

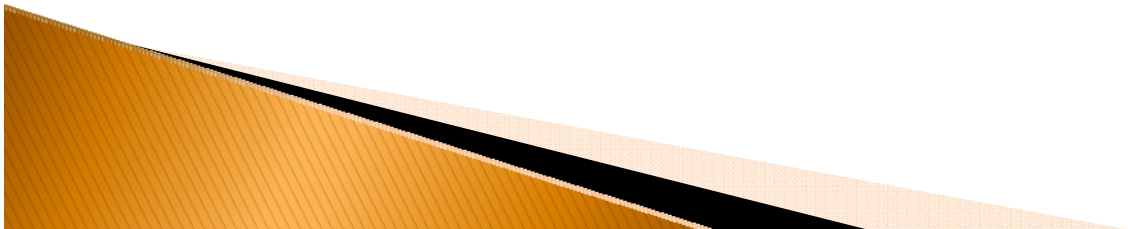


# NSF WORKSHOP on SCIENCE EDUCATION IN COMPUTATIONAL THINKING (SECANT)

Purdue University  
November 15 & 16, 2007

# Motivation (1)

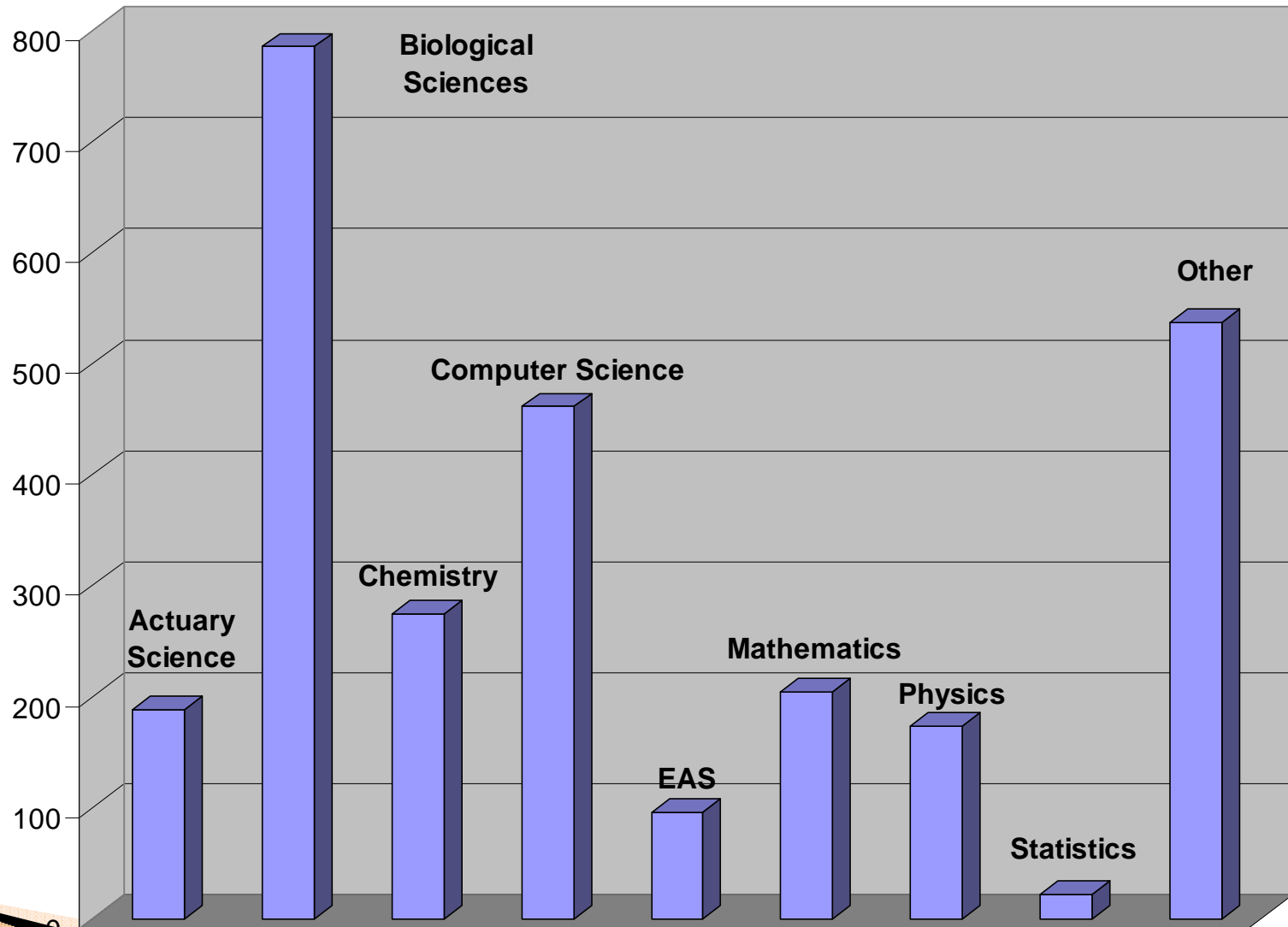
- ▶ **Computing requirement for all science majors starting fall 07**
  - Existing introductory programming courses do not match what science students should learn
- ▶ **Overall re-evaluation on the introductory course sequence**
  - Declining enrollment and poor retention of majors



## Motivation (2)

- ▶ Science 2020: Report on importance and impact of computing on science.
  - Nature (March 23, 2006) and Microsoft Research website
- ▶ NSF CPATH – Revitalized Undergraduate Computing Education

# Purdue's Science Enrollment

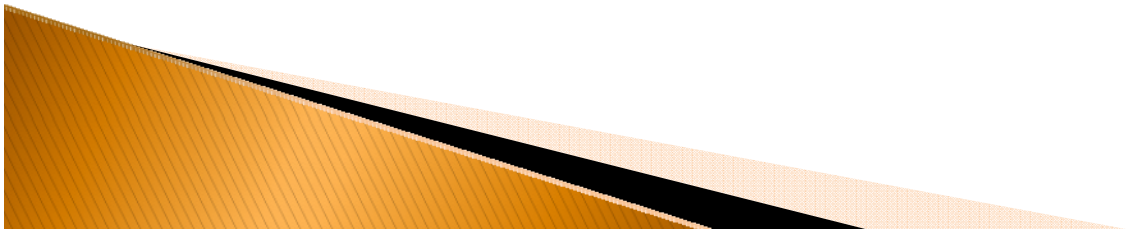


# Questions

- ▶ What should science majors know about computing?
- ▶ How can we effectively use computation to teach science?
- ▶ Can computing be integrated into non-CS majors?
- ▶ Would the outcome impact CS and engineering majors?

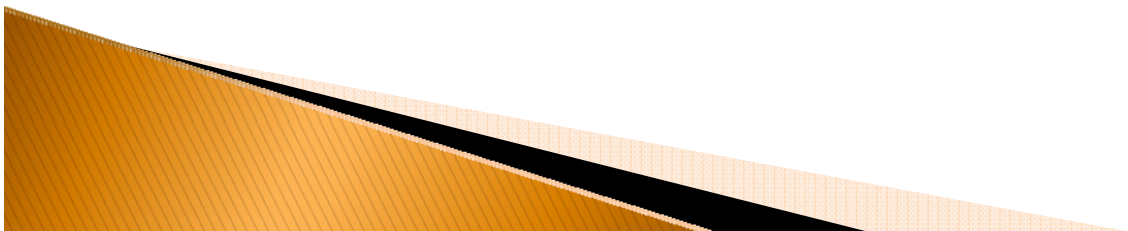
# Course Development: Introduction to Computational Thinking

- ▶ Offered as a pilot in spring 2008
- ▶ Introduce programming methods and computational principles in a problem- and application-driven way
- ▶ Use Python and Python libraries including VPython, NumPy, and NetworkX



# Workshop Objectives

- ▶ Get a broader perspective on the computing for science students
- ▶ Learn from the experiences of other institutions
  - Interaction between large research institutions and smaller liberal arts colleges
- ▶ Work towards creating a dialog and building a community for sharing resources



# A look at the agenda (1)

- ▶ Creating a dialog between science and computer science – four perspectives, followed by discussion.
- ▶ Computing courses – three perspectives, followed by a panel, and discussion.
- ▶ Panels on
  - on visualization and data analysis
  - the next generation of scientists in the workforce



# A look at the agenda (2)

- ▶ Round table discussion on community building
- ▶ Workshop follow-ups
  - Collect presentation material and 1–2 page position papers
  - Prepare a final report
  - Organize material on workshop website

