A hands-on course in the theoretical dissection of biological phenomena

SEPTEMBER 18 TO OCTOBER 8, 2016

Biology is changing at a dizzying pace with a host of technologies now making it possible to quantitatively query biological phenomena in ways that were previously unimaginable. The aim of this course is to respond to such quantitative data with quantitative models. The course will explore the description of a broad array of topics from modern biology using the language of physics and mathematics. One style of thinking we will emphasize imagines the kinds of simple calculations that one can do with a stick in the sand. We will draw examples from broad swaths of modern biology including cell biology (signaling and regulation, cell motility), physiology (metabolism, swimming and flight), developmental biology (patterning of body plans, how size and number of organelles and tissues are controlled), neuroscience (action potentials and ion channel gating, vision) and evolution (population genetics, biogeography). This course is aimed at those interested in learning more about how to construct theoretical models of biological systems as well as the use of computational tools to simulate and test the predictions of those models.

APPLICATION DEADLINE JUNE 21, 2016

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