



Bringing a Lab Class Online with JoVE Videos

Tips from the Field on a Remote Instruction Laboratory

By: Kathryn Allen Ph.D., Assistant Professor of Chemistry, Millersville University

As institutions around the world move to remote instruction, faculty who lead laboratory based classes find themselves in an increasingly difficult position to teach material that is normally focused on in-person and hands-on practice. We have spoken with one professor making this transition to share an example of how to take a lab lesson online, making use of a JoVE video to remotely demonstrate a process that is traditionally completed on campus.

These suggestions are based on a 100-level General Chemistry course that incorporates a 2 hour lab, 1 hour recitation, and 3 hour lecture each week. The course is General Chemistry II and explores the basic concepts of kinetics, thermodynamics, solubility, acid-base chemistry, and electrochemistry.

#1

Select a JoVE video

Select a video based on current lecture/lab topics. I selected [Determining the Solubility Rules of Ionic Compounds](#) from the Science Education Chemistry Series because we are discussing solubility and qualitative analysis in lecture; this video describes this process in the laboratory. A simple keyword search on JoVE within the subdivision of interest leads to videos that may align with your lecture topic.

#2

Put together a handout that asks questions related to the video and its content

I focused on principles introduced in this video, but also asked questions about techniques such as centrifugation and decanting. For example:

1. Describe what would happen if a centrifuge isn't balanced before being run (hint: what happens to an unbalanced washing machine)?
2. Given a mixture of chloride ion and phosphate ion, suggest how you might separate the two ions using solubility rules using any nitrate salt. Use a K_{sp} table to help you analyze this problem.

#3

Record a pre-lab lecture on PowerPoint

I recorded myself talking through a few key points on solubility and qualitative analysis. This PPT was less than 15 minutes and just served to introduce two things:

- What is qualitative analysis?
- How do solubility rules work to separate ions?

#4

Assign your students to watch the video and read the article

Please note: there are multiple ways to set up remote access for yourself and your students to JoVE videos. Please [view this guide](#) for more information.

#5

Provide students with the handout

"Don't stress if the lab doesn't hit all your learning objectives or if you feel the handout is too short, just find something FUN and INTERESTING and level appropriate and take advantage of the fact that JoVE has content laid out for you all ready to go." - Kathryn Allen Ph.D

