

Abstract Submitted
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A course on physical models of living systems PHILIP NELSON,
Univ Pennsylvania — What is a “Physical model” of a biological system? Are such models valuable for students? I’ll describe some mechanical systems incorporating feedback control: the governor, toggle, and relaxation oscillator. Students who understand these systems at a tactile level, seeing them in action in the classroom, gain a better understanding of control networks arising in cellular homeostasis, program switching, and the cell cycle respectively. Moreover, I’ve found that some students respond better to physical ideas when they are motivated by biological examples; in this light, studying physical models of living systems can actually enhance learning of physics itself. I’ll give details of an undergraduate course dedicated to topics like these, which attracts students from many different majors, and describe resources I’ve made available for constructing such courses.

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