

**College of Engineering
Engineering College Council
Meeting Notes**

April 20-21, 2005

Note: The PowerPoint presentations, advance material, and agenda for the spring 2005 ECC meeting are available on the web at:

www.engineering.conrel.edu/ecc/

Login: spring2005

Password: spring2005

The Engineering College Council (ECC) met in Ithaca on April 20 and 21, 2005. The following ECC members were present:

Kenneth E. Arnold
Richard A. Aubrecht
Joseph Bonventre
Charles S. Brown Jr.
Kenneth C. Brown
Jay W. Carter
Scott C. Donnelly
Samuel C. Fleming
W. Kent Fuchs
James N. Hauslein

William J. Hudson Jr.
Gretchen Knoell
Christine M. Maziar
James M. McCormick
Venkatesh Narayanamurti
Armando J. Olivera
Justin Rattner
Rebecca Robertson
William R. Shreve
Evelyn Taylor

Bill Shreve opened the meeting and announced that:

- The fall 2005 meeting agenda would focus on the undergraduate program
- This meeting will focus on the Master of Engineering program
- Dean Fuch's presentation will be shorter to increase time for questions and discussion
- ECC members will meet in four separate breakout groups to discuss specific MEng Self Study reports
- All ECC members are invited to the CEAA events held at the end of the day

Kent Fuchs introduced Christine Maziar, a new member of the ECC and highlighted that her experience in different academic administrative positions was a valuable asset to the council. Christine is the Vice President and Associate Provost at the University of Notre Dame. Before moving to Notre Dame, she spent six years at the University Minnesota as Vice President for research and Dean of the Graduate School. She was also on the faculty of the Department of Electrical and Computer Engineering and the Vice Provost for three years at the University of Texas Austin.

The ECC members introduced themselves.

Engineering Highlights –W. Kent Fuchs, Dean

Kent Fuchs presented an abbreviated version of his presentation to allow more time for discussion. He highlighted the following:

- Provost Martin has completed a report on Academic Planning which is included in the ECC packet
- National developments – There is a growing concern about the relative size of technical workforce and federal funding for research in engineering and physical sciences- INNOVATION (see reports in packets)
- Changes in Leadership at Cornell
 - Stephen T. Golding has been appointed Executive Vice President for Finance and Administration effective May 2005.
 - Inge Reichenbach, VP for Alumni Affairs and Development, is moving to Yale University. Laura Toy will be the Acting Vice President.
- Diversity Programs – New staff in the Diversity Office include:
 - DiOnetta Jones, Director
 - Justin McHorse, Assistant Director
- Accreditation
 - All six of our undergraduate programs reviewed by ABET in November 2004 did well. We will be able to announce the programs' reaccreditation after the July Engineering Accreditation Commission official approval of the evaluation results.
- Strategic Plan
 - The first release of the long version of the Strategic Plan is included in your packet. This is a dynamic document and, therefore, feedback is appreciated.
 - A Strategic Plan brochure will be distributed to 40K alumni and friends in the August 2005 in the Engineering Magazine.
- Facilities
 - Two new facilities are in progress: The New Life Sciences building and the Physical Sciences building
 - A feasibility study is in progress for a third Computing and Information Science and Engineering building.
- Quantitative progress
 - The college was ranked 12ths by USNWR this year.
- MEng
 - This is the main topic of today's meeting. The review of the MEng programs was a result of recommendations from the strategic planning process
- 1-2-3 Goal
 - One of the goals in the Strategic Plan that relates to the graduate program is the goal for each faculty member to graduate 1 PhD

student, 2 MEng students, and 3 BS students each year. We are at the mark for MEng degrees awarded and slightly above our goal for BS degrees, but we have not met the goals for PhD degrees awarded.

Discussion:

Bill Shreve noted that the number of PhDs produced per faculty, one of the 1-2-3 goals, was used by USNWR as a ranking criterion. If the college achieved the 1-2-3 goal it would most likely result in an improved ranking.

Jay Carter asked Kent to comment on how the college was doing with transnational objectives and with China specifically?

The university has appointed David Wippman as a new Vice President for International Relations. Central support should help the college increase its international presence. Our international goals are to:

1. Improve our international image
2. Increase study, work, and internship opportunities for students our students abroad and international students at Cornell University
3. Increase the quality of the international students admitted to the Engineering graduate programs
4. Develop international faculty research collaborations

The college has fewer students studying abroad than our peers and, therefore, we want to increase our international opportunities. We are in different stages of implementing the following international agreements:

1. Asia: Tsinghua University, Beijing, The Peoples Republic of China – In November 2004 we signed a Memo of Understanding (MOU) with Tsinghua which encourages faculty workshops, faculty research collaboration, faculty exchanges, joint PhD student supervision, and undergraduate study opportunities in China. Cornell is also developing a relationship with Beida University and will be setting up a Cornell office in Beijing.
2. India: We are planning to establish a relationship with one of the ITT universities in India over the coming year.
3. Europe: Ecole Centrale, Paris, France – We have developed two programs with Ecole Centrale. The first is a Junior Year Abroad program. The second is a 2-2-1 program in which a student spends their junior and senior years at Ecole Centrale and returns to Cornell for their MEng degree. At the end of the MEng program the student receives a BS degree from Cornell, the equivalent of the BS degree from Ecole Centrale, and an MEng degree from Cornell. We have two students who will enter the 2-2-1 program this fall.

Charles Brown asked “What are your diversity performance measures?” and “How are we doing?”

The college has three issues – (1) the number of underrepresented minorities (URMs), (2) the retention of URMs, and (3) the environment in support of URM success.

1. If we change the diversity of the faculty first it will enhance and sustain the other levels. We have a goal to have half of our new faculty hires be women or URMs. We are not there yet.
2. We want to increase the number of PhDs awarded per faculty from .5 to 1.0 and increase the diversity of the graduate students. We are offering full support fellowships to all graduate URMs in the MS/PhD program and providing a mentor for each of these students. It is starting to pay off. Note that we are not doing this for MEng students.
3. We set the goal of 11% minorities in our undergraduate population. Currently we have 7% URM undergraduates but our entering fall 05 freshman class includes 11% URMs.
4. We are holding steady at approximately 27-28% women while the percentage of women at some our peer institutions has plummeted.

Gretchen Knoell noted that the acceptance rate for women was 50%. She asked, “Was the quality of the women applicants better or were the standards lower?”

The standards for the admission of women were not lower. We look at many different criteria when selecting our class. We have used the McManus endowment to offer women scholarships to enhance our efforts in this area.

Bill Hudson asked, “How will the change in the SAT impact your ability to analyze students.”

We don’t have the answer to that yet but we don’t think it will have a significant impact. Currently our students take the SAT II writing exam which is similar to the change in the SAT. Our entering students have the second highest verbal scores in the university. Arts and Sciences is the only college with higher average verbal scores and our average total SAT score (Math and Verbal) is the highest.

Evelyn Taylor inquired, “Was the number of PhDs awarded per faculty an issue in the lower USNWR rank?”

The college aspires to be considered in the top five engineering institutions. Some of the USNWR factors improved, some stayed the same, and some hurt us.

Factors that improved or stayed the same included:

Peer Rating - 9th to 8th

Total Research Expenditures – 16th to 15th This is a size dependent factor.

Acceptance Rate – 37th to 27th Our pre-application process for graduate admissions hurt us. We have eliminated pre-applications.

Recruiter Rating - stayed the same ranked 8th

NAE Memberships - remained constant at 12th

PhDs Granted – remained at 15th

We were hurt by the following factors in which we fell in the ranking:

GRE quantitative score - 9th to 22

of PhDs Awarded per Faculty - 16th to 24th

Research Expenditures per Faculty - 4th to 14th The research expenditures per faculty factor was impacted by a USNWR methodology change. They now use the total faculty in the college as a denominator instead of the faculty engaged in research.

Jim Hauslein observed that if you look at the more macro trend of our ranking over the last five to six years our ranking is steadily declining.

Kent noted that some of our peers, such as Georgia Tech, have made good progress. Others have improved their ranking by aggressively reporting their data.

Venky Narayanamurti remarked that faculty membership in NAE is important and needs to be higher. He suggested that the college systematize an approach to NAE nomination.

Justin Rattner agreed and that NAE membership should be looked at on an ongoing basis. The college has had no new NAE members for a number of years.

MEng Review – Michael G. Spencer, Associate Dean for Research

Mike Spencer summarized the Master of Engineering program recommendations and objectives that came out of the strategic planning process. He noted that as a result of the planning process the MEng program is being reviewed for the first

time by itself. In the past it was only evaluated in the context of the BS or MS/PhD programs.

The MEng program was constituted in its current form in 1965 as a result of an Engineering Policy Committee study that took place in 1964 and recommended that the BS program be reduced from four to five years and the MEng degree be awarded for a fifth year of study. Cornell's MEng program is unique because of the large number of MEng programs we offer, the required design/research project, and the fact that we admit both internal and external candidates to the program.

The desired MEng program outcomes are:

- Produce a graduate with a greater field specialization
- Produce a graduate with a greater exposure to engineering design
- Produce a graduate with a greater exposure to working in interdisciplinary teams
- Provide a bridge for some students to the MS/PhD degree program

The college desires to strengthen the quality and impact of the MEng program. Data showing MEng enrollment and revenue generation and distribution in FY01, FY04, and FY05 was presented. The MEng financial model, that determines the distribution of MEng tuition returned to the college, was just revised from a complicated weighted non-linear model to a linear model that distributes 65% of net tuition (Total tuition less ~20% university administrative fee) to the college and 35% to the departments. Many of the departments offering an MEng program rely on this income.

Discussion:

Justin Rattner asked, "How many of our peers in the top 10-20 schools actually grant an MEng degree?"

Kent answered that some of our peers offer an MEng degree but it frequently is different than the program we offer at Cornell.

Joe Bonventre added that MIT has an MEng program but it is less focused on a project and limited only to their students.

Venky Narayanamurti questioned, "Is there a significant difference between the MEng project and undergraduate projects?"

Kent responded that the MEng projects are different. They are required as part of the MEng curriculum. They are also likely to be externally linked to a corporation and are often team based.

Jim McCormick asked, “What would the student perspective of the outcomes of the MEng program be?”

Mike Spencer responded:

- Depth in the field
- Greater value in the job market

Jim followed up by asking why those outcomes were not in the college list of outcomes.

Justin Rattner noted that, given the difference in the starting salaries of students graduating with MEng versus BS degrees, the program had a high return on investment (ROI).

Bill Shreve suggested that practical application ought to be added to the list of outcomes too.

Jay Carter said that based on the interaction with MEng students who gave presentations at the 4/20 ECC dinner, the students had fun and enjoyed the projects. He said this should also be added to the outcomes because a student’s positive impression of the program was important for networking and future development activities.

Bill Hudson pointed out that there is a distinct difference between the MEng and MS/PhD programs. MEng students enhance their industry related job skills. The MS/PhD degree is an academic program that prepares researchers. There may be a conflict of goals between the research emphases of the Strategic Plan versus meeting the needs of every student. How do you build in neutrality?

Kent responded that there is a tension between the MEng and MS/PhD programs that is similar to the tension between the MEng and the BS programs. The MEng program is voluntary and is a benefit to society. Improving society is part of our mission. The program is also unique because it is the only college program that brings in resources to the departments. It does add to the faculty load and because we have more undergraduates than our peers results in a significant load on our faculty.

Bill Aubrecht asked, “What is the history of the funding? If you were to start from ground zero, would you have an MEng program?”

Kent responded that we would have an MEng program if we started from ground zero. He explained that the original Strategic Plan included a goal to raise an endowment to offset the need for the MEng financial return. That goal was eliminated because I like

the revenue model and would like to change the undergraduate and MS/PhD graduate model to be like the MEng model. This is one way to control your own destiny.

The MEng program is not just about money. It is part of our role and mission.

Venky Narayanamurti commented that there is a big distinction between the MEng program and the MS/PhD program. The fifth year of the MEng program is required to be a PE. The college might consider admitting students in their fourth semester with a specified minimum GPA to the MEng program.

Charles Brown asked, “What percentage of the MEng students have financial aid?”

Mike Spencer answered that almost no financial support is available to MEng students. There are a few TAs available but almost all of the MEng students pay their own way.

Evelyn Taylor asked, “How is the MEng program marketed?”

With a few exceptions on the web, the program is marketed department by department.

Bill Hudson noted that when he was in school the BS degree was a five year program. He suggested that the college offer the MEng degree program as the entry level program and give students the option to convert to the MS/PhD program.

Charles Brown asked, “Is it correct to assume that faculty engaged in the MEng program are demographically different from those involved in the MS/PhD program and are less likely to be tenure track faculty?”

Kent responded that it is true that the faculty involved in the MEng program are demographically different but they are not untenured. A few faculty carry the majority of the MEng load. These individuals are often senior faculty.

Gretchen Knoell inquired, “Why did the number of students change? What drove that - the financial model?”

The revenue question about the program is important. Each department’s MEng tuition return differs based on their enrollment. Some departments have large MEng programs others, by choice, have almost no MEng students.

Scott Donnelly noted that the enrollment has declined less than the apparent financial loss.

The MEng financial model is not linear. Tuition return is weighted based on the relationship of the number of students to the number of faculty. A new model will be implemented starting in July 2005 (FY06) that will distribution the MEng tuition in a more linear manner.

Joe Bonventre asked, "What does the financial impact of a reduction of 20 students mean to a program?"

The loss varies depending on the overall enrollment in the MEng program and the enrollment in the particular MEng program.

Note: During the lunch break two additional documents were distributed to provide additional information about the new FY06 financial model and the amount of MEng tuition distributed to the college compared to the overall budget and college expenses.

Mike Spencer reviewed the four MEng breakout group assignments and seven questions each group should answer. He explained that each of the department MEng Self Study Reports say very different things. The programs have diverse targets and objectives. Some want to increase the size of the program, others want to decrease the size of the program. In addition, large departments and new departments have unique concerns.

Jay Carter asked, "Looking at the financial considerations only, would we have fewer faculty lines if we did away with the MEng program? Would we be better off without the program? Would the number of faculty cut be equal to the reduced workload?"

Kent responded that another way to pose the question would be to ask, "What would the impact be if we got rid of the 2,800 undergraduates?"

Christine Maziar commented that research in not fully reimbursed through indirect costs. The MEng program runs in the black and supports other functions in the college.

Bill Shreve added that without the MEng program the graduate level course offerings would change drastically. Many of the 500 level courses currently offered are also taken by undergraduates.

Christine Maziar ended the discussion by noting that as federal funding becomes more constrained in the future, colleges will look for more revenue streams like the MEng program.

The ECC members split up and moved to the breakout rooms.

Breakout Group Reports

Group Three – Computer Science, Electrical Engineering, Engineering Physics, Materials Science and Engineering

ECC Members: Justin Rattner (Facilitator), Venky Narayanamurti(Reporter), Christine Maziar, William Shreve

Department Participants: Charles Van Loan, Graeme Bailey, Clifford Pollock, Joel Brock, Emmanuel Giannelis, Julie Delay, David Grubb

New Areas and Collaborative Models

- Materials Science MEng program needs a new approach; link it to life sciences? Link it to nanotechnology? Technology Mgt?
- Tracks and flexibility are more important than entirely new degrees
- Large MEng programs need a faculty member in charge
- Financial model needs fundamental rework to re-invigorate the program

How Does Industry Value the MEng Program?

- Appreciate the project-oriented approach
- Satisfy the need of the development and manufacturing organizations for “professional” engineers (vs. researchers)
- Good indicator of candidates who have an interest in furthering their career goals
- Also an indicator of interest in the applied side of engineering
- Significantly higher pay levels (+\$14K)

Does MEng Strengthen or Weaken the College?

- Definitely strengthens the college
- Need to take more pride in the program
- An increasingly important asset
- A way to respond to global changes

How can the MEng Programs Enhance the Undergrad and MS/PhD Programs?

- Make supervision of MEng students part of the PhD program
- They help shift the faculty workload
 - Using MEng students to help lead UG system projects
- Enables a wider variety of course work to be offered at the 500/600 level
- Provide the best TAs for undergrads

Marketing the MEng Program

- Individual fields have to be in charge
- Value in having the college market the philosophy; more leverage of the Cornell value add
- Marketing to companies who want to get selected employees upgraded; leverage the NSF centers by using MEng grads to enable access
- Market to regional companies
- Need to fill the college position which handled the MEng and coop programs to drive both marketing and overall coordination
- Do a better job highlighting the timeliness of the tracks while keeping the degrees in the major areas.

Assessing the Quality and Success of the MEng Program

- We need to formalize the follow-up of what the MEng students are doing after 3 and 5 years
- Track the financial contributions by the MEng graduates
- Maintain sense of community through computer accounts with controlled intranet access

Specific Recommendations in CS, ECE, AEP, and MSE

- CS has opportunity in tracks such as security and computational biology
- ECE should lower the bar to hit the sweet spot of the MEng candidate
- AEP to avoid students gaming the system by applying to MS/PhD program
- MSE's Technology Management MEng idea needs more thought (courses, ...)

Additional Notes by Department

Notes from CS (Van Loan)

- Honors CS undergrad – MEng continuity
- Some financial instability – return on best
- MEng TAs – always short supply
- Machine learning is most popular
- NA was the old story; now a universal need
- An opportunity for non-CS undergraduates to get more depth in the field; a marketable feature
- Compliments the CS minor
- Tracks as an emphasis: computational bio and computer security; basis for advertising
- CS has a full time MEng director (Graime Bailey)
- Bill: don't water down with business courses
- Grads tend to keep in touch via email; network for employment offers

Notes from ECE (Pollock)

- Issue: the load MEng students place on faculty; young faculty doesn't see the ROI

- Issue: hard to decouple revenue from the numbers of students
- Issue: early admission of Cornell undergraduates takes away from revenue
- Issue: back to basics (PDEs, Maxwell, ...) isn't playing well with students; want app's
- Issue: how much more technical depth is needed; recruiters are not consistent; undergraduates follow industry
- Issue: raising the admission bar caused the fall in accepts
- Next year will include some business courses
- Going out to do recruiting; RPI for example

Applied and Engineering Physics (Brock)

- Fairly small program; wide spectrum of interest; high accept rate; modest growth due to new faculty
- What do you do with a UG that doesn't have the requisite course work? Take an extra year to do needed coursework
- 1-1 correspondence between students and seats in the lab: more MEng means fewer PhDs
- Nobody comes to grad school here without full support; pass the A exam, get MS, and leave
- MEng particular valuable as TAs; (generally true across departments); provides a cohort
- Additional students makes offering certain course much more attractive; benefits PhD students.
- MEng students are considered grad students which brings down the graduate student ratings.
- MEng student work with the research teams; focus on engineering design.

Materials Science (Giannelis)

- Very small program in a strong research oriented department
- MEng go 1-1 with a particular group; most part it's similar to a MS/PhD program
- Program hasn't grown because students haven't found it valuable beyond a UG degree
- In discussion: would a different program give us the numbers and be attractive to students
- Targeting an area called technology management; ex: how to establish an engineering portfolio; courses like risk assess.
- Question: do we have the faculty to teach tech mgmt? do we have the course work? Answer: no new courses
- Planning on a team approach; take advantage of system engineering; one idea on the table.

Group 2 – Agriculture and Biological Engineering, Biomedical Engineering (Bioengineering Option), Chemical Engineering

ECC Members: Rebecca Robertson (Facilitator), Joseph Bonventre (Reporter), Charles Brown, Samuel Fleming, James Hauslein, Evelyn Taylor

Department Representatives: Michael Walter, Michael Shuler, David Lipson, Paulette Clancy

1. Are we offering MEng degrees in appropriate areas? Are there new program areas or collaborative models that we should consider?
 - Distance learning approaches may be useful.
 - Create structure that fosters engineer and clinician interactions with medical or vet environment.
 - Partner with venture that wants early access.
 - Could facilitate interactions by making IP issues more transparent.
 - More clarity on advising students interested in interface of biology, medicine and engineering.

2. What does industry value in the MEng program?
 - Graduate should be able to identify what is problem that is to be solved and can develop a creative approach to a solution?
 - Understands regulatory environment?
 - Master of particular technology and adaptive expertise.
 - Maturity.
 - Team building and collaboration.
 - Further along in ability to integrate various aspects of engineering disciplines directed to a problem.

3. Does MEng program strengthen or weaken the college?

The financial component is important. MEng student activities aid graduate students and the overall activity of the faculty member. Faculty should be monitored and mentored carefully.

4. Are there ways that MEng program can better enhance the undergrad program and MS/PhD
 - Can have significant effect on maintaining high quality in admissions to Cornell especially in the face of significant competition in the bio/engineering area.
 - In many cases MEng students contribute very positively to PhD student research
 - Can attract “non traditional” engineering students to engineering and potentially increase feed to graduate programs

5. How can we better market? Improve the quality of candidate pool?
 - Diversity of MEng class should be increased. Educational experience would be better with more people who had undergrad degrees from places other than Cornell.
 - BME and Chem E. did mass mailing and have three-quarters of applicants from outside of Cornell
 - Some concerns of quality control because of connection to financials.
 - Reaching out to graduates who are year or two out after graduation although there are questions about financial benefit and how popular this would be.
 - Market and develop a distance learning approach.
 - Start marketing at undergraduate admissions level. Present the wide variety of options the high school applicant will have if they come to Cornell.
 - Describe missions of the various MEng programs to help undergrads and applicants navigate and understand the richness of opportunities at Cornell at the interface of biology/engineering and medicine.

6. How can we assess the quality and success of the MEng program?

Possible metrics include:

 - Patents
 - Publications
 - Leadership positions
 - Technical accomplishments
 - Salary

But these metrics will vary depending on industry

7. What recommendations for specific programs?
 - Distance learning
 - Market at level of college's admission. Make it clear and transparent at an early level all of the opportunities at the interface of medicine, biology and engineering. Make it clear how valuable the approach that Cornell has taken is superior to approaches that others have taken. This was controversial
 - Agree to expand program in some areas and not in others rather than "one size fits all"
 - Assess outcomes using patents, publications, salary and leadership position and technical accomplishments.
 - Consider allowing students to enter the MEng program in the 4th semester so that they can design the last 3 years of BS-MEng in a more organized way.

Group One – Aerospace Engineering, Engineering Mechanics, Mechanical Engineering (Manufacturing Option), Geological Sciences

ECC Members: Richard Aubrecht – Facilitator, Kenneth Brown – Reporter, Scott Donnelly, William Hudson, Armando Olivera

Department Representatives: Sidney Leibovich, Timothy Healey, Chung-Yen Hui, Teresa Jordan

1. Are we offering MEng in appropriate areas?

Mechanical and Aerospace Engineering

- Yes. Continue and grow the program
- It is the “right” thing to do
- It has corollary benefits (returns)

Theoretical and Applied Mechanics

- No. Direct interested candidates to other programs with critical mass.

Geological Sciences

- No. Direct interested candidates to other programs with critical mass.
There is an overlap with CEE/Life Sciences.

2. Does industry value the MEng program?

Mechanical and Aerospace Engineering

- Yes.
- Should develop data to support this claim (salary premiums, testimonials, etc.) to help better market MEng and to provide some metrics for judging success.

Theoretical and Applied Mechanics

- Probably not. MS/PhD the main route.
- However, should explore demand or need for applied math stand-alone programs for non-engineers. Alternate career paths for physics and math majors – need flexible requirements.

Geological Sciences

- No. MS/PhD is the dominant route.

3. Does the MEng strengthen the college?

All

- Yes.
- Provided acceptance standards are high enough (3.0+)...MEng students help fund teaching load and are not detracting to faculty time.
- Enhance industry-corporate relations...needs to be developed
- Provided ways are found to manage projects with same or less faculty time

- An interesting avenue to offer non-engineers a route to jobs

4. Can the MEng program be enhanced?

Mechanical and Aerospace Engineering (Only)

- Hire a full-time director... “Eisner” model
- Grow to 55 students
- Make more use of industry partners
- Coordinate acceptance with corporate recruiting cycles
- Marketing – do marketing at the college level with department partnership
- Improve project component (???)

4.(b) Can the MEng program enhance the MS/PhD?

- Two very different tracks
- Just avoid drawing away faculty time

5.6.7. How can we improve?

- Recognize not every department needs an MEng program. Focus on critical mass.
- Facilitate Dean-level interaction to make sure the crossovers happen...\$ returns...teaching loads.
- Hire a full-time Director in M & AE
- Involve industry
- Dial it (M&AE) up to 55...marketing should be simple
- Make projects practical, team oriented, compact...use undergraduate projects where appropriate

Kent Fuchs summarized that the MEng Task Force and the MEng Committee would review the recommendations and send specific recommendations back to the individual departments. The departments will determine what recommendations will be accepted and followed up.

Group Four – Civil and Environmental Engineering (Engineering Management Option), Operations Research and Industrial Engineering (Financial Engineering Option), Systems Engineering (Systems Engineering Option),

ECC Members: Gretchen Knoell (Facilitator), Kenneth Arnold (Reporter), Jay Carter, James McCormick

Department Representatives: James Gossett, James Renegar, Mark Eisner, Robin Roundy

1. Think Big

- Valuable from the standpoint of industry

- Good for students – Why are only 25% (really 16.6%) going on to the MEng program. Need marketing internally
 - Distinctive for Cornell University
 - Keeps Alumni connection to Cornell
2. Grow the program – Need faculty and funding
 - Improve the quality of the applicants
 - Pull through the undergraduate quality
 3. Need to make the program more visible to employers
 - Marketing to employers
 - Statistics – salaries, career development, giving to Cornell University
 - Market to students at other Universities
 - Market to Cornell Placement Office
 4. Get experience alumni to be visiting lecturers, program resources (couple of weeks ----Mark Eisner)
 5. MEng fights global competition (outsourcing)
 - We want conceptualizers (fact based with analytical skills)
 6. Need to give students and recruiters help in understanding terminology
 7. Relevancy to ranking
 - Goal of being considered in the top five

Teaching Excellence – David Gries, Associate Dean for Undergraduate Programs

David Gries presented a short update on Teaching Excellence in the college. Since 1993 11 out of 37 (30%) of the Weiss Presidential Fellows, a university teaching award, have been engineering faculty.

Al George was presented the Carson Buck Teaching Award at the St. Lawrence Section meeting of the ASEE in Binghamton University, April 8, 2005.

The college had Richard Felder and Rebecca Brent, nationally recognized scholars of engineering education, present a 1.5 day workshop on Effective Teaching in January 2005. 57 faculty attended the presentation. The total attendance was 70.

Felder and Brent will return in August 2005 to give an Effective Teaching workshop for new faculty. If it is a success, it will be offered annually.

Bruce Corson recently gave a lecture on creative design in engineering.

A Committee on Teaching Excellence has been established.

Discussion:

Jim McCormick stated that it is fair to say that the upside of learning more about the science and art of teaching is significant.

David Gries agreed that if we got faculty on board we could make a big difference. Kent said that there were two benefits to more effective teaching:

1. Better teaching evaluation ratings
2. More efficient use of faculty time – Felder says that a faculty member should spend only two hours preparing a lecture.

Bill Aubrecht noted that the time to make improvement is with new faculty and suggested that the college focus its efforts there.

Charles Brown suggested that we look at the average student evaluation of teaching before the intervention and after the intervention and compare the teaching ratings of faculty who did and didn't participate in the workshops.

David Gries stated that the college has not done that but that we could.

Christine Maziar asked, "Are there other methods of determining the quality of teaching other than the teaching evaluations?"

David Gries explained that as a result of the ABET accreditation evaluation the six programs that were reviewed developed syllabets (syllabi developed according to an ABET format) for each course which included learning outcomes. During a post course assessment process they evaluated how well the students attained those learning outcomes and developed plans to improve the course if the learning outcomes were not satisfactory achieved.

Christine Maziar commented that the ABET process focused too much on the course and should be changed to focus on the program.

David Gries pointed out that in the ABET process the course outcomes roll up into program outcomes which support program objectives.

Observations of Tsunami Damage in Sri Lanka from the 2004 Sumatra Earthquake – Philip Liu

Philip Liu gave a very interesting presentation on the tsunami wave deformation and impact that resulted from the 12/26/04 earthquake of the coast of Sumatra. The tsunami displaced the equivalent of 20 times the volume of water in Cayuga Lake.

The ECC ended the meeting in a closed Executive Session.