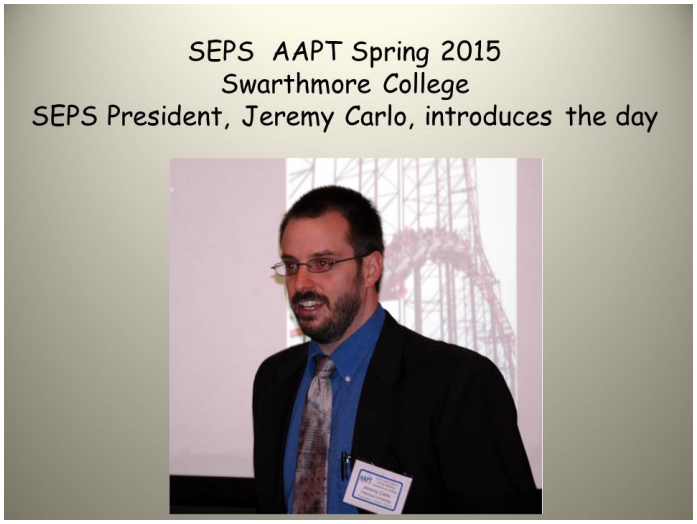
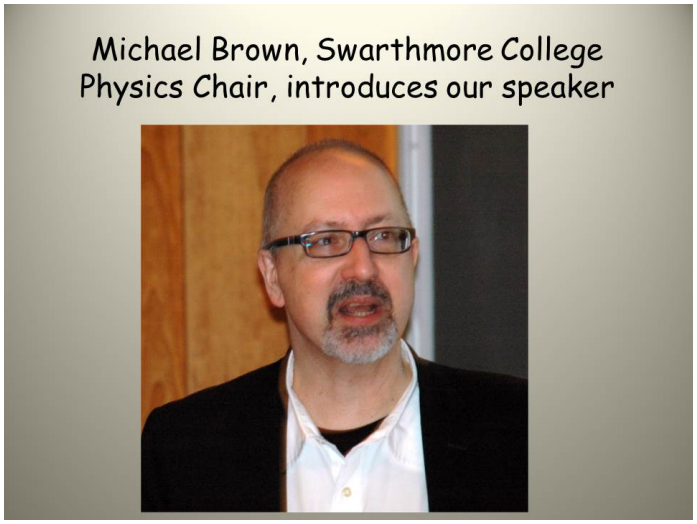
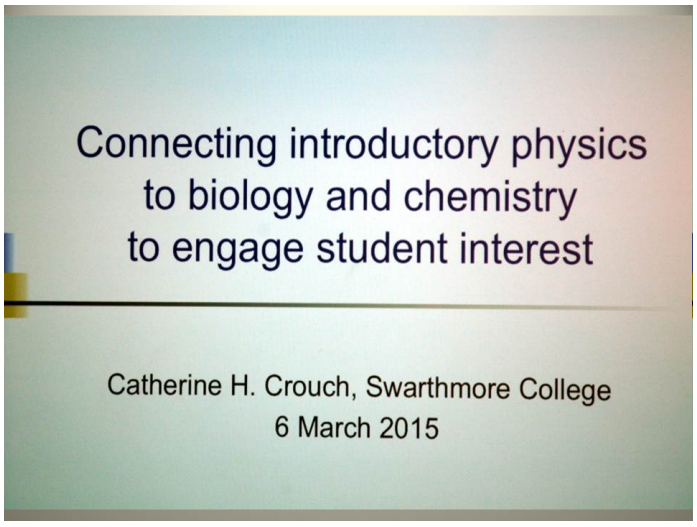
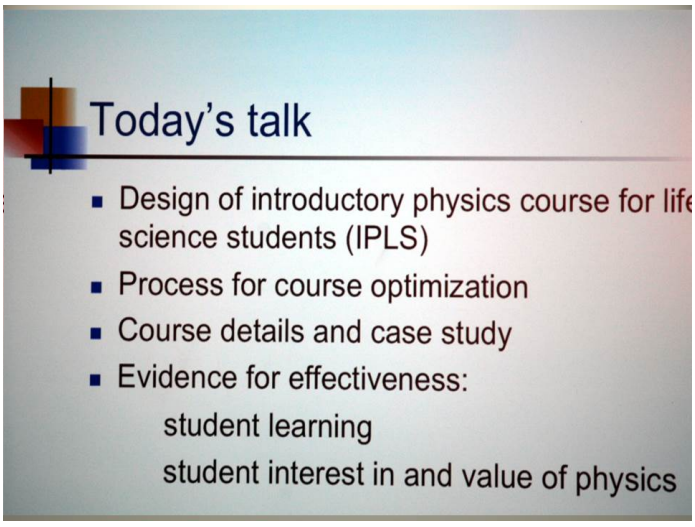
SLIDES FROM 2015 SPRING MEETING AT SWARTHMORE COLLEGE

Click on a slide to see it in a slideshow.









IPLS course optimization

Organize each topic and unit around one or two biological contexts

- Optics: animal vision and microscopy
- Waves: echolocation
- Electricity/circuits: cell membrane potential, nerve signaling
- Magnetism and induction: magnetic sensing, NMR

Choosing content

- Consulted with biology, biochemistry, and medical faculty to develop syllabus:
  - What are students learning in their courses and using in research?
  - What is important for students to know?

Choosing content and skills

- Know what else your students are learning and doing
- Choose material with long-term value for them (and tell them why)

Additions to 2nd semester

- More geometric and wave optics
- Electrostatics in media
- More circuits (neural circuit models, electrophysiology)
- Emphasize electric potential more than field
- Focus magnetism on interactions of dipoles with fields

Reductions in 2nd semester

- Omit Gauss's Law
- Omit magnetic field calculations
- Only do simple cases of induction
- Omit AC circuits and inductance
- Omit Maxwell's equations

ConcepTest: biological context

You are in a garden initially looking at a nearby flower. If you then turn your gaze to a tree that is farther away, how does the focal length of your eye's lens change, if at all?

1. The focal length increases.
2. The focal length decreases.
3. The focal length remains the same.
4. Need more information.

Outcomes: attitudes

Do students:

- Find physics useful for the life sciences?
- Understand how to learn and use physics?
- Develop and benefit from interest in physics?

Summary

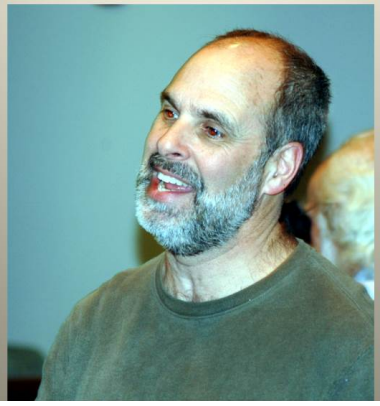
- IPLS class is rebuilt around authentic biological contexts
- The biggest change is the "frame"
- Assessment:

  Comparable conceptual learning to standard course

  Substantially improved interest and other perceptions of physics

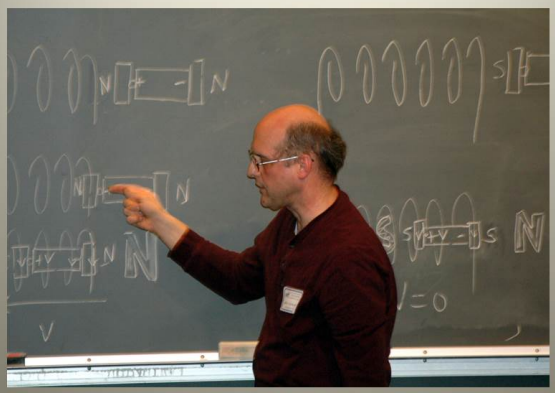
Mary Ann Klassen, one of our Swarthmore College hosts, introduces the Contributed Papers and Demos

Ron Pedelty, East High School, West Chester introduces a topic of color vision and the mysterious dress that has been in the news this past week



What Color Is That Dress?

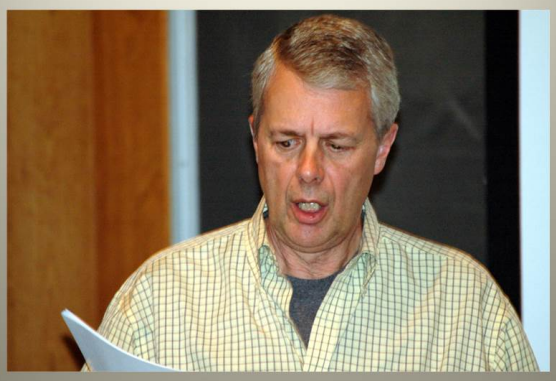
Jeff Wetherhold and his magic train run by battery/magnet



Anne Tabor Morris discusses HOW we interpret Physics Problems

Jay Bagley, SEPS Section Representative discusses future events next year

Art Zadrozny, SEPS Treasurer, give us the news of our funds and expenses



Jillian Waldman, SEPS Secretary gives us a summary of the events of 2015

Jeremy Carlo guides us through the elections of officers for 2015 - 2016

Officers for 2015 – 2016

- President: Bob Schwartz
- Vice President: Kathleen McElroy
- Secretary: Jillian Waldman
- Treasurer: Art Zadrozny
- Section Rep: Jay Bagley

(new) Outreach Committee

- A new committee charged with reaching out to new physics teachers and bringing them into the fold of SEPS/AAPT

- Harriet Slogoff - retired U.Penn
- Barry Feierman – retired Westtown School

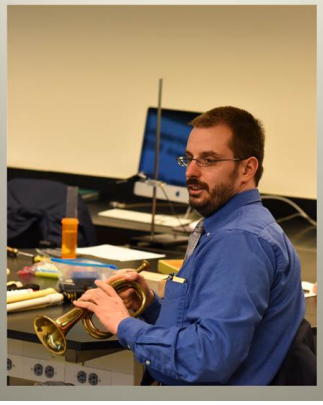
Workshop 1
Circuit Boards – Marc Baron

Circuit Boards: how do they work?

Workshop 2
The Physics of Musical Instruments
Barry Feierman on an old Alto Sax

Vibrating Strings
examining the harmonic structure

Jeremy really wants to play this bugle



Thank you to our hosts at Swarthmore College

Mike Brown

Adam Neat

Mary Ann Klassen