

Abstract Submitted  
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**An undergraduate course, and new textbook, on “Physical Models of Living Systems”**<sup>1</sup> PHILIP NELSON, Univ Pennsylvania — I’ll describe an intermediate-level course on “Physical Models of Living Systems.” The only prerequisite is first-year university physics and calculus. The course is a response to rapidly growing interest among undergraduates in several science and engineering departments. Students acquire several research skills that are often not addressed in traditional courses, including: basic modeling skills, probabilistic modeling skills, data analysis methods, computer programming using a general-purpose platform like MATLAB or Python, dynamical systems, particularly feedback control. These basic skills, which are relevant to nearly any field of science or engineering, are presented in the context of case studies from living systems, including: virus dynamics; bacterial genetics and evolution of drug resistance; statistical inference; superresolution microscopy; synthetic biology; naturally evolved cellular circuits. Publication of a new textbook by WH Freeman and Co. is scheduled for December 2014.

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