

Personalized Learning Update

What is included in the update?	1
Did s/he watch one main lecture and one solution lecture each week?	2
Did s/he complete other tasks?	3
Did s/he utilize multiple attempts and follow the feedback to make corrections within the one-week window?	5

What is included in the update?

In each update, we include the homework score for each of the past weeks up to the one due last Friday. The full score for each homework is 5.0. And missing score means the student did not attempt that homework. Below is an example from one student. For all homework, the full score is 5.0. A percentage score is also included for your reference.

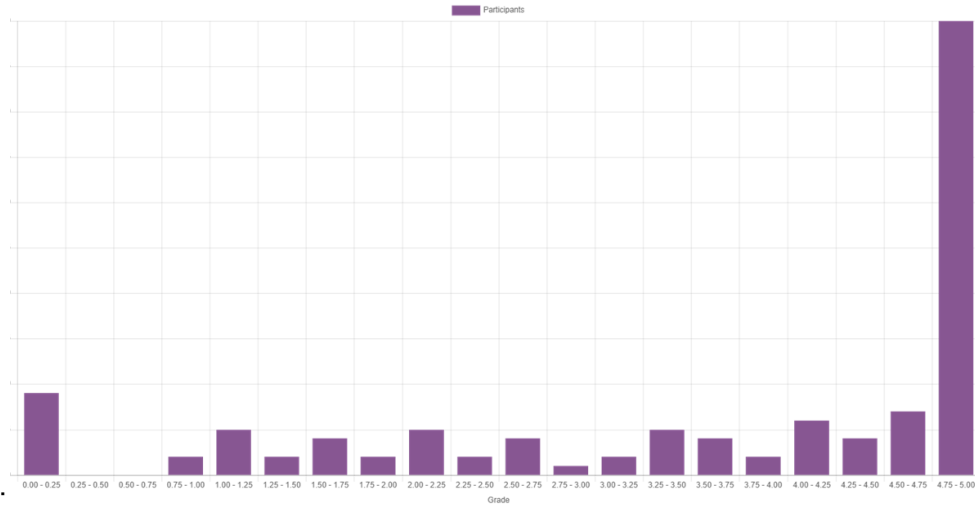
For example student 1

week #	01	02	03	04	05	06	07	08	09	10	11	12
lesson	1A	1B	1C	1D	2A	2B	2C	2D	3A	3B	3C	3D
homework score	5.0	5.0	5.0	5.0	5.0	4.6	5.0	5.0	5.0	4.9	4.9	5.0
score %	100	100	100	100	100	93	100	100	100	98	98	100

Student 2:

week #	01	02	03	04	05	06	07	08	09	10	11	12
lesson	1A	1B	1C	1D	2A	2B	2C	2D	3A	3B	3C	3D
homework score	4.7	4.3	3.7	4.0	4.3	4.4	4.0	5.0	3.7	1.5	3.9	4.5
score %	94	86	73	80	86	89	81	100	74	30	79	90

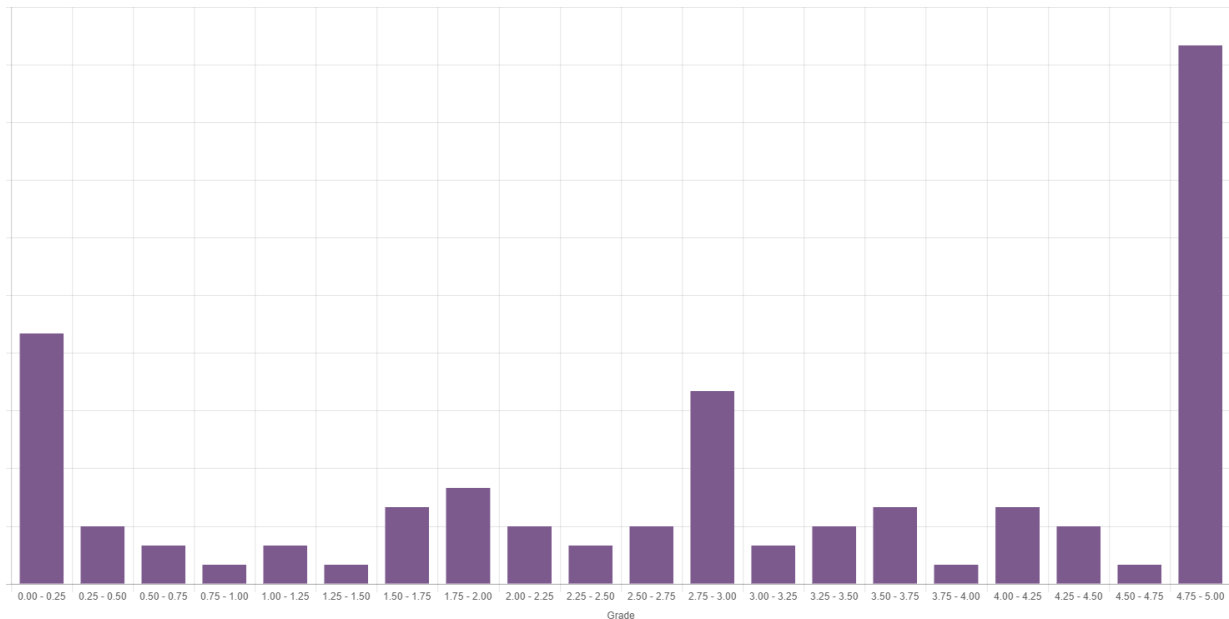
The following histograms illustrate the typical distribution of homework scores. The majority of the students scored higher than 95%.



Assignment 2D:

Some students didn't get enough time to do the homework and resulted in a peak at the score of 0 in the histograms. Please makeup when we reopen the assignments a few weeks after the due date.

Assignment 3D: the hardest assignment in Mechanics One.



How to improve your performance and learn more efficiently?

Again, a student should not just learn for exams and scores. But a low score indicates your student needs help. Please be considerate and supportive when talking to your child about this. If the score is challenging, here are some aspects you may check with him/her.

Did s/he watch one main lecture and one solution lecture each week?

Our main lectures are posted every Friday. Students are encouraged to watch and study them over the weekend. Some students spend hours watching each main lecture, frequently pause,

think and take notes along the way. Prof. Man spends an extremely large effort and hours to produce the main lecture, which focuses on inquiry-based learning, with emphasis on why and how. Even if a student may have learned a concept elsewhere, s/he will still greatly benefit by studying each main lecture thoroughly.

One review-and-solution video is posted every week. Digesting that video can help you to avoid common mistakes and build a strong foundation for understanding the next main lecture.

Did s/he complete other tasks?

If you let your student log in to our learning platform, you will find an “**Overall checklist for the whole semester**” at the beginning of the course page. The participation of your student for the whole semester. There is also a separate checklist for each week that only shows the contents of that particular week. Of course, we only track if a student has “opened” the lecture video or not, but we can’t tell if a student was really focusing on the lecture.

Procrastination has a second name, “student syndrome”. Pretty much everybody procrastinates. The way to get important but not urgent tasks done is planning. Work with your child to set aside a fixed time slot for each week to work on this course, for example, 2 hours each Saturday morning. Once something became a routine, it will much easy to follow and your student will achieve amazing results in long run.

Required items: 92%
All items: 72%

21 May - 27 May

- ☒ Main lecture M01A
- ☒ Assignment M01A (Due 05/28 Friday at noon)
- ☐ *Class Discussion Forum week1*
- ☒ M01A Notes
- ☒ M01A Assignments
- ☒ Checklist of week 1

28 May - 3 June

- ☒ Main lecture M01B
- ☒ Assignment M01B (Due 06/04 Friday at noon)
- ☒ Review & Assignment solution lecture M01A
- ☒ Week 2
- ☐ *Class discussion week 2*
- ☒ M01B Notes
- ☒ M01B Assignments

4 June - 10 June

- ☒ Main lecture M01C
- ☒ Review and Assignment solution lecture M01B
- ☒ Assignment M01C (Extended till Sat. 06/12 at noon)
- ☒ Check list of this week
- ☐ *Class discussion week 3*
- ☒ M01C Notes
- ☐ M01C Assignments
- ☒ M1Live01ppt
- ☒ Recorded live lecture M1Live01

11 June - 17 June

- ☒ Main lecture M01D
- ☐ Review and solution M01C
- ☒ Assignment M01D (Due 06/18 Friday Extended till 11:59 PM)
- ☐ Check list of week 4
- ☐ *Class discussion forum week 4*
- ☒ M01D Notes
- ☒ M01D Assignments

18 June - 24 June

- ☒ Main lecture M02A

Most students finish 90% of the **required items**: the main lecture, the assignment of each week, the review and solution lecture, and the biweekly live lecture (or the recorded live lecture). Many students also study the pdf files of weekly notes and assignments. Some participate in forum Class discussions routinely. Those items are not required.

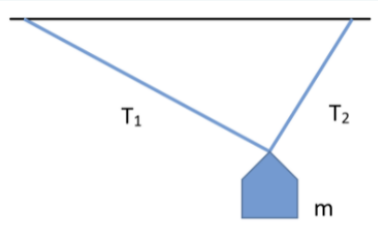
Did s/he utilize multiple attempts and follow the feedback to make corrections within the one-week window?

In order to allow students to think independently and learn to correct mistakes, each assignment has three attempts. These classic homework questions are designed with many "traps" in response to common misunderstandings and confusions. It's not a bad thing to answer wrong the first time. Through a mistake, students can have the opportunity to think about why this is wrong and how to correct it. This way the student can truly understand it. We encourage students to keep trying until they get the highest possible score. So we only count the highest score (not the average score) in multiple attempts.

You have unlimited chances to **"finish the attempt"** to save what you have done so that you can come back and continue later. You **have three chances to "submit"** your attempts for grading.

After you submit once, within each question, you will see whether your answer is correct. More importantly, you will see detailed feedback written by professor Man for each question. You should use that to make corrections or to summarize your problem-solving strategies. Depending on the different choices you made, the feedback explains why that choice is incorrect to clarify your confusion or misunderstanding.

A box of mass m is suspended from two strings of unequal length as shown. The magnitudes of the tension T_1 and T_2 in the string must satisfy which of the following relations?



- ☐ $T_1 > T_2$
- ☒ $T_1 + T_2 = mg$
- ☐ $T_1 < T_2$
- ☐ $T_1 = T_2$

✗ T_1 and T_2 are not in the vertical direction. They can't be added directly. We need to treat the x-components and y-components separately. The sum of the y components (vertical ones) of T_1 and T_2 balances mg .

Your answer is incorrect.

Recall a similar problem in 3B, which is explained in the main lecture of 3C. Please watch that again if you forget. The two horizontal force components need to be balanced. T_1 is more horizontal. T_2 is less horizontal.

How can T_{1x} be the same as T_{2x} ? which force needs to be stronger?

Vertically, the sum of T_{1y} and T_{2y} equals mg .

A rocket, initially at rest, is fired horizontally with a horizontal acceleration of 12 m/s^2 . If the rocket is fired from a cliff 80 meters high, what is the distance in meters between the landing location and the bottom of the cliff? (Note: use $g=10 \text{ m/s}^2$).

- ☐ a. 96
- ☐ b. 100
- ☒ c. 48



After you find the time traveled vertically, you tend to consider that $\Delta x = v_{0x} t$, thinking that the object keeps the same velocity horizontally (when air resistance is ignored). But this is a rocket. It can receive a forward reaction force when it pushes gas backward. It says the rocket has a constant acceleration along the horizontal direction. So, the displacement in the x-direction = $v_{0x} t + 1/2 a_x t^2$. v_{0x} is zero here. 12 m/s^2 is the accelerator, not velocity.

- ☐ d. 120
- ☐ e. 72

Your answer is incorrect.

We are used to the situations in which the acceleration in the x-direction (horizontally) is zero.

In this case, the rocket keeps pushing gas horizontally backward and gets a push force horizontally.

So it has acceleration both in the x-direction and y-direction (due to gravity).

We know we should treat the x-direction and y-direction motion separately. We just need to consider constant acceleration motion equations for the x-direction, as well.

a_x is given and it doesn't change.

Based on the feedback, you can attempt the assignments again. You have three chances to "submit" your attempts. Please use those opportunities to make corrections and digest the feedback. That is the most efficient way to improve. This way, a diligent student should be able to learn from the mistaken and detailed explanation by Prof. Man right after the first attempt and get much-improved scores during the second and third attempts.

Everyone should use a paper notebook for taking notes and doing assignments. You can also print the pdf files of each assignment and write on them. Keep your force analysis drawing, equation sets, final answer, and calculation details on paper, so that given the feedback, you can easily check which part was incorrect. During your second attempt, you can quickly input the final answers to those correct questions and focus on the incorrect ones.

For each mistake you make, please document in your notebook: 1, What was the mistake (be specific and detailed)? 2, Why was it incorrect (Clarify the reason so that you can avoid the same mistake later.)? 3, How to make corrections? 4, What did I learn from this mistake?

Started on	Saturday, 7 August 2021, 10:20 PM
State	Finished
Completed on	Saturday, 7 August 2021, 10:23 PM
Time taken	2 mins 43 secs
Marks	3.00/20.00
Grade	0.75 out of 5.00 (15%)

Question 1
Incorrect
Mark 0.00 out of 1.00
Flag question

A 2.0-kg mass (m_A) and a 3.0-kg mass (m_B) are connected by a light string which is over a frictionless pulley.

Find the magnitude of the acceleration ✗ m/s^2

Find the tension inside the string. ✗ N

P.S. In your paper notebook, please try to derive the formula for the magnitude of the acceleration as a function of m_A , m_B , and g . Please try to derive the formula for the tension as a function of m_A , m_B , and g .
Please think about what will happen, if $m_B = m_A$? What if $m_B = 2m_A$?
What if $m_B \gg m_A$? (for example what if m_A is zero?)

Please follow the pulley example in the lecture. This is a little easier, since there is no normal force nor friction force here.
You can consider A and B separately as the object of interest. Each one of them only receives two forces. A receives $m_A g$ and T_A . You can call the tension T_A or $T_{\text{from B}}$.
Combine the tension and the mg (two forces) acting on object A equals m_A multiplied by a_A .
Combine the two forces acting on object B equals m_B multiplied by a_B .
Don't forget since the string length is fixed, when A moves 3 cm, B also moves 3 cm. So they have the same speed and the same magnitude of acceleration. You need to be careful about the positive or negative signs.

Quiz navigation

1	2	3	4	5	6	7	8	9
					✓	✓		
10	11	12	13	14	15	16	17	
✓								

Finish review

Every time you submit, you will get instant grading and feedback (except for the essay part of open-ended discussions). For those text discussions, students in group 1 will get individual personal written feedback from Professor Man typically within a few days after the due date. Every student will get general feedback and detailed explanations in the homework solution video.

For inline multiple-choice questions represented by a drop-down menu, **the correct answer is shown when a mouse pointer is over the ✗** as shown below.

Question **3**

Partially correct

Mark 0.75 out of 3.00

Flag question

Edit question

Two people are pulling on the ends of a light rope. Each person pulls with a force of 100 N. The tension in the rope is ✖

A light rope hangs from a hook on the ceiling. A weight of 100 N hangs from the rope. Nothing moves. What is the tension in the rope? (The mass of a light rope is negligible.)

✔

Incorrect

Incorrect

The correct answer is: 100 N

Mark 0.00 out of 1.00

Summary

The quiz in our learning platform not only tests how well a student grasps the complicated physics concept and masters the problem-solving skills but also measures a student's self-discipline, time management, and ability to learn from mistakes.

We don't know what our kids do in the future or what jobs will look like decades later. But we know a person who can learn by himself/herself will adapt to change and prosper in the future.