



Physical Biology

BIOHOPK 320

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Units 3: Graduate Level

Instructors:

Mark Denny & Manu Prakash

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Hopkins Marine Station,
Pacific Grove

* To be admitted to the class, contact Mark
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The principles of physics and engineering can be applied to answer a wide variety of important questions in biology. For example, these principles can help to explain why plants and animals are the size and shape they are, how the environment affects body temperature, how animals move, and why biological materials behave as they do. However, despite the potential for physical principles to provide biological insight, they are underrepresented in the curricula of both engineers and biologists. In this course, we will take a project oriented approach towards remedying this situation by bringing together graduate students in engineering and biology for an intensive, two-week, hands-on experience in the application of physical biology.

Lectures will introduce specific topics (e.g. the formulation of heat-budget models, the principles of low-Reynolds-number locomotion, role of interfacial forces, the physics of soft materials), and students will then use that information to conduct experiments both in the field and laboratory.

The class is taught at Hopkins Marine Station in Pacific Grove (90 miles south of Palo Alto), and housing is provided for students not already resident at the Station. There are no formal requirements for the course; we assume that engineering students in the class will assist the biologists with math and physics, and that biology students will assist the engineers with the biology.