FIG: Modeling Life

Physics 199; CRN 16824; Fall 2014

Syllabus

Introduction

Welcome to UO! This FIG ties together two introductory-level courses that might at first glance seem very dissimilar: Computer Science 122 (David Wilkins) and Physics 171 (Raghuveer Parthasarathy). There’s a deep reason for this link, however: both physics and computer science have changed the way we look at the living world, in ways that are currently still in flux. We’ll look, in a non-technical way, at models of biological systems ranging from huddling penguins to swimming bacteria, also examining the many meanings the term “model” has. Beyond expanding our intellectual horizons, and learning about tools and fields of study that didn’t exist a few decades ago, we’ll also help develop the resources you will need to thrive at Oregon.

Class Time

Fridays 2:00-2:50 pm, Willamette 112

Instructor

Professor Raghuveer Parthasarathy (Par-tha-sa-ra-thē)
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FIG Assistant

Jenna Boss
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Office Hours

Prof. Parthasarathy: Tues. 11:00-11:50am, Thurs. 11:00-11:50am.

Topics

Week 1: Introductions; Discussion of summer readings (microbes!); Physical models of huddling penguins

Week 2: What do models tell us (and not tell us)?

Week 3: Good models, bad models, ugly models.

Week 4: Science Library Activity

Week 5: How and why do bacteria swim? Maybe a lab tour.

Week 6: More models (physical and computational), especially involving bacteria.

Week 7: Four-Year Academic Planning

Week 8: Computational models of bacterial motion; imaging and a lab tour. OR Modeling bacterial interactions.

Week 9: Thanksgiving (no class)

Week 10: Final Project Presentations
**Grading**

This is a Pass / No Pass class. In order to pass you can miss *at most* one class, **and** you must have a satisfactory grade on *all* assignments.

Attendance is important, especially since this small, discussion-based class will benefit greatly from the active engagement of all of us in it. For this reason also, we will not allow the use of laptops or phones during class. If there are documented serious health-related or family-emergency-related reasons for absences, please inform Prof. Parthasarathy promptly.

**Assignments**

- There will be a short assignment most weeks, typically involving writing, related to the topic we’ve discussed. These will be graded as “satisfactory,” “needs improvement,” or “unsatisfactory.” Assignments in the second category might for example have minor lapses of clarity but are otherwise conceptually sound, and can be re-done to become “satisfactory.” Late assignments will not be accepted.
- There will be a final project for the term, which will be described later.
- A “getting acquainted” meeting with Prof. Parthasarathy, and (separately) a meeting with Fig Assistant Jenna Boss, are required early in the term; we’ll describe these later.

**Blackboard**

We will maintain a Blackboard site for this class, which will be your main source for course information, documents, and announcements. Make sure that you regularly check your Blackboard-linked e-mail account.

**Students with Disabilities**

If there are aspects of the instruction or course design that result in barriers to your inclusion, please notify Prof. Parthasarathy as soon as possible. You are also welcome to contact Disability Services in 164 Oregon Hall, 346-1155.