

Overview and guide to Swarthmore College laboratory materials

Catherine Crouch has developed three new laboratories to have significant biological content: optical instruments (split over two weeks, because of its length), electrocardiography, and nerve signaling. The rest of the lab curriculum covers fairly standard content, but has been largely adjusted (with a couple of exceptions) to reflect sound pedagogy, an emphasis on modeling and problem-solving, and the topics of greatest importance for the life sciences.

On this web site are provided:

- Editable files for the three new laboratories and for the introduction to the lab manual, including the schedule of all laboratories
- PDF files for all of the laboratories in a zip file
- Supporting materials for the electrocardiography lab (which involves the most unfamiliar material)
- Editable “Instructor Guides” for the three new laboratories, which describe the instructor’s presentation at the start of the laboratory period, as well as listing equipment required for the laboratory. These are still works in progress (as they were written initially for use just within Swarthmore) and so if you have further questions please don’t hesitate to send email to ask!

Available to instructors by email upon request:

- Solutions to associated problem-solving assignments

Structure of Swarthmore’s course:

At Swarthmore College, there are no scheduled discussion sections for science courses; there are three hours of lecture time and a weekly three-hour laboratory. The laboratory is a part of the course and so all students are in the laboratory as well as the lecture meetings. The typical enrollment in this course is 40-50 with students all together for the lecture, and divided into groups of 15-20 for the laboratory. Consequently, group problem solving has been built into the lab whenever possible.

Most of the labs are designed on a tutorial model, in which students work through a series of scaffolded activities intended to use hands-on experiments to support them in thinking about and answering questions about the material, while a few are more design-oriented.