Resources for Online Science:

Virtual Labs/Interactive Quizzes/Videos/Worksheets

If you need help finding specific resources, feel free to email Siddharth Ramakrishnan sramakrishnan@bmcc.cuny.edu , Director of Research or Eliza Osae-Kwapong eosaekwapong@bmcc.cuny.edu, Instructional Designer/Data Manager (e-Learning)

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General Resources for All Disciplines

- **Freely available Data Sets :**
    - https://portal.brain-map.org/ - Neuroscience
    - https://www.usgs.gov/products/data-and-tools/science-datasets - Population genetics, Ecology, Geosciences
    - Ecological/Conservation Data: http://lila.science/

- **Interactive Quizzes for all:** https://www.softschools.com/quizzes/
- JOVE Journal of Visual Experiments: https://www.jove.com/journal
- **Models:** https://www.explorelearning.com/index.cfm?method=Controller.dspFreeGizmos
- PHET offers interactive simulations for Physics, Chemistry, Biology, Earth Science & Math that allows students to vary parameters. Simulations can be embedded in your course in Blackboard. **E.g. Build an Atom.** Here students can build an atom out of protons, neutrons, and electrons, and see how the element, charge, and mass change. They can then play a game to test their work.
- **Using Case studies for Student Projects:** https://sciencecases.lib.buffalo.edu/
- **Virtual Labs for different topics:** https://learningcenter.nsta.org/mylibrary/collection.aspx?id=ldPT0QtbY/w_E (Note - The first few links do not work. The virtual microscopes, rutgers site, wow labs,Gel electrophoresis, DNA extraction works)

- **Simulations in Math and Science:** http://www4.esc13.net/instructional-technology/virtual-sims/ (Note: Links that definitely work - Topology and geometry software , Math and physics applets, Virtual laboratories in probability and statistics , https://lstat.kuleuven.be/newjava/vestac/, Seeing statistics, Visual fractions, http://polymer.bu.edu/ogaf/, Mathematical ideas in science , https://www.nctm.org/mathforum/, Memory, https://reglos.de/musinum/, http://polymer.bu.edu/vmdl/#, Dave's geometric pix gallery, Building big, MASTER tools, Chickscope, The Visible Human Project , Virtual frog dissection kit , Cells Alive!, Virtual microscopy , NOVA hot science , Fear of physics , Becoming human, BioInteractive, A science odyssey , Amazon interactive, Solar system simulator, Human anatomy online , MathMol modules concepts in science through molecular modeling, Molecular expressions , Mock Trials , The Great Flu. Bricks or Clicks., The POD Game., Aftermarket profit potential., Nursing simulation.,)

- **Video Tutorials**
    - ★ YouTube has a large library of video tutorials
    - ★ Khan Academy also has a large library of video tutorials and interactive practice exercises: https://www.khanacademy.org/
- **Virtual Labs: Biology, Physiology, Computer Programing, Virtual Urchin, Chemistry, Microbiology, Earth Science, Anatomy & Physiology** https://www.merlot.org/merlot/materials.htm?keywords=virtual+labs&sort.property=relevance

Other Discipline Specific Links

Astronomy

- **Virtual Labs**: https://astro.unl.edu/vlabs/
- **OER**
    - ★ Text, Videos, Websites: https://openstax.org/details/books/astronomy

Biology

- http://onlinelabs.in/biology From microscopy to Population dynamics and animal behavior
- More introductory Biology Labs : http://bio.rutgers.edu/~gb101/virtuallabs_101.html
- Comparative Anatomy : http://www.eskeletons.org/
- Different Labs and Lesson Plans: https://www.labxchange.org/explore
- Bio Libre: Text, Virtual Labs, Downloadable homework files, Worksheets https://bio.libretexts.org/

Chemistry

- **Virtual Lab** provides lessons with lab simulations and short quizzes that focus on Chemistry topics.

Example:
http://www.mrpalermo.com/virtual-lab-precision-and-significant-figures.html

- **Nuclear Chemistry Virtual Lab**: Lab manual, worksheet and simulation. https://www.uccs.edu/vgcl/nuclear-chemistry
- **Interactive Quizzes**
  - ★ https://www.softschools.com/quizzes/chemistry/
  - ★ https://education.jlab.org/elementflashcards/

- **OER**
  - ★ **Lumen Learning:** Text and Exercises https://courses.lumenlearning.com/suny-introductory-chemistry/
  - ★ **Chem Libre:** Text, Virtual Labs, Downloadable homework files, Worksheets https://chem.libretexts.org/Courses/University_of_Arkansas_Little_Rock/Chem_1403%3A_General_Chemistry_2
- **Video Tutorials:** YouTube has a large library of video tutorials.
  - ★ The Organic Chemistry Tutor is one of the best on YouTube: https://www.youtube.com/channel/UCEWpbFLzoYGPfuWUMFPSaoA

★ Tyler Dewitt is one of the best on YouTube: https://www.youtube.com/channel/UCj3EXpr5v35g3peVWnVLoew

Engineering

- Simulations - Use drop down menu on right top for picking topic of interest http://engineertech.org/courses/ac-circuit-analysis/?submit=view
- https://virtuallabs.merlot.org/engineering/index.html

Geology

- Online simulations - earthquake, dating, river https://www.sciencecourseware.org/GLOL/
- Resources for different simulations and models: https://serc.carleton.edu/NAGTWorkshops/online/lab_activities.html
- http://onlinelabs.in/geology

Mathematics

- Some simulations and exercises: http://onlinelabs.in/math
- Live stream of *Ask Math Questions*: https://www.poshenloh.com/live/

Physics

- **OER**
  - ★ Physics Libre: Text, Virtual Labs, Downloadable homework files, Worksheets https://phys.libretexts.org/
- **Virtual Labs:** https://phet.colorado.edu/en/simulations/category/physics

Psychology

- Demonstrations and simulations: https://opl.apa.org/
- Cognitive Psychology: https://psych.hanover.edu/JavaTest/CLE/Cognition/Cognition.html
- More demonstrations in Psychology: https://psych.hanover.edu/Krantz/tutor.html