

College Physics is a very important sequence since many biology majors take it and later become high school science teachers. Since these future teachers are not physics majors, and may not be identified as future teachers while they are still at the university, it is very important to serve them well. The algebra-based sequence has not had previous NSF support, and has limited resources.

Background

The class meets three times a week for 50 minutes in a large group setting, once a week for 50 minutes in a medium group setting, and once a week for 110 minutes in a lab setting.

The large group setting (a “raked” lecture hall with approximately 200 students) allows for the kinds of things that can be done effectively in a large group. Definitions, vocabulary, and problem solving strategies can be provided. Peer instruction techniques, using infrared personal response devices, are used, as well as JiTT, with web-based homework and questions due before class.

The medium group setting (a “raked” lecture hall with 40-70 students) encourages students to ask questions that may have come up after lecture, when homework problems were attempted.

The lab setting (20-24 students) allows students to do inquiry-based labs, carrying out guided explorations. They are encouraged by class policy and the questions raised in the course materials to argue amongst themselves and with their instructors (either a graduate assistant, or advanced undergraduate learning assistant) about course topics. Labs from the reformed University Physics sequence were adapted for the course where possible.

The College Physics course is an algebra-based introductory physics course aimed primarily at science majors in the life sciences and allied subjects, including many pre-med students. Since a good many of these students may be expected to end up working as science teachers in some capacity it is clearly of importance that they be exposed to a clear statement of fundamental physics concepts. The two-semester sequence is quite technical, covering all major aspects of mechanics, electromagnetism and optics, with an introduction to modern physics (relativity and quantum theory), simply omitting any use of calculus.

The class is primarily made up of life science majors, with college algebra and trigonometry being the prerequisites for the course. Calculus is not required.

The textbook for the course is Walker’s [College Physics](#)¹, with an activity guide developed at UA.

The course is taught by a team made up of one faculty member, 3.5-4.5 teaching assistants and 0-1 learning assistants each semester.

[\[Link to CP References.htm\]](#)