Computer Science
Après Le Crash
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New CS Undergraduate Students at Purdue
STEM Bachelor’s Degrees by Gender (not counting Life Sciences)

Share of Bachelor’s Degrees in Physical Sciences, Engineering, Computer Science, Mathematics by Gender, 1966-2000
New CS Graduate Students at Purdue
New CS Grads at Purdue: Domestic

- Domestic Applied
- Domestic Admitted
- Domestic Enrolled

Graph showing the number of domestic CS graduates at Purdue from 1993-94 to 2004-05.
New CS Grads at Purdue: International

- **93-94**: International Applied 500, International Admitted 200, International Enrolled 100
- **94-95**: International Applied 400, International Admitted 150, International Enrolled 50
- **95-96**: International Applied 300, International Admitted 100, International Enrolled 30
- **96-97**: International Applied 250, International Admitted 70, International Enrolled 20
- **97-98**: International Applied 200, International Admitted 50, International Enrolled 10
- **99-00**: International Applied 100, International Admitted 20, International Enrolled 5
- **00-01**: International Applied 75, International Admitted 15, International Enrolled 5
- **01-02**: International Applied 50, International Admitted 10, International Enrolled 5
- **02-03**: International Applied 300, International Admitted 100, International Enrolled 50
- **03-04**: International Applied 250, International Admitted 70, International Enrolled 20
- **04-05**: International Applied 200, International Admitted 50, International Enrolled 10

Key:
- Blue: International Applied
- Green: International Admitted
- Yellow: International Enrolled
2.3 Million Projected S&E Job Openings
(new jobs plus net replacements)
2002-2012

Next three slides courtesy of John Sargent, Office of Technology Policy, U.S. Dept. of Commerce
Bachelor’s Degree Production 1986-2000

Life Sciences Up...

... Engineering, Physical Sciences, CS, and Math Down
Are we Preparing Students for the Demand?

Annual Degrees and Job Openings in Broad S&E Fields

SOURCES: Tabulated by National Science Foundation/Division of Science Resources Statistics; degree data from Department of Education/National Center for Education Statistics: Integrated Postsecondary Education Data System Completions Survey; and NSF/IES. Projected Annual Average Job Openings derived from Department of Commerce (Office of Technology Policy) analysis of Bureau of Labor Statistics 2002-2012 projections.
Offshoring Challenge: Why?

- Jobs being sent to India, China, Russia, Estonia, . . .
- Much work is digitized and IT enables long-distance communication.
- Smaller “catch-up” period after technology development.
- Many developing countries have developed infrastructure and educated workforce.
- Wages overseas can be 20% of ours.
Public and Media Frenzy on Offshoring

- *Business Week, 2/3/2003:* 
  *Upscale* jobs are being sent overseas.

- In 2003-2004 fiscal year, 
  AFL-CIO says 162K jobs moved, 87K jobs lost 
  (4 times Dept. of Labor and Forrester figures).

- Employment Law Alliance, 6/29/2004: 
  60% of workers favor penalties against 
  companies, 21% would sue if job endangered.
Other Perspectives

• Offshoring/outsourcing is natural.
• New high-value-added jobs created by innovation.
• Insourcing.
• Need to better educate students to emphasize team, project management, systems engineering.
• Emphasize links to applications, ability to innovate.
Where the Sciences Coalesce

- Bioinformatics
- Climate Change
- Computational Science
- Massive Data
- Membrane Science
- Nanoscience
- Science Education Research

> Play