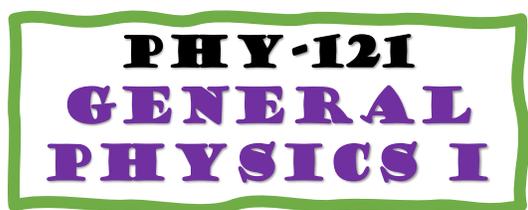
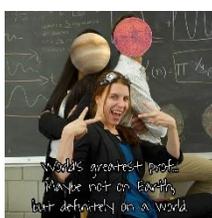


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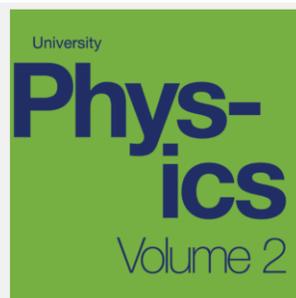
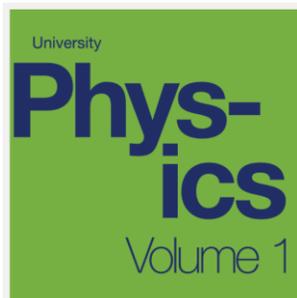


Locations & Times:	Location	Time
Lecture Days	In person: Olin 103 Online Option: Zoom [Links to meeting rooms on Moodle]	MWF 10:30-11:20 am
Group Work Days [TAs: Alex Florea and Justin Sehlin]	In person: Olin 103	TR 10:30-11:20 am
Lab	Olin 217, 221, 224 (spread out)	M (1:30-3:20 or 3:30-5:20 or 6:30-8:20) or T (1:30-3:20 or 3:30-5:20) [pm]
FREE! Help Sessions w/ Darsa	Scheduled: Center for Inclusive Excellence Open Door: Olin 204	W (1:30 - 3:30 pm) R (11:30 am - 1:30 pm) When my door is open
Tutoring	Olin 216	Sun-Thurs 7-10 pm

Important dates and a course schedule can be found on Moodle.

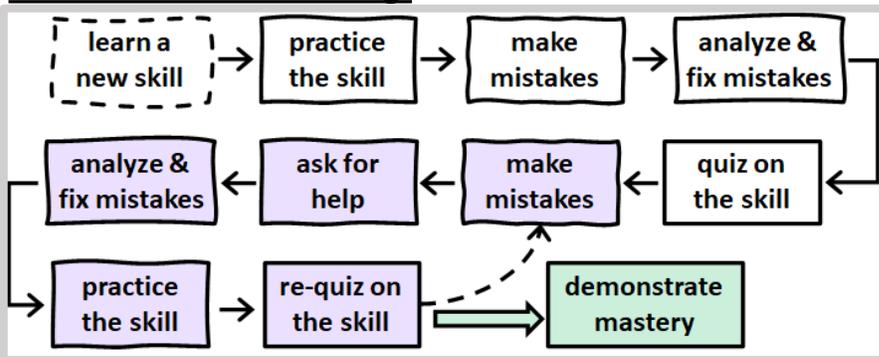
Materials and Resources:

FREE!!! e-Books:
<https://openstax.org/details/books/university-physics>



Class Forum
Discord
[Link on Moodle]

Standards-Based Grading:



Assessment Plan:

- Approximately 7 standards per chapter (3.5 per lecture)
- Biweekly quizzes (usually Fridays)
- Midterm and Final (for re-assessment)

Grading Scheme (Mastery Level)	Score
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Grades: Average of all standards

3.75 – 4.00	A	2.25 – 2.49	C
3.50 – 3.74	A-	2.00 – 2.24	C-
3.25 – 3.49	B+	1.75 – 1.99	D+
3.00 – 3.24	B	1.50 – 1.74	D
2.75 – 2.99	B-	1.25 – 1.49	D-
2.50 – 2.74	C+	< 1.24	F

Got it solidly!	4
Mostly got it. (Understand the idea well, but sometimes make small mistakes or get confused by subtleties.)	3
Making progress. (Definitely understand it somewhat, but still have misconceptions, gaps in knowledge, or make serious mistakes.)	2
Starting out. (Know a little bit about this, but not enough to really use it for anything.)	1
Nothing yet. (Have no idea what this is.)	0

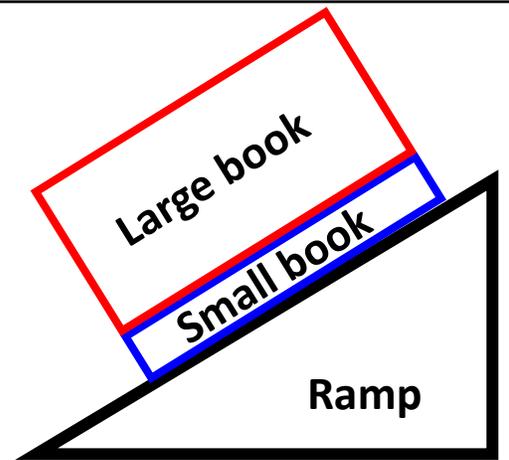
I have the right to adjust thresholds should this system prove too lenient or harsh in practice.

Here is an example of an assessment question used to evaluate multiple learning objectives:

Question:

A small book sits at rest on a ramp that slopes down and to the left. On top of the small book is a large book, also at rest.

- Draw a free-body diagram for both books and indicate all third-law pairs.
- Compare the magnitude of the normal force on the large book by the small book to the magnitude of the gravitational force on the large book by Earth. Specify which, if either, is larger.
- Compare the magnitude of the friction force on the large book by the small book to the magnitude of the friction force on the small book by the large book. Specify which, if either, is larger.



Rubric: The learning objectives for this question are listed, along with the criteria for a student to obtain a proficient score for each question.

Newton's Laws of Motion: Standard 2	I can draw the free-body diagram for an object based on a description of its situation, indicating the directions of all the forces, and identifying their types and what interaction with another object each is due to.
4	Got it solidly: if all forces shown and all forces are correctly labeled (type and direction).
3	Mostly got it: if all forces shown and only one is mislabeled.
2	Making progress: if missing one or two forces or have more than one force mislabeled.
1	Starting out: if missing more than two forces.

Newton's Laws of Motion: Standard 1	I can relate the net force on an object to the various individual forces that act upon it.
4	Got it solidly: if explained that the normal force on the large book by the small book is smaller than the gravitational force on the large book by the Earth after breaking the gravitational force into its components (i.e., the normal force is not always equal to mg).
3	Mostly got it: if recognized that the two forces are not equal because the forces are not in opposite directions.
2	Making progress: if recognized that the forces are not in opposite directions, but not sure what to do beyond that.
1	Starting out: if can only state "I think that is how it works on a ramp."

Newton's Laws of Motion: Standard 4	I can identify action/reaction force pairs within systems of interacting objects and use Newton's Third Law to relate their magnitudes and directions.
4	Got it solidly: if all third-law pairs are identified and correctly matched up (i.e., explain that the two friction forces and normal force between the two books are the same, respectively).
3	Mostly got it: if able to identify both action/reaction force pairs, but explanation is missing key components (i.e., must include same type, interaction between same two objects, opposite direction, <u>and</u> appear on different free body diagrams).
2	Making progress: if only able to identify one action/reaction force pair with explanation.
1	Starting out: if only able to identify one action/reaction force pair with no explanation.