

COURSE CODE: LBYPHO1

COURSE TITLE: Fundamentals of Physics Laboratory: Mechanics

DEPARTMENT: Physics

TEXTBOOK:

- Manual of each experiment can be found in the AnimoSpace in Canvas course.

READING LIST/ ONLINE RESOURCES:

- Physlets at University of Colorado, Boulder.  
<https://phet.colorado.edu/en/simulations/category/physics>
- Phyphox (remote measurement):
  - <https://phyphox.org/remote-control/>
  - [https://www.youtube.com/watch?v=mPUHCW\\_ypn9M](https://www.youtube.com/watch?v=mPUHCW_ypn9M)
- Arduino Science Journal: <https://support.arduino.cc/hc/en-us/sections/360004584459-Science-Journal-App>
- Errors and Acoustics: <https://phyphox.org/experiment/acoustic-stopwatch/>
- Simple Pendulum:
  - [https://phyphox.org/wiki/index.php/Experiment:\\_Pendulum](https://phyphox.org/wiki/index.php/Experiment:_Pendulum)
  - <https://www.youtube.com/watch?v=xY3NFCdG3ZU>
- MATLAB Academy (campus-wide license): <https://matlabacademy.mathworks.com/>
  - Matlab Onramp: <https://matlabacademy.mathworks.com/details/matlab-onramp/gettingstarted>
  - Matlab Fundamentals: <https://matlabacademy.mathworks.com/details/matlab-fundamentals/mlbe>

READING LIST/ TEXTBOOK REFERENCES:

- Halliday, D., Resnick, R: and Walker J. (Latest Edition). Fundamentals of physics. New York: John Wiley and Sons.
- Jones, E., Childers, R. (Latest Edition), Contemporary college physics. Boston: Mc-Graw Hill Companies, Inc.
- Serway. R.A., and Beichner, R. J. (Latest Edition). Physics for Scientists and Engineers with Modern Physics. Orlando, Florida: Saunders College Publishing.
- Young , H. and Freedman, R. (Latest edition). University Physics with Modern Physics + Mastering Physics with eText access card. Pearson.

REQUISITE EQUIPMENT/MATERIALS FOR THE COURSE:

- Smartphone that can install the Physics Apps listed below.
- Physics Experiment Mobile Apps (freeware)/Software (online):
  - PHYPHOX <https://phyphox.org/download/>

- Arduino Science Journal <https://www.arduino.cc/education/science-journal>
  - KSTools
    - Android: <https://play.google.com/store/apps/details?id=de.appzer.kstools&hl=en>
    - OS: <https://apps.apple.com/us/app/kstools-com-tools-and-more/id909742373>
  - Physics Toolbox Sensor Suite (supplementary) <https://www.vieyrasoftware.net>
  - Matlab Mobile (Android): [https://www.mathworks.com/help/matlabmobile\\_android/ug/install-matlab-mobile-on-your-device.html](https://www.mathworks.com/help/matlabmobile_android/ug/install-matlab-mobile-on-your-device.html)
  - Matlab Online: <https://www.mathworks.com/products/matlab-online.html>
- PC with internet access (remote monitoring, data acquisition, and plotting)
  - Tape measure or meterstick
  - Ruler
  - Adhesive tape

For Simple Pendulum Experiment:

- Paper tube (tissue tube) or small plastic bag (support for your phone)
- Rubber band (if you are using the paper tube)
- String