



Engineering at Hampton University: An Overview

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Dean

School of Engineering and Technology



Background

- Engineering programs at Hampton since 1985
- Olin Engineering Building: 1988
- Chemical and Electrical programs first accredited in 1992
- School of Engineering and Technology created in 1995 (engineering, architecture and aviation programs)



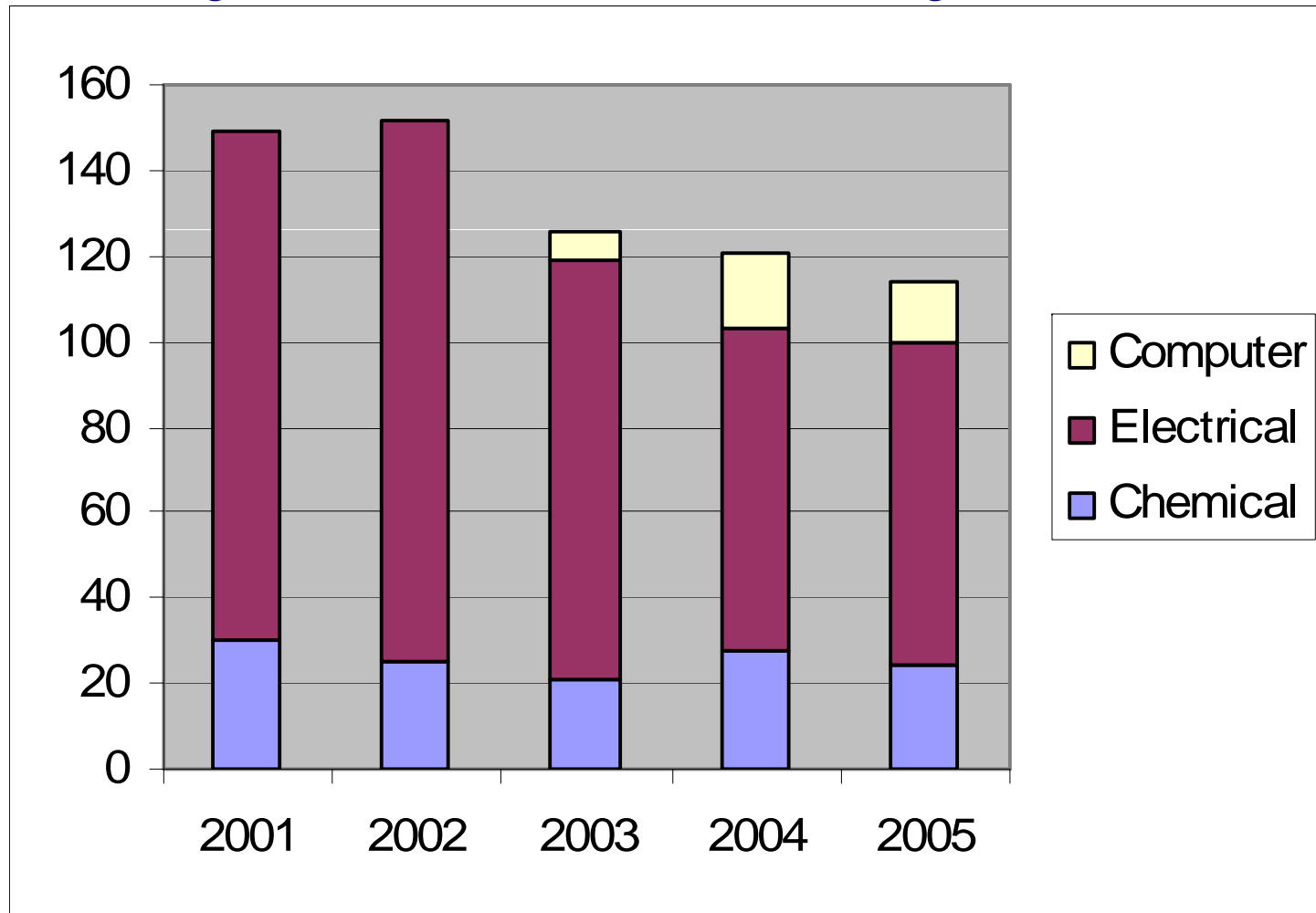
Summary Engineering Numbers:

- \$1.52 Million/year direct research dollars (in 2004-2005)
- Support from NASA, Army, DOE, NSF, DOT
- 114 students in three engineering programs:
 - Chemical (24 students 2005-2006)
 - Electrical (76)
 - Computer (14)
- 9 faculty members



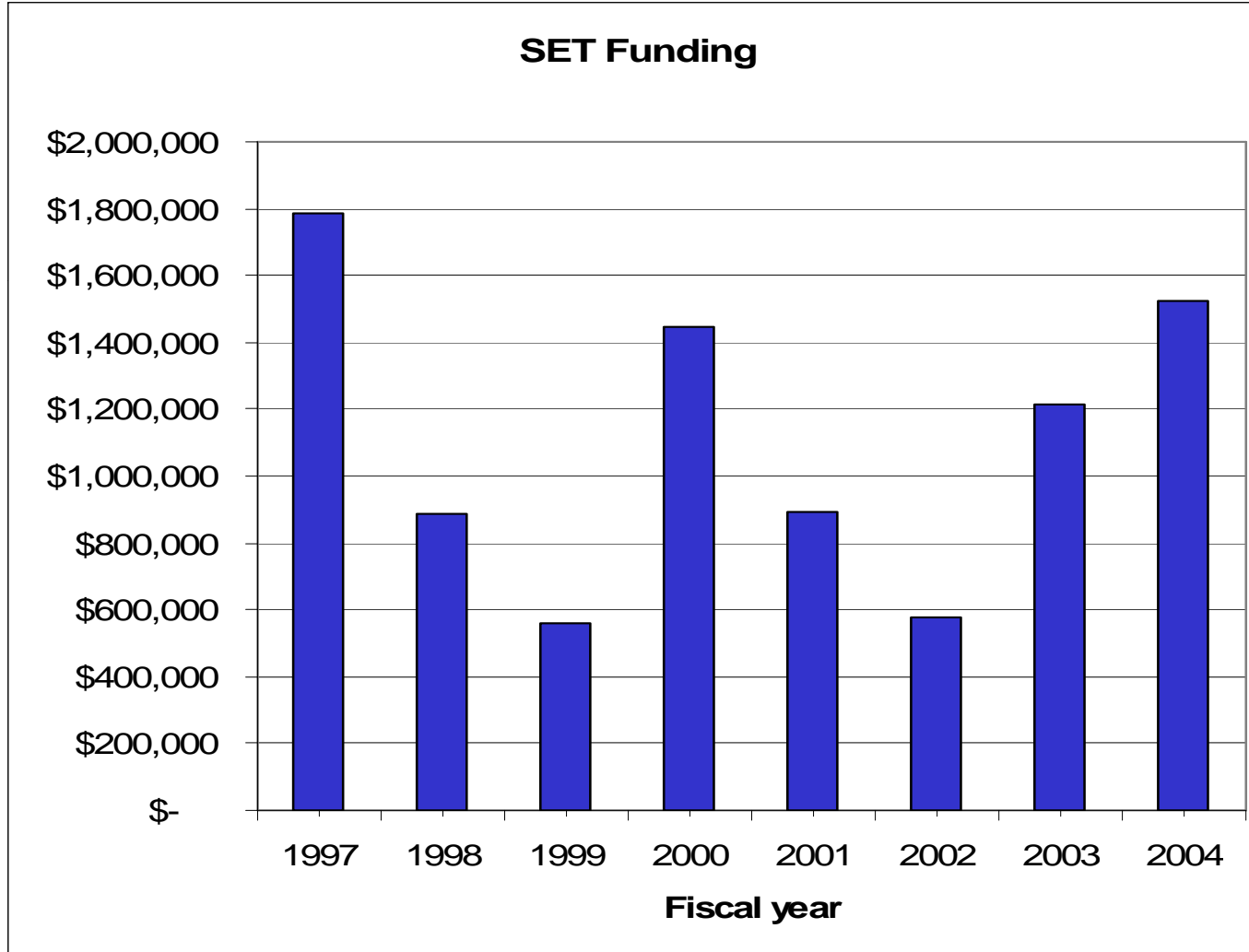
Enrollment Summary

(total majors, not active majors)





Grants and Contracts Summary





Some Engineering Highlights:

Meeting the Standard

- Leadership for Center for Aero-Propulsion
- Co-PIs on Eastern Seaboard Inter-modal Transportation Applications Center
- Several Department of Energy-Supported Research projects
- Leadership for Virtual Parts Engineering Research Center
- Student presentation success in local student professional competitions and regional AMP competitions



Engineering Highlights, Cont.

- Student success in internships
- Patents:
 - Dr. Liang HU received a patent for transitional absorption process.
 - Dr. Ates Akyurtlu, Dr. Jale F. Akyurtlu, David Schryer submitted a patent "Catalyst for Decomposition of Nitrogen Oxides."
- Dr. Adeyinka Adeyiga was selected to be a fellow of ASEE.
- 4 faculty have participated in NAE CASEE project on Engineering Education research



Additional Challenges Identified and Plans

- Improving recruitment and retention
- Evaluating student learning
- Improving facilities and resources
- Monitoring our processes



Improving Recruitment and Retention

- Improve web-site and communications
- Increase recruitment outreach to K-12
- Academic outreach/mentorship to K-12
- Hold a summer bridge program (summer 2006)
- Increase scholarship aid available
- Increase academic support available from the school (tutoring, study skills, etc)
- Consider a pre-major program
- Work with admissions director!!



Evaluating Student Learning:

Evaluate vs. real standards

- Pretest freshmen to gauge their preparation?
- Measure content *and* process knowledge (learning methods, study skills, etc)
- Use competencies listed by classification (year) to develop by-classification diagnostics
- More meetings with current students about their experiences in summer programs, internships, career fairs



Evaluating Student Learning:

Evaluate vs. real standards, cont.

- Plan to use FE sample questions to calibrate the rigor of our core freshman/sophomore engineering courses
- Enlisting industry to gauge competency of our students (internships [some for credit?], co-ops, hires)
- Using alumni survey and interview results
- Developing undergraduate projects mentored by industry engineers

Improving Facilities and Resources



- Development plan:
 - Laboratory improvements
 - Student extracurricular research and design projects mentored by industry
 - Resources from research
 - Scholarship aid (including for bridge program)



Strategic Plan Summary

- **Develop the capabilities of the School** by increasing interdisciplinary research and educational initiatives in emerging areas and developing a collaborative center for design, research, and education
- **Increase impact of School, its programs and its research:** by increasing visibility in the professional communities of our programs, and increasing enrollment and program quality



Some Education Initiatives

- Introduction of Nanotechnology to Undergraduate Engineering and Science
- Proposal on Engineering Education research submitted to NSF with HU Education Dept.
- Discussions with NSF on a series of “Best Practices in Engineering Education at HBCUs” workshops
- Proposal for pilot research, design and education center discussed with NSF and industry, as well as potential collaborators at other HBCUs