Cornell University
242 Carpenter Hall
Ithaca, NY 14853-2201

Telephone: 607 255-9679
Fax: 607 255-9606
E-mail: engineering_dean@cornell.edu

College of Engineering

Engineering College Council
Meeting Notes

April 10, 2003

The Engineering College Council (ECC) met in Ithaca on April 9 and 10, 2003. The following ECC members were present.

Charles S. Brown Jr.
Kenneth C. Brown
Jay W. Carter
Troy A. Clarke
E. Linn Draper Jr.
W. Kent Fuchs
James N. Hauslein
David A. Hodges
William J. Hudson Jr.
W. Keith Kennedy Jr.
Gretchen Knoell
Randall D. Ledford
John P. Neafsey
Justin Rattner
Rebecca B. Robertson
Neil A. Schilke
William R. Shreve
Roger Strauch
Sherri K. Stuewer
Evelyn Taylor

Welcome and Introductions
Sherri Stuewer, Chair of the Council, opened the meeting, welcomed the Council members, reviewed the agenda, and introduced three new Council members:

Kenneth Brown. One Equity Partners – Cornell B.S. '74 ME
Troy Clarke, General Motors Corporation
Evelyn Taylor, BP Amoco, Cornell B.S. 'Chem E

Engineering Programs, Facilities, and Goals
Dean Kent Fuchs began his presentation by describing the recent organizational changes in the college and the strategic planning process currently underway. He introduced three new Associate Deans and one new Department Chair who will begin their new positions on June 1, 2003:

Michael Spencer, Associate Dean for Research, Graduate Studies and Professional Education
David Gries, Associate Dean for Undergraduate Programs
Zellman Warhaft, Associate Dean for Diversity and Faculty Recruitment
Terry Jordan, Chair of the Department of Earth and Atmospheric Sciences (Currently the Associate Dean for Undergraduate Programs)

The Dean also introduced two changes in Assistant Dean positions:

Deborah Cox, Assistant Dean for Strategic Planning, Assessment and New Initiatives
(Previously the Assistant Dean for Student Services)
Betsy East, Assistant Dean for Student Services

He reintroduced the Council to:

Cathy Long, Assistant Dean for Administration
Marsha Pickens, Assistant Dean for Development and Alumni Relations

The remainder of Dean Fuch's presentation focused on benchmarking data as a basis for planning the future of the College. He showed trend data in the areas of admissions, post graduate opportunities, and the college ranking. In admissions, the number of applicants was down slightly, but the quality, as measured by SAT scores, remains very strong. The post graduate activities of the class of 2003 has been strongly influenced by the economy, with the percentage of students going to graduate school about equal to the percentage going to work (i.e. both about 40%). The US News ranking of graduate engineering schools showed Cornell tied for 11th, down from 8th in the last survey. The areas needing improvement, according to the ranking, included PhD's granted per faculty, acceptance rates for graduate students, and NAE members among the faculty.

Kent presented the likely themes for the new University capital campaign:

- Priority programs
  - Biomedical and Bio-engineering
  - Systems Engineering
  - Nanoscience and engineering, Information, Energy and the Environment
  - Core Competancies
  - Women and Under-represented Minorities
- Endowed Professorships
- Student fellowships
- The learning and discovery environment

He also discussed the current state of the College facilities and the new facilities needed to advance the College and accommodate new programs:

- Completion of Duffield Hall
- Plans for new Life Sciences Technology Building
- Proposal for new Physical Sciences Building
- Consideration of new building to replace Carpenter Hall that would enhance access to information and instructional support.

In conclusion, current strategic discussions in the College were described:

- New Joint Majors:
  - Information Science, Systems, and Technology (ORIE and CS)
  - Environmental Engineering (BEE and CEE)
- Common Core Curriculum
  - Flexibility
  - Biology requirement
- The creation of "Research Professor" positions

Discussion

The Council wanted to ensure that the College objectives were aligned with the objectives of the new University president, Jeff Lehman. As future goals are identified, the College may have to realign priorities to match the University strategic plan.

The quality of our incoming class was discussed. Our admitted students this year are comparable in quality to last year's. The Mean Math SAT is 760, and mean verbal SAT is 691 for admitted students. Seventy nine percent (79%) of our incoming freshmen are in the top 5% of their high school class, and 94% are in the top 10%.

The Council did not find it surprising that the employment statistics and cooperative education program placements were down significantly given the current economic climate. Career Services statistics by department were requested.

Minority student participation in the Cooperative Education Program was discussed. Under-represented minority students do not participate in the program at the same rate as non-URMs. Efforts are underway to increase URM participation.

The components that make up an excellent engineering school and contribute to faculty quality were discussed briefly. While quality research is fundamental to achieve excellence, the complete set of criteria contributing to the standing and reputation of the college are complex.

There were questions and concerns about support for the biomedical engineering program . The Council had understood that there was a University commitment to the undergraduate minor and MEng program.

It was strongly suggested that consideration of what we will stop doing (i.e., not do) be included in the strategic planning self-evaluation process.

Undergraduate Mission, Goals and Objectives

Terry Jordan gave an overview of the ABET accreditation process and the current progress on developing program educational objectives (PEOs) and program outcomes. She presented the draft versions of the college education mission, vision and values and invited the Council to discuss them with students in the afternoon breakout session.

Plans for New Applied Engineering Physics/Physics/Chemistry Building
Joel Brock, Chair of Applied and Engineering Physics, gave a presentation outlining the need and preliminary plans for a new physical sciences building in the area of Clark Hall.

Comments centered on ensuring the efficient use of the space. A process to assess use of the existing space as well as the proposed new space was suggested. Joel Brock explained that an analysis of square feet per researcher would be conducted, researchers would be interviewed and compliance to safety code assured. Currently all of the existing space is being used. There is no lecture space and AEP would like to have a lobby to create identity.

Plans for New Life Sciences Technology Building and Biomedical Engineering
Mike Shuler, Director of the Biomedical Engineering Program, and Stephen Kresovich, Director of the Institute for Genomic Diversity, described the University plan for a new Life Sciences building with an interdisciplinary emphasis.

The council questioned the efficiency of a 60% space utilization rate and noted the relationship of the rate to the ultimate cost of the building. Industry space utilization rates are much better than 60%. It was suggested that we use the expertise in ORIE to analyze workflow and space utilization.

The interrelationship with the medical center in New York City was discussed. There are currently no plans for building space in NYC however a teleconferencing capability is being planned. There will be collaboration with faculty in NYC. Eight (8) faculty at Cornell have co-professorships in the medical college. Space for visiting NYC faculty and doctors at Cornell has also been discussed but not yet determined.

Security was a key concern. A security group is reviewing the security plans that, for now, are primarily passive. The space in the building was described as “pretty innocuous” - There is no BL3 lab space in the building. The security group is trying to strike a balance between openness and security.

Duffield Hall, Ward Lab, NEES Program Tour
The Council toured Duffield Hall, Ward Lab and the NSF Network for Earthquake Engineering Simulation (NEES) facilities.

NSF Network for Earthquake Engineering Simulation (NEES) Program and Facilities
Thomas O’Rourke, Thomas R. Briggs Professor of Engineering, and Harry Stewart, Associate Professor, both from Civil and Environmental Engineering discussed the current state of the NEES program and facilities.

The Council wanted to know if the college had an obligation to maintain the program if NSF stopped funding the initiative. The College does not have an obligation to support the program if the funding ceases. The Museum Science Center in Tokyo was cited as an example of a similar facility.

Engineering Library, Student Collaboration and Experiential Learning Facility and Student Services Center

Deborah Cox presented the initial concepts for a new building to replace Carpenter Hall that would integrate leadership, library, and learning/instructional support and student services and invited the Council to join students in a discussion of the center after lunch.

Breakout Sessions (Students and ECC Members)

The Council, joined by undergraduate and graduate students, broke into three groups. Two of the groups discussed the new facility to replace Carpenter Hall. The third group focused on the Undergraduate mission, vision, values and objectives. A summary of their discussions is attached.

Discussion of Breakout Reports

Envisioning a New College Center

Undergraduate students place a new college center at the top of their priority list.

Central versus distributed space to satisfy some of the identified needs should be considered.. The identified needs, which included space for adhoc study groups, group design projects, and student organizations, could be met by space distributed among several buildings.

The need for quiet space as well as active space was emphasized. Carrels provide good individual study space. Lockers would also be very desirable for students and would save them a lot of time wasted on shuffling books and materials back and forth.

Any new facility should have flexible wireless technology. Access to licensed engineering software on public workstations is also necessary to support student learning.

Any design should emphasize flexibility in space and furniture to accommodate changing needs over time.

Engineering Undergraduate Education Programs

Introduction to Engineering Courses (ENGRI) could be structured to include more group work. The quality of existing ENGRI courses is uneven. Some are good; others are not good at all. It was suggested that Tau Beta Pi could evaluate the introductory courses and make recommendations for their improvement.

From an employer perspective, Cornell engineering students don't have the same business savvy as students from other universities. It was recommended that we explore what is missing in our program.

The possibility of expanding digital access to alums and small companies was discussed. It has been considered but commercial licenses are very protective and the cost escalates to prohibitive levels with the addition of corporate remote access.

Executive Session

This Council meeting was Neil Schilke's last. He was presented with a plaque to recognize his membership on the Council since 1986 and cited as exemplary for his commitment to the College and University, his generous giving of time and service, and excellent leadership. He was thanked on behalf of the College and the Council.

The Council recognized Mike Isaacson's contributions to the College and the Council. He was an outstanding resource and liaison.

The Council had extensive discussion about the facilities planning effort and made the following suggestions:

- a better-structured, high-level facilities plan that identifies priorities for the next six years is needed.

- program development should be a priority versus facilities development. The program development plan should come before the facilities development plan.

- there is a conflict between developing a sense of identity desired by departments (e.g. AEP) versus the long-range goal of fostering interdisciplinary activities. Consider whether facilities should be assigned rigidly.

- the space utilization (gross square feet versus assignable square feet) of engineering buildings at 60% utilization rate should be much higher. Assignment of offices for individual faculty shortchanges labs. A different footprint would better utilize space.

- space utilization could be improved by disciplined management of the storage of old equipment The "pack rat" syndrome creates a safety hazard and makes asset management difficult. Duffield Hall should begin with a very strict storage policy.

- a more disciplined use of space could be accomplished by allocating the cost of space to the users. At some universities the cost of space is charged to researchers. Concern was expressed that a lot of effort was going into allocating new space with little consideration of using freed up space to meet strategic goals.

- future trends in lab space and information storage should be considered to ensure that the new facilities are forward looking.

Dean Fuchs explained how the cost of maintaining and upgrading facilities is handled. Duffield Hall is the only building with an endowment. Indirect cost will cover some of the expenses but the campus absorbs most of the costs. Research grants don't allow depreciation.

The Council expressed concern about the slow progress from other parts of the University in appointing faculty to the biomedical engineering program. Recognizing the difficulties in getting aligned incentives in a program, the Council discussed the option for a department of biomedical engineering. The Council strongly supports the development of capabilities in biomedical engineering and is keenly interested in monitoring the progress of this development.

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The Council was complimentary of the focus on metrics by Dean Fuchs and requested comparative data from other universities (e.g. applications, acceptance rates, retention rates, job placement).

It was agreed that the new one day meeting format worked well. The agenda for the next meeting will include:

1. Strategic Plan
2. College Metrics

Sherri Stuewer adjourned the meeting.

The presentation slides from the meeting can be viewed at:
http://www.engineering.cornell.edu/ecc

Username: spring03
Password: spring03

Under the heading "Current Meeting April 9-10, 2003", click on "Presentations".

Breakout Session Summaries

Group # 1 – Envisioning the Future for Student Facilities and the Engineering Library

The Center should have two different sections – administration and academic
The group emphasized that the building should maintain current capabilities and enable new capabilities especially:

- Loud/active space
- Presentation space (A place to practice and present)
- Food services
- Program space (projects connect undergrads and grads in engineering)
- Community space to enhance connectivity across engineering disciplines, the college and Cornell (teleconferencing/networking)
- Better connection between career services and alumni affairs
- Provide a gateway for the college = awareness, info/tech hub, showcase
- Enhanced technology – netmeeting, teleconferencing – expedite the digitization of periodicals.

Consideration of shared space was suggested, as was the need for efficiency, flexibility and adaptability in the design of the space. Moveable, changeable soft walls were suggested. Mann Library and the Johnson School of Management were cited as good examples of space design and usage.

A new Center with community space is a high priority.

Group #2 – Envisioning the Future for Student Facilities and the Engineering Library

- A new college center is a high priority for undergraduate students. For undergrads this was a higher priority than any proposed research space. Graduate students find greater community in their research groups.

- URIS and Mann are more attractive places to study but currently full access to them by engineering students is restricted. Look at the positive aspects of these spaces.

- An open feeling is good.

- Group meeting rooms are necessary for study. It was suggested that we try an experiment by putting modular interiors in the existing library to see how this works.

- To enhance corporate and alumni relations parking and a large (200+ seat) conference facility are needed.

- The building should make a statement by being impressive.

- The space must be flexible/adaptable – use modular interiors and wireless networking.

- As pedagogy has shifted, there is a strong movement to digital materials. Books and paper are less important for engineering.

- Remote access and video conferencing capabilities are needed.

- To accommodate emerging project activities, use Ward Lab as a short-term solution.

- Project space shouldn't be included in the new facility. It should be located in the departments.

- Print/Digital resources won't differ significantly except that access to old materials, which have not been digitized, will be more difficult.

- Call the building an Engineering Center, not a library.

- Access to software as well as hardware is important.

- Students would benefit from lockers but they pose a security risk.

Group # 3 – Undergraduate Mission, Goals, Values and Objectives

<u>College of Engineering</u>
"Educate the leaders of tomorrow"

- What are we currently doing to achieve this goal?
- How can we measure this goal?

Sixth statement of the College of Engineering Mission – to collaborate with alumni – How can we:

- Better engage alumni?
- Provide a source of alumni education?
- Develop a metric system to measure this = win-win

<u>Community</u>
Group Learning; Group Work

- Integrate students into the school of engineering from day one.
- More focus on group work/collaborative efforts early on in group problem sets and group projects
- Address lack of community through connecting students with students and students with faculty

Strengthen Community

- Create identity early on instead of waiting until the junior or senior year
- Have an overall emphasis on spirit, culture, community

Values

Why is there so much emphasis on student flexibility/change in the goals?

"We prize an inclusive, respectful college environment in which community bonds and community responsibility exceed competitiveness."

- We need SMART goals
  - » Specific
  - » Measurable
  - » Action-oriented
  - » Realistic
  - » Timely

Extends into…

Program Educational Objectives

- Address symmetry in program objectives
  - » I.e. Chemical and Biomolecular Engineering's objective #3 "To provide a liberal education in humanities and history". *Pull this out of the Program Objectives and put into the values statement.*
  - » What are the common reoccurring themes? What belongs in the specific department objectives?

- More flexibility for electives to allow for a broader education while maintaining a rigorous education - *Evaluate the current curriculum.*

- Consistency in format of department educational objectives

- More focus on systems and group work

- Making the connections with industry

A Re-occurring Theme

How to actively integrate the engineering discipline into the total business system.

- Understand how what you are doing in a project plays into other business aspects
- Dealing with exactness in an inexact world (multiple answers and imperfect information).