

Abstract Submitted  
for the PHYSTC22 Meeting of  
The American Physical Society

**Better Support for Students in Classical Mechanics Through a Flipped Classroom Approach**<sup>1</sup> JULIE BUTLER, Michigan State University, MORTEN HJORTH-JENSEN, Michigan State University and University of Oslo — In many undergraduate physics curriculums classical mechanics is often the first “real” physics class that students take. A combination of advanced concepts and mathematics makes this a difficult class for many students considering a physics major. In addition, Michigan State University is making a push to integrate Python programming into its undergraduate physics curriculum, adding another skill that students in classical mechanics need to learn. The goal of this project presented here is to reformat the traditional lecture style presentation of classical mechanics at Michigan State University to provide students in classical mechanics with better support through a flipped classroom approach to presenting the concepts, as well as the related mathematical and Python programming concepts. This presentation will go through the process of transitioning the classical mechanics course as well as how we incorporated a hybrid approach to the class to be mindful of those students who cannot or prefer not to attend class in person. We will also discuss how we work with undergraduate learning assistants to provide more assistance to students outside of class and will present surveys of students in the class to determine the effectiveness of the modified approach.

<sup>1</sup>This work is supported by the U.S. National Science Foundation under Grants No. PHY-1404159 and PHY-2013047.

Julie Butler  
Michigan State University

Date submitted: 28 Dec 2021

Electronic form version 1.4