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Classical Mechanics with Computational Physics in the Undergraduate Curriculum J.E. HASBUN, University of West Georgia — Efforts to incorporate computational physics in the undergraduate curriculum have made use of Matlab, IDL, Maple, Mathematica, Fortran, and C[1] as well as Java.[2] The benefits of similar undertakings in our undergraduate curriculum are that students learn ways to go beyond what they learn in the classroom and use computational techniques to explore more realistic physics applications. Students become better prepared to perform research that will be useful throughout their scientific careers.[3] Undergraduate physics in general can benefit by building on such efforts. Recently, I have developed a draft of a textbook for the junior level mechanics physics course with computer applications.[4] The text uses the traditional analytical approach, yet it incorporates computational physics to build on it. The text does not intend to teach students how to program; instead, it makes use of students' abilities to use programming to go beyond the analytical approach and complement their understanding. An in-house computational environment, however, is strongly encouraged. Selected examples of representative lecture problems will be discussed. [1] "Computation and Problem Solving in Undergraduate Physics," David M. Cook, Lawrence University (2003). [2] "Simulations in Physics: Applications to Physical Systems," H. Gould, J. Tobochnik, and W Christian. [3] R. Landau, APS Bull. Vol 50, 1069 (2005) [4]J. E. Hasbun, APS Bull. Vol. 51, 452 (2006)

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