

Flipped Classroom Lesson Plan Template

Lesson Title	Periodic Motion and the Pendulum
Course	Introductory Physics
Date	Fifth week of course

Learning Objectives

Students will be able to explain the concept of periodic motion and relate it to the movement of a pendulum.

Student Learning Resources at Home

Have students view the video/presentation found at: <http://ed.ted.com/on/lcDXItbl#watch>

Students can find more information on periodic motion and pendulums posted in the “dig deeper” section found at: <http://ed.ted.com/on/lcDXItbl#digdeeper>

Student Learning Activities at Home

Have students submit answers to the general questions found in the “think” section found at: <http://ed.ted.com/on/lcDXItbl#review>

1. What is a pendulum?
2. What is simple harmonic motion?
3. Where is velocity the greatest in a swinging pendulum?
4. Where is the restoring force the greatest in a swinging pendulum?
5. What is angular frequency?

Classroom Activities

0-10 min: Students will break into five groups to discuss their answers to one of the five questions related to the video viewed at home. Students will present their information by group to the class.

10-30 min: Interactive demonstration of the motion of a pendulum. Apply simple harmonic motion, velocity, restoring force, angular frequency to demonstration. Ask students for predictions and explanations of concepts learned at home (ex. Ask students to list other examples of periodic motion: person on a swing, grandfather clock, etc.).

30-50 min: Give students worksheet to apply formulas and answer questions related to frequency, amplitude, displacement, angular frequency, etc. Allow students to work in unassigned groups/with neighbors. Ask students to volunteer to write worksheet answers on board.

50-60 min: Hand out post-quiz to be completed before leaving class. Ask students to apply formulas and concepts of periodic motion.

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Assessment

Diagnostic assessment:

Before class, log in to check if students have viewed the video/presentation found in the Activity-Lessons section of Ted Ed. Review student responses to the five open ended questions assigned and provide feedback if necessary.

Formative assessment:

Walk around the classroom to answer individual student questions during break-out activity from 0-10 min and worksheet activity from 30-50 min. Have students volunteer to write answers to worksheet questions on the board. Briefly go over each question with the class and address any further questions.

Summative assessment:

Distribute post-quiz, include topics related to frequency, amplitude, displacement, angular frequency, etc.