

Quizzes (Fall 2026)

PHYS 203B-001: COLLEGE PHYSICS

School of Physics and Applied Physics, Southern Illinois University–Carbondale

Due date: At 12:30 PM before each class, on D2L

Instructions

- This document collects the quizzes for the complete semester. One question below is due on each day of lecture.
- Assessment of quizzes does not look for correctness. Instead, it expects you to be critical and creative.
- The questions are conceptual. They might be open ended, thus, it is not recommended to spend more than ten minutes on a question. You are encouraged to ponder about it though.
- After completion, scan the pages as a single PDF file, and submit the file on D2L (under Assignments). The question number syntax Q-MMDD is derived from date of lectures. The deadline has an (undisclosed) buffer period, so do not hesitate to try submissions after the deadline.

Questions

Electric charge and electric forces

(Q-0818:) Watch the following YouTube video by Bruce Yeany

<https://youtu.be/jcoTqhXehDQ>

https://youtu.be/U6bKDaZiy_k

to gain insight on how we can manipulate the electric charges in materials. Explain the demonstration using the idea of transfer of charges.

(Q-0820:) A charged conducting sphere is brought close to another neutral conducting sphere. (The spheres are not allowed to touch.) Is the electric force between the spheres zero? If not, is the force attractive or repulsive?

Check out the following presentation at Jefferson Lab,

<https://youtube.com/embed/n3tauzN6-Uk?start=150&end=332>,

that demonstrates this effect between timestamps 2:30 to 5:32 minutes.

(Not for submission:) Check out videos related to the Palais de la Découverte (‘Discovery Palace’), a science museum located in the Grand Palais in Paris. For example, check out the presentation

https://youtu.be/seaCEEg_FGw?start=1425&end=1600.

[They are mostly in French. For subtitles in English in YouTube, pause the video, click on the ‘wheel’ for settings, and select English as the language for Captions.] Explain how a lightning rod protects a structure from a lightning strike.

Electric field

(Q-0825:) The following is a video illustrating the idea of Faraday cage in the SPARK Museum of Electrical Invention in Bellingham, Washington,

<https://youtu.be/uAJfw3tALbI>.

A perfect Faraday cage shields one from electric force. Imagine ways to shield from gravitational force.

(Q-0827:) The following is a short 3D animation from the Physics and Astronomy Animation Project at Penn State Schuylkill,

<https://youtu.be/LB8Rhcb4eQM>

Sketch the electric field lines of three identical positive charges at the corners of an equilateral triangle. Repeat the exercise after you replace one of the positive charge with a negative charge.