

# Engineering Programs, Facilities, and Goals

**W. Kent Fuchs**

Joseph Silbert Dean of Engineering

April 10, 2003

## Overview

### Activities in the College

- > Organization
- > Accreditation
- > Strategic Planning

### Quantitative Trends and Benchmarking

- > "Planning the future -- Benchmarking the past"
- > *US News* rankings from last week

### Facilities Planning

### Current Strategic Faculty Discussions

## COLLEGE ACTIVITIES

### Organization Changes in College Administration

- > Created new Assistant Dean for "Strategic Planning, Assessment, and New Initiatives"
- > New Associate Dean for "Diversity and Faculty Recruiting"

### Accreditation - ABET visit fall 2004

- > Institutions and Programs define mission and objectives to meet needs of constituencies -- enables program differentiation
- > Emphasis on outcomes
- > Programs must demonstrate how criteria and educational objectives are being met
- > Emphasis on continuous improvement

## Strategic Planning

**Department and School draft plans have been submitted**

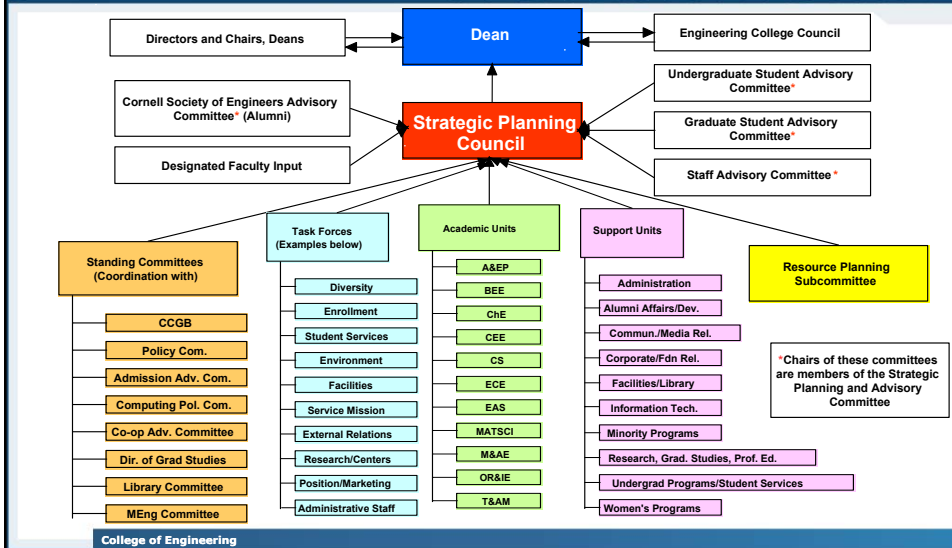
### College Document for Public Feedback - Fall 2003

### Engineering "Strategic Planning and Advisory Council" charged with creating drafts of College Plan

- > Jim Thorp is Chair
- > Small core faculty responsible for authorship
- > Broad group of faculty, staff, students, and alums charged with providing input and critiques
- > Open forums in early fall

### Facilities Assessment and Planning

## Strategic Planning Process



## New Associate Deans & Department Chair – June 1

- **David Gries, Associate Dean of Undergraduate Programs**
- **Michael Spencer, Associate Dean of Research, Graduate Studies, and Professional Education**
- **Zellman Warhaft, Associate Dean of Diversity and Faculty Recruiting**
- **Terry Jordan, Chair, Department of Earth & Atmospheric Sciences**

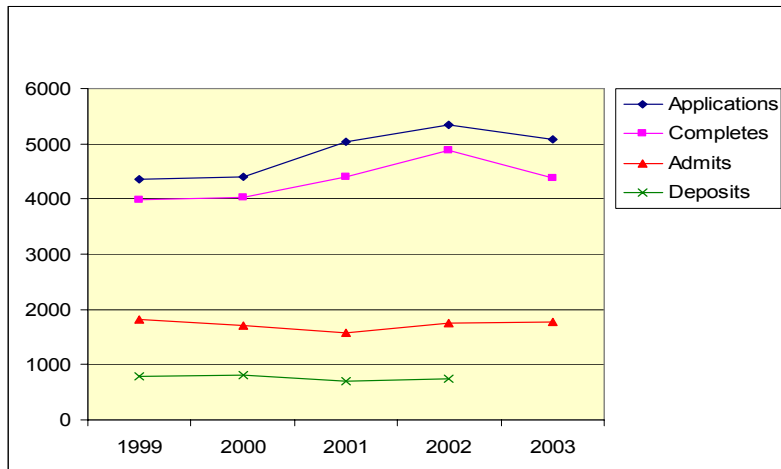


## Assistant Deans

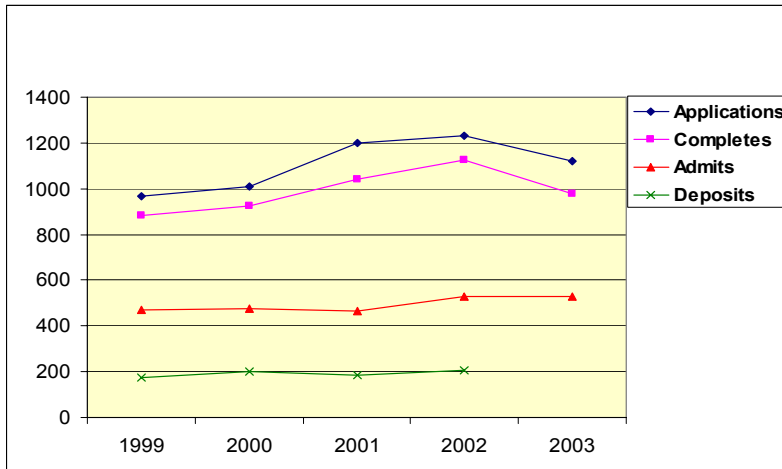
- **Deborah Cox, Assistant Dean, Strategic Planning, Assessment and New Initiatives**
- **Betsy East, Assistant Dean, Undergraduate Programs**
- **Cathy Long, Assistant Dean, Administration**
- **Marsha Pickens, Assistant Dean, Alumni Affairs & Development**

## "BENCHMARKING THE PAST – PLANNING THE FUTURE"

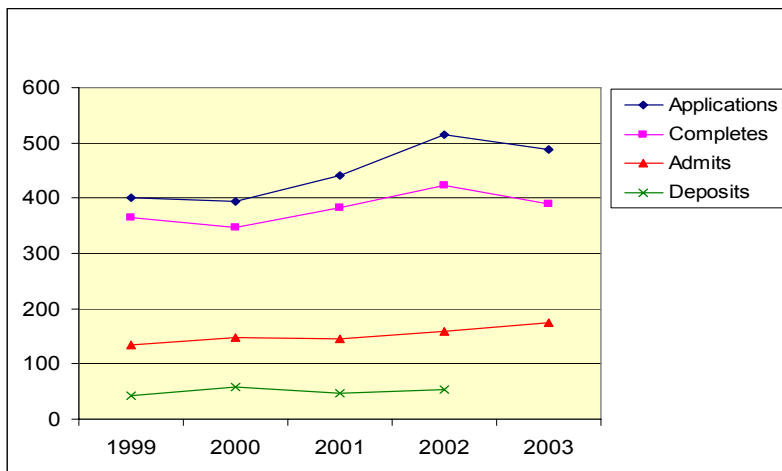
### Total Applications for Admission



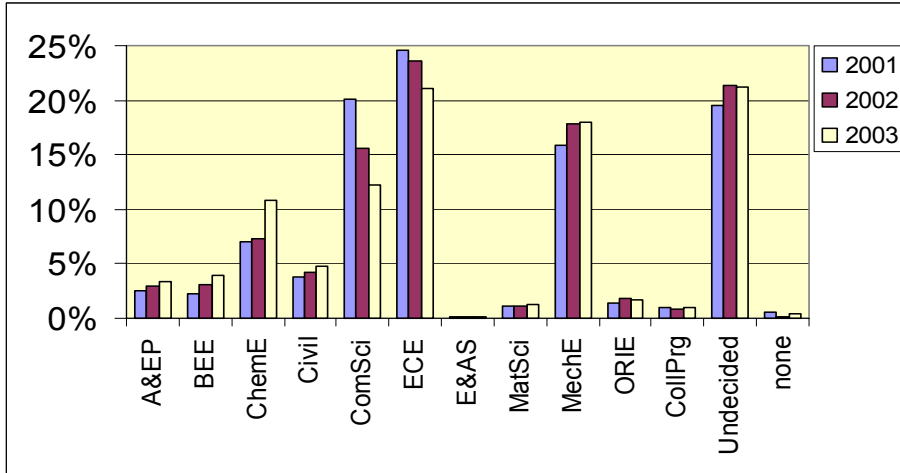
## Applications - Women



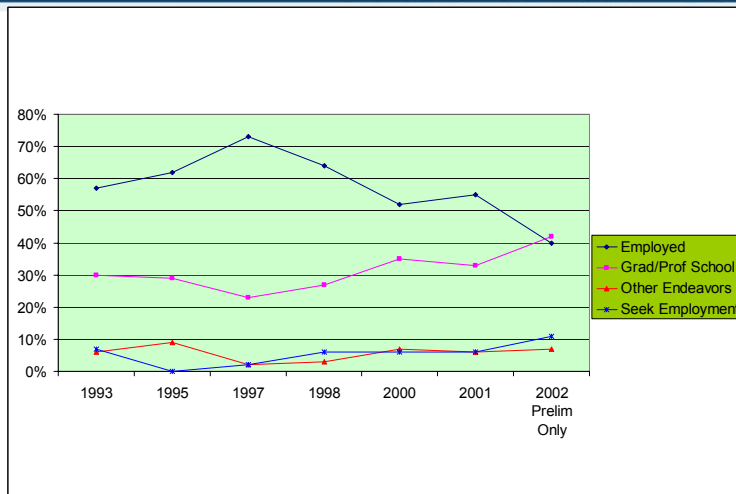
## Applications - Underrepresented Minorities



## Fall Freshman Engineering Applications by Interest

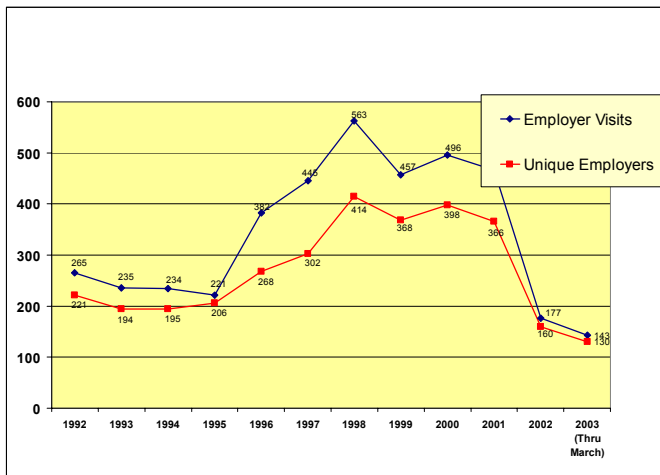


## Post Graduate Activities





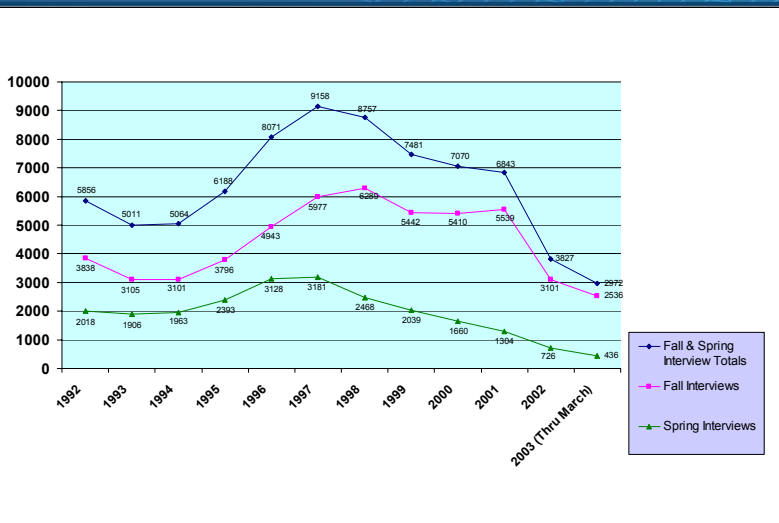
## Employer Recruitment Visits



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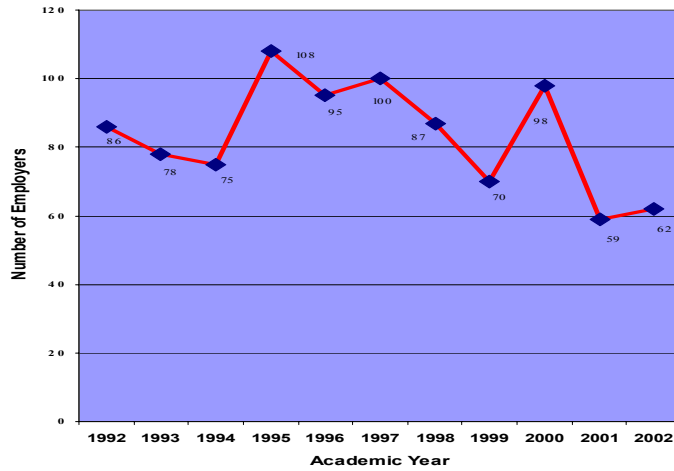


## Job Interviews

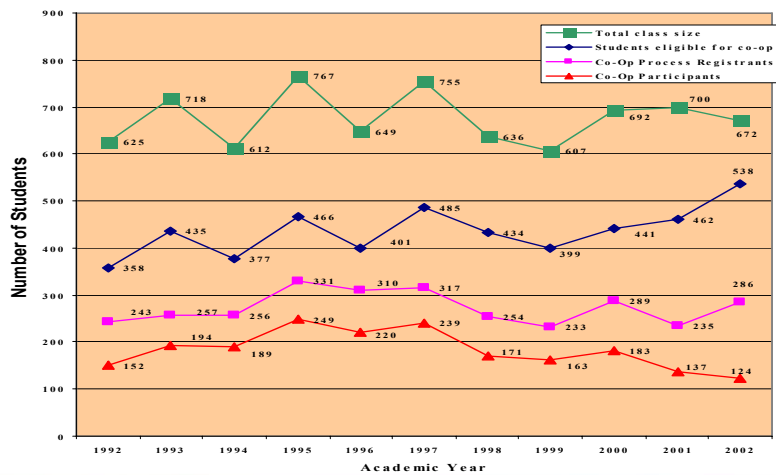


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## Number of Employers Who Hired Co-Op Students



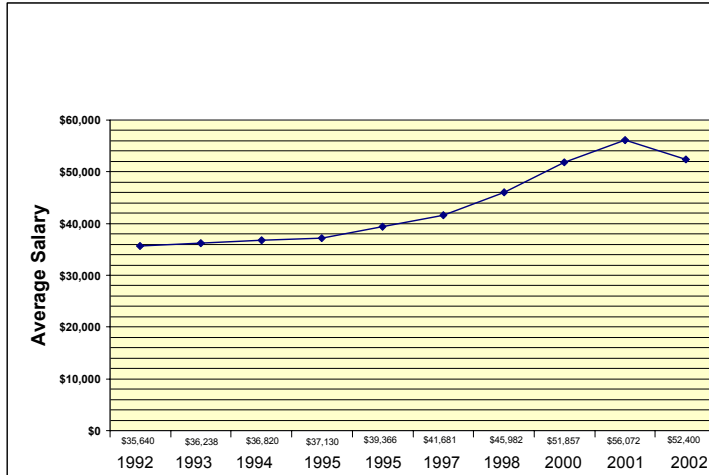
## Co-Op Student Participants





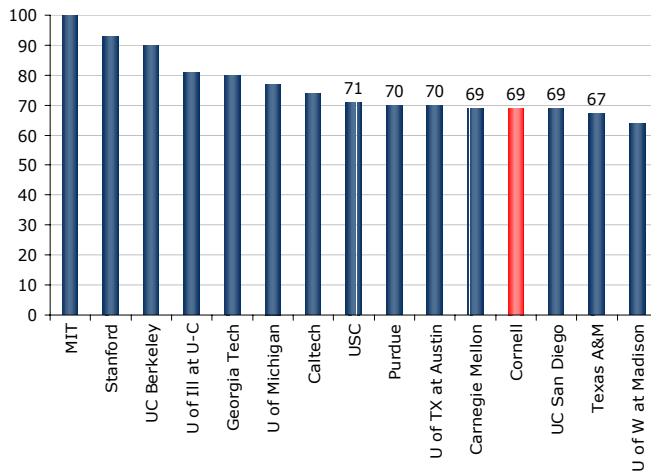


## Average Undergrad Salaries

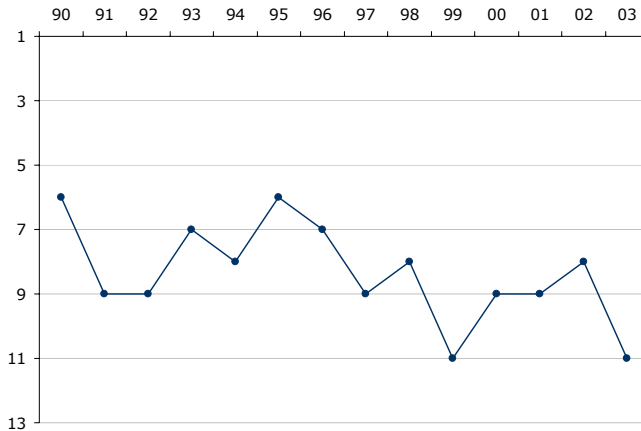


## BENCHMARKING

### US News Rankings of Graduate Engineering Schools Spring 2003



## Cornell Engineering Graduate Rank in *US News*



### Peer Ranking

1. Massachusetts Institute of Technology
2. Stanford University (CA)
7. California Institute of Technology
3. University of California–Berkeley
4. University of Illinois–Urbana-Champaign
5. Georgia Institute of Technology
6. University of Michigan–Ann Arbor
11. Carnegie Mellon University (PA)
11. Cornell University (NY) – three-way tie for 8th
9. University of Texas–Austin

### Recruiter Ranking

1. Massachusetts Institute of Technology
2. Stanford University (CA)
7. California Institute of Technology
3. University of California–Berkeley
4. University of Illinois–Urbana-Champaign
5. Georgia Institute of Technology
18. Princeton University (NJ)
6. University of Michigan–Ann Arbor
11. Carnegie Mellon University (PA)
11. Cornell University (NY) – four-way tie for 8th
9. Purdue University–West Lafayette (IN)
9. University of Texas–Austin

## US News Graduate Rankings 2003

### Research \$s Per Faculty Ranking

- 8. University of Southern California

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- 11. University of California–San Diego

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- 14. Texas A&M University–College Station

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- 44. University of Rochester (NY)

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- 17. Harvard University (MA)

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- 2. Stanford University (CA)

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- 11. Cornell University (NY) – 7th

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- 9. Purdue University–West Lafayette (IN)

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- 44. Dartmouth College (Thayer) (NH)

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- 1. Massachusetts Institute of Technology

### Total Expenditure Rankings

- 1. Massachusetts Institute of Technology

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- 5. Georgia Institute of Technology

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- 4. University of Illinois–Urbana-Champaign

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- 14. Texas A&M University–College Station

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- 9. Purdue University–West Lafayette (IN)

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- 6. University of Michigan–Ann Arbor

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- 11. University of California–San Diego

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- 8. University of Southern California

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- 3. University of California–Berkeley

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- 16. University of Maryland–College Park

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- 2. Stanford University (CA)

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- 15. University of Wisconsin–Madison

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- 11. Carnegie Mellon University (PA)

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- 9. University of Texas–Austin

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- 21. Penn State University–University Park

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- 11. Cornell University (NY) – 16th

Areas needing improvement:

PhDs granted, PhDs per faculty,  
Acceptance rate for grad students,  
NAE members

## LIKELY THEMES FOR CAPITAL CAMPAIGN

### Programs

Biomedical and Bio-engineering  
Systems engineering  
Nanoscience and engineering, information, energy and environment  
Core competencies  
Women and under-represented minorities (Faculty and Students)  
- double the number

### Faculty

Endowed Professorships (40)

### Students

Fellowships (growth in quality and size of PhD program)

### Learning and Discovery Environment

Instructional laboratories  
Teaching excellence and inquiry-based learning  
Facilities- new and enhancement of existing  
Naming of individual departments and schools- flexible endowment

## FACILITIES ASSESSMENT and PLANNING

**Space audit completed November 2002**

**Quality assessment this semester**

**Programmatic driven facility plans for College  
being created with Strategic Plan**

## External Space Audit of Engineering

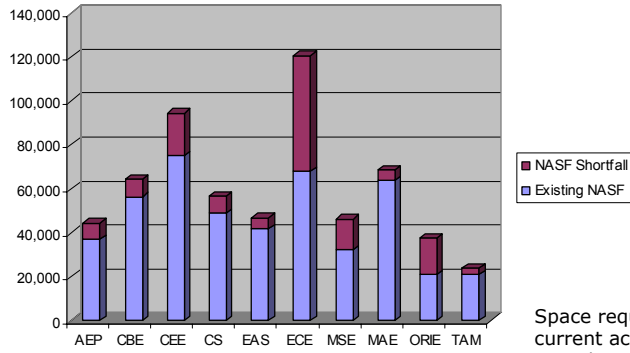
### Purpose

- > Analyze amount, type, and utilization
- > Serve as University pilot

### Findings

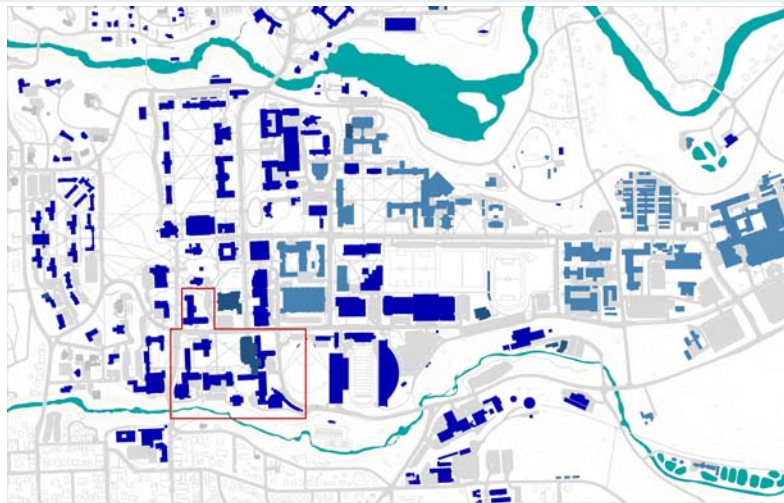
- > Engineering buildings designed primarily as teaching facilities  
Not designed for significant research activity, student participation in research, sophisticated equipment  
Does not support current small group, project, and experiential learning methods
- > Underutilized spaces
  - 13K High Volt Lab (2%)
  - 20K renovation planning/construction underway (3%); 2K of total unassigned
  - 9K college shop (1%)
  - 5K Lab of Plasma Studies (<1%)
  - 3K occupancy prohibited (<1%)

## Space Needs (from external audit)

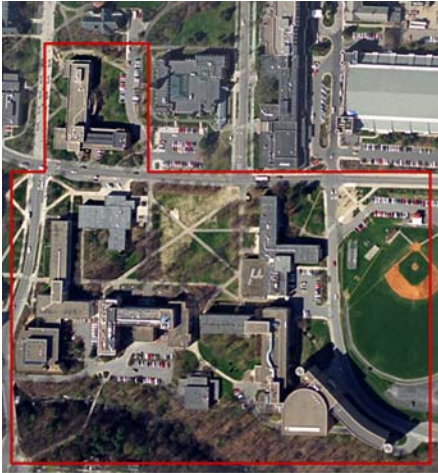


Space requirements to accommodate current activity with no projected growth

- Existing 464K NASF
- Modeled 603K NASF
- 30% shortfall







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**Olin Hall**  
 - CBE, Student Svcs  
 Built: 1941  
 Sq. Ft: 129,664  
 Net: 74,165  
 Partial Central HVAC  
 East Wing Renovated '89



**Hi Voltage Lab**  
 - Storage  
 Built: 1953  
 Sq. Ft: 16,622  
 Net: 14,709



**Kimball Hall**  
 - TAM  
 Built: 1953  
 Sq. Ft: 30,143  
 Net: 18,646  
 No HVAC  
 1<sup>st</sup> Floor Labs Renovated '93



**Phillips Hall**  
 - ECE  
 Built: 1954  
 Sq. Ft: 88,540  
 Net: 56,735  
 Partial Renovation  
 with Duffield



**Thurston Hall**  
 -CEE, MSE, TAM  
 Built: 1953  
 Sq. Ft: 53,010  
 Net: 35,724  
 Partial Central HVAC  
 Labs on 3<sup>rd</sup> & 4<sup>th</sup> floor  
 renovated '95



**Knight Lab**  
 - CNF  
 Built: 1954  
 Sq. Ft: 16,469  
 To be demolished '04

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**Carpenter Hall**  
 - Engr Admin, Career Svcs,  
 & Library  
 Built: 1957  
 Sq. Ft: 50,577  
 Net: 43,034



**Hollister Hall**  
 - CEE, Admissions  
 Built: 1959  
 Sq. Ft: 155,288  
 Net: 71,735  
 No Central HVAC  
 McManus Lounge '99  
 DeFrees Lab '84



**Upson Hall**  
 - CS, MAE  
 Built: 1958  
 Sq. Ft: 156,859  
 Net: 101,401  
 Partial Central HVAC  
 4<sup>th</sup> & 5<sup>th</sup> floor added '87  
 Automotive lab added '95



**Bard Hall**  
 - MSE  
 Built: 1963  
 Sq. Ft: 49,366  
 Net: 22,994  
 Phased HVAC in process



**Grumman Hall**  
 - MAE  
 Built: 1958  
 Sq. Ft: 16,289  
 Net: 12,831  
 No Central HVAC



**Ward Laboratory**  
 - Formerly NE  
 Built: 1963  
 Sq. Ft: 26,030  
 Reallocation in process

## Facilities for Interdisciplinary Collaboration

### Duffield Hall

**New Life Sciences Technology Building (BMEP,  
 BioPhysics, and BioInformatics)**

**New Physical Sciences Building (AEP)**



## Duffield Hall Challenge Campaign

**Objective: \$30 Million endowment for Duffield Hall**

**1:1 Challenge from David Duffield**

**February 2003 – February 2005**

## CURRENT STRATEGIC DISCUSSIONS

### Learning and Curriculum

- > New Joint Major-- ORIE and CS  
"Information Science, Systems, and Technology"
- > New Joint Major-- BEE and CEE  
"Environmental Engineering"
- > Common Core Curriculum  
Flexibility  
Biology requirement

### Faculty

- > "Research Professor"