Note:** Refer to this calendar for the due dates of the 22 homework assignments.

Course Objectives:

At the completion of this course the student will

- understand the fundamental concepts of Newtonian mechanics
- be able to apply these ideas both quantitatively and qualitatively
- be able to provide a basic physical model for mechanical interactions
- appreciate the fundamental role of physics in other scientific disciplines

Grade Distribution:

Homework: 20%

Exam 1: 15%

Exam 3: 15%

Exam 2: 15%

Final Exam: 35%

Letter Grade Distribution:

≥ 93.00	A	73.00 - 76.99	C
90.00 - 92.99	A-	70.00 - 72.99	C-
87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	B	63.00 - 66.99	D
80.00 - 82.99	B-	60.00 - 62.99	D-
77.00 - 79.99	C+	≤ 59.99	F

If needed final grades will be normed to the university average, a B+, 87.00

Course Policies:

- General
 - No use of phone and similar devices during class. Turn them off.
 - No makeup exams will be given except for extraordinary circumstances. If you are ill and miss an exam then this must be documented by a physician's note.
 - Any unexcused missed midterm exam will be scored as 0%. Missing the final exam results in failing the course.
 - Anyone found cheating on an exam will fail the course

Reading and Homework Assignments

- Students are expected to work independently. Offering and accepting solutions from others is an act of plagiarism, a serious offense, and all involved parties will be penalized according to the Academic Honesty Policy. Discussion amongst students is encouraged, but when in doubt, direct your questions to your teaching fellow.
- No late assignments will be accepted except for extraordinary reasons.
- Workload from other courses, work-study programs and the like are not sufficient reasons to be granted an extension for reading or homework assignments.
- If you feel you have just cause to be granted an extension then you must get permission from me, not the teaching fellow who is your lecturer.

Required materials and registration instructions for Physics10a, F2018

1. College Physics: A Strategic Approach, 4th edition” by Knight / Field / Jones, 2019.
2. MasteringPhysics.

There are three options for required text. Listed in order of expense (the first option is the least expensive). Chose 1 option. All 3 options available at campus bookstore.

Each of the 3 options includes 2 items. The first item is the textbook. Option 1 provides electronic access to the text. Options 2 & 3 are for loose-leaf and hard bound printed versions, respectively. The second item is included in all 3 options; “MasteringPhysics -- Pearson eText 2.0”, which is access to the online course homework. **Note:** You need both MasteringPhysics and the textbook (either printed or electronic).

The publisher is Pearson. The text is:

“College Physics: A Strategic Approach, 4th edition” by Knight / Field / Jones, 2019.

Required course materials. Chose 1 of the 3 options below. Note: Whatever you purchase **MUST** correspond to one of the following three ISBN numbers.

1. **Electronic textbook (eText) with Mastering Physics access:**
ISBN 9780134702353 (you can buy access direct from Pearson when you register as indicated below in step 1 of registration directions for \$115.95)
2. **Unbound book with Mastering Physics access:** ISBN 9780134644141
3. **Bound book with Mastering Physics access:** ISBN 9780134641492

Next, get registered and join the course.

1. Go to [Pearson Mastering Physics webpage](#).
2. Under **Register Now**, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor’s **Course ID (MPFRADEN43864)**, and chose **Continue**.
5. Enter your existing Pearson account **username** and **password** and select **Sign in**. You have an account if you’ve ever used a Pearson MyLab & Mastering product, such as MyLab Math, MyLab IT, or Mastering Chemistry.
 - If you don’t have an account, select **Create** and complete the required fields.
6. Select an access option.
 - Enter the access code that came with your textbook or was purchased separately from the bookstore.
 - Buy access using a credit card or PayPal account.
7. From the “You’re Done!” page, select **Go to My Courses**.
8. Select **Yes** and enter your **Course ID** to join your course. Click **Continue**.
9. Enter your **Student ID** according to the instructions provided and click **Continue**. That’s it! You should see the course home page for the course.

To sign in later:

1. Go to [Pearson Mastering Physics webpage](#) and select **Sign In**.
2. Enter your Pearson account **username** and **password** from registration, and select **Sign In**.
 - If you forgot your username or password, select **Forgot your username or password?**

If you have a technical issue: Contact [Pearson Support](#).

Complete the “Module Before Class” and homework (HW) assignments using the Pearson MasteringPhysics website.
 To register, follow instructions on p. 5 of the syllabus.

Phys10a sections

Sep 2018 (Eastern Time - New York)

	Mon	Tue	Wed	Thu	Fri
August	27	28	29	30	31
		Due. Chap 1 Module Before Class.	3:30pm - M,W,S4,5 Class 1, Chap. 1A	5pm - T,Th,S6 Class 1, Chap 1A	9:30am - T,F,S1,2,3 Class 1, Chap 1A
September	3	4	5	6	7
	9:30am - T,F,S1,2,3 Class 2, Chap 1B 5pm - T,Th,S6 Class 2, Chap 1B	Due. Chap. 2 Module Before Class 3:30pm - M,W,S4,5 Class 2, Chap 1B	3:30pm - M,W,S4,5 Class 3, Chap 2A		HW1 due, Chap 1 9:30am - T,F,S1,2,3 Class 3, Chap 2A
	10	11	12	13	14
			3:30pm - M,W,S4,5 Class 4, Chap 2B	5pm - T,Th,S6 Class 3, Chap 2A	HW2 due, Chap 2 9:30am - T,F,S1,2,3 Class 4, Chap 2B
3:30pm - M,W,S4,5 Class 5, Chap 3A	17	18	19	20	21
	9:30am - T,F,S1,2,3 Class 5, Chap 3A 5pm - T,Th,S6 Class 4, Chap 2B			5pm - T,Th,S6 Class 5, Chap 3A	9:30am - T,F,S1,2,3 Class 6, Chap 3B
	24	25	26	27	28
	Due. Chap. 4 Module Before Class 3:30pm - M,W,S4,5 Class 6, Chap 3B	3:30pm - M,W,S4,5 Class 7, Chap 4A	5pm - T,Th,S6 Class 6, Chap 3B		HW3 due, Chap 3 9:30am - T,F,S1,2,3 Class 7, Chap 4A
	1	2	3	4	5
	Exam 1, chaps 1,2,3 9:30am - T,F,S1,2,3 Class 8, Exam 1 5pm - T,Th,S6 Class 7, Exam 1	Exam 1, chaps 1,2,3 3:30pm - M,W,S4,5 Class 8, Exam 1	5pm - T,Th,S6 Class 8, Chap 4A		9:30am - T,F,S1,2,3 Class 9, Chap 4B

Mon	Tue	Wed	Thu	Fri
1 October	2 Exam 1, chaps 1,2,3 ● 9:30am - T,F,S1,2,3 Class 8, Exam 1 ● 5pm - T,Th,S6 Class 7, Exam 1	3 Exam 1, chaps 1,2,3 3:30pm - M,W,S4,5 Class 8, Exam 1	4 ● 5pm - T,Th,S6 Class 8, Chap 4A	5 ● 9:30am - T,F,S1,2,3 Class 9, Chap 4B
8 3:30pm - M,W,S4,5 Class 9, chap 4B	9 Due. Chap. 5 Module Before Class ● 9:30am - T,F,S1,2,3 Class 10, chap 5A ● 5pm - T,Th,S6 Class 9, chap 4B	10 3:30pm - M,W,S4,5 Class 10, Chap 5A	11 ● 5pm - T,Th,S6 Class 10, Chap 5A	12 Homework 4 due, chap 4 ● 9:30am - T,F,S1,2,3 Class 11, chap 5B
15 3:30pm - M,W,S4,5 Class 11, chap 5B	16 Due. Chap. 6 Module Before Class ● 9:30am - T,F,S1,2,3 Class 12, chap 6A ● 5pm - T,Th,S6 Class 11, chap 5B	17 3:30pm - M,W,S4,5 Class 12, chap 6A	18 ● 5pm - T,Th,S6 Class 12, chap 6A	19 Homework 5 due, chap 5 ● 9:30am - T,F,S1,2,3 Class 13, chap 6B
22 Due. Chap. 7 Module Before Class 3:30pm - M,W,S4,5 Class 13, chap 6B	23 ● 9:30am - T,F,S1,2,3 Class 14, chap 7A ● 5pm - T,Th,S6 Class 13, chap 6B	24 3:30pm - M,W,S4,5 Class 14, chap 7A	25 ● 5pm - T,Th,S6 Class 14, chap 7A	26 Homework 6 due, chap 6 ● 9:30am - T,F,S1,2,3 Class 15, chap 7B
29 Exam 2, chaps 4,5,6 3:30pm - M,W,S4,5 Class 15, Exam 2	30 Exam 2, chaps 4,5,6 ● 9:30am - T,F,S1,2,3 Class 16, Exam 2 ● 5pm - T,Th,S6 Class 15, Exam 2	31 3:30pm - M,W,S4,5 Class 16, chap 7B	1 Due. Chap. 8 Module Before Class ● 5pm - T,Th,S6 Class 16, chap 7B	2 Homework 7 due, chap 7 ● 9:30am - T,F,S1,2,3 Class 17, chap 8A
			November	

Phys10a sections

Nov 2018 (Eastern Time - New York)

Mon	Tue	Wed	Thu	Fri
<p>29</p> <p>Exam 2, chaps 4,5,6</p> <p>3:30pm - M,W,S4,5 Class 15, Exam 2</p> <p>October</p>	<p>30</p> <p>Exam 2, chaps 4,5,6</p> <p>9:30am - T,F,S1,2,3 Class 16, Exam 2</p> <p>5pm - T,Th,S6 Class 15, Exam 2</p>	<p>31</p> <p>3:30pm - M,W,S4,5 Class 16, chap 7B</p>	<p>1</p> <p>Due. Chap. 8 Module Before Class</p> <p>5pm - T,Th,S6 Class 16, chap 7B</p> <p>November</p>	<p>2</p> <p>Homework 7 due, chap 7</p> <p>9:30am - T,F,S1,2,3 Class 17, chap 8A</p>
<p>5</p> <p>3:30pm - M,W,S4,5 Class 17, chap 8A</p>	<p>6</p> <p>9:30am - T,F,S1,2,3 Class 18, chap 8B</p> <p>5pm - T,Th,S6 Class 17, chap 8A</p>	<p>7</p> <p>3:30pm - M,W,S4,5 Class 18, chap 8B</p>	<p>8</p> <p>Due. Chap. 9 Module Before Class</p> <p>5pm - T,Th,S6 Class 18, chap 8B</p>	<p>9</p> <p>Homework 8 due, chap 8</p> <p>9:30am - T,F,S1,2,3 Class 19, chap 9A</p>
<p>12</p> <p>3:30pm - M,W,S4,5 Class 19, chap 9A</p>	<p>13</p> <p>9:30am - T,F,S1,2,3 Class 20, chap 9B</p> <p>5pm - T,Th,S6 Class 19, chap 9A</p>	<p>14</p> <p>3:30pm - M,W,S4,5 Class 20, chap 9B</p>	<p>15</p> <p>Due. Chap. 10 Module Before Class</p> <p>Due. Chap. 10 Module Before Class</p> <p>5pm - T,Th,S6 Class 20, chap 9B</p>	<p>16</p> <p>Homework 9 due, chap 9</p> <p>9:30am - T,F,S1,2,3 Class 21, chap 10A</p>
<p>19</p> <p>3:30pm - M,W,S4,5 Class 21, chap 10A</p>	<p>20</p> <p>9:30am - T,F,S1,2,3 Class 22, chap 10B</p> <p>5pm - T,Th,S6 Class 21, chap 10A</p>	<p>21</p>	<p>22</p>	<p>23</p>
<p>26</p> <p>Exam 3, chaps 7,8,9</p> <p>3:30pm - M,W,S4,5 Class 22, Exam 3</p>	<p>27</p> <p>Exam 3, chaps 7,8,9</p> <p>9:30am - T,F,S1,2,3 Class 23, Exam 3</p> <p>5pm - T,Th,S6 Class 22, Exam 3</p>	<p>28</p> <p>3:30pm - M,W,S4,5 Class 23, chap 10B</p>	<p>29</p> <p>Due. Chap. 11 Module Before Class</p> <p>5pm - T,Th,S6 Class 23, chap 10B</p>	<p>30</p> <p>Homework 10 due, chap 10</p> <p>9:30am - T,F,S1,2,3 Class 24, chap 11A</p>

Mon	Tue	Wed	Thu	Fri
<p>26</p> <p>Exam 3, chaps 7,8,9</p> <p>3:30pm - M,W,S4,5 Class 22, Exam 3</p> <p>November</p>	<p>27</p> <p>Exam 3, chaps 7,8,9</p> <p>9:30am - T,F,S1,2,3 Class 23, Exam 3</p> <p>5pm - T,Th,S6 Class 22, Exam 3</p>	<p>28</p> <p>3:30pm - M,W,S4,5 Class 23, chap 10B</p>	<p>29</p> <p>Due. Chap. 11 Module Before Class</p> <p>5pm - T,Th,S6 Class 23, chap 10B</p>	<p>30</p> <p>Homework 10 due, chap 10</p> <p>9:30am - T,F,S1,2,3 Class 24, chap 11A</p>
<p>3</p> <p>3:30pm - M,W,S4,5 Class 24, chap 11A</p> <p>December</p>	<p>4</p> <p>9:30am - T,F,S1,2,3 Class 25, chap 11B</p> <p>5pm - T,Th,S6 Class 24, chap 11A</p>	<p>5</p> <p>3:30pm - M,W,S4,5 Class 25, chap 11B</p>	<p>6</p> <p>5pm - T,Th,S6 Class 25, chap 11B</p>	<p>7</p> <p>Homework 11 due, chap 11</p> <p>9:30am - T,F,S1,2,3 Class 26, review</p>
<p>10</p> <p>3:30pm - M,W,S4,5 Class 26, review</p>	<p>11</p> <p>9:30am - T,F,S1,2,3 Class 27, review</p> <p>5pm - T,Th,S6 Class 26, review</p>	<p>12</p>	<p>13</p>	<p>14</p>
<p>17</p>	<p>18</p>	<p>19</p>	<p>20</p>	<p>21</p>