DRAFT
Engineering College Council Meeting
October 17-18, 2013
Ithaca, New York

Members Present: Jim Becker, Dan Bernstein, Bob Cowie, Lance Collins, Greg Galvin, Virginia Giddings, Michael Goguen, Ken Goldman, Frank Huband, Ivan Lustig, Jim McCormick, Howard Morgan, Justin Rattner, Jim Ricotta, Bob Shaw, Dan Simpkins, Elissa Sterry, Duane Stiller, Sherri Stuewer, Todd Zion

Emeriti Present: Dick Aubrecht, Jay Carter

The meeting presentations and materials can be found at:
https://confluence.cornell.edu/display/ECC/2013+Fall+ECC+Meeting

Username: eccmeeting@gmail.com
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Welcome and Introductions
Lance Collins, Dean of Engineering, welcomed the Council to the Fall '13 ECC meeting and announced that the theme would be the "Engineering-Business Interface". He indicated that the Council members would be asked to provide their input on learning opportunities for undergraduate and graduate engineering students to prepare them for leadership roles in business and as entrepreneurs. He also noted that lunch would involve a joint session with the Johnson Graduate School of Management Advisory Council members facilitated by he and JGSM Dean Soumitra Dutta to discuss each degrees' value proposition for industry, as well as their effectiveness for preparing graduates to be successful entrepreneurs.

The Dyson Engineering Business Minor
Deborah Streeter, Professor, Charles H. Dyson School of Business and Faculty Director of the Dyson Business Minor for Engineers (DBME), gave a presentation on the Dyson Business Minor for Engineers. This minor is specifically tailored to the education and career needs of engineering students. Streeter noted that many students are looking for a way to get a business credential before they graduate. This minor exposes them to the vocabulary, concepts and analytics used in a business environment and makes them more competitive for internships. Knowledge of how to read financial statements, how to manage people and familiarity with the business world will be valuable to them whether they start their own business or work for a corporation. She added that the business minor, as well as the Engineering Leadership Program, will cultivate the students' success in business.

Streeter gave an overview of the academics for the DBME which include the pre-requisite of Economics, the core courses of Introduction to Management of Marketing, Accounting and Finance. In addition, each student takes a career-appropriate upper-level course and a capstone course, AEM 4660 (Marketing Dynamics, Computer Simulation and Modeling). AEM 4660 is offered as a 7-week course consisting of teams (formed balancing gender and fields of study). Streeter pointed out that each student team makes decisions for business (through simulation

runs). The teams compete in 10 rounds over the 7 weeks. Streeter showed a video clip where students commented on this experience, noting that business is full of ambiguities and that this course was an important learning experience for them. Students love this class.

Streeter also noted that the DBME is very effective from a learning perspective, as being integrative, and a great team experience. She added that other opportunities for DBMEs include lunches with alumni on campus, attending the NYC Summit and one-on-one opportunities with mentors.

Streeter discussed collaborations with the Engineering Leadership Program, including the professional skill video series which deals with inner critic, getting and giving feedback and speed reading personality types. She concluded that the minor is growing, student participation in extra-curricular activities is strong, students are adapting the minor to their career interest and there is room for even more integration with the Engineering Leadership Program.

Streeter concluded by saying that the Dyson Business minor for engineers is a rigorous, flexible way for students to be exposed to business and it has been very successful. She encouraged the council members to contact her if they plan to be on campus and are interested in having lunch or meeting with a group of Dyson Business minors students.

The Council members also heard positive feedback from students who have participated in this program. Their comments on the Dyson Business minor included:

- It's a great opportunity to learn about startups.
- Problem solving skills were helpful in job search.
- Three-day conference with World Bank in D.C. was great.
- Business simulation lab was very interesting.
- Immediate feedback was helpful.

Comments on the Dyson Business minor:
- It would be good to make prospective applicants aware of this program. Betsy East, Assistant Dean for Student Services, responded that the admissions staff work with the Cornell Alumni Admissions Ambassador Network (CAAN).
- Is the purpose of this program to make the College of Engineering more competitive? Streeter responded that it could be used as a competitive advantage in recruiting high school students. She added that the extracurricular activities we offer give us an advantage. Lance added that our DBME program distinguishes us from the other universities.
- Is there a way to provide an introductory course for all students that introduces the business aspect in engineering? Exposure for students to business would be very helpful. Lance agreed that this would be very helpful.
- Has there been any feedback on how the program has worked? Streeter responded that the program was redone last year due to feedback from students.

- How can we leverage alumni? Streeter indicated that alumni provide great opportunities for students (for example, participating as a guest speaker or mentoring). If interested, please email her at <dhs4@cornell.edu>.

Streeter concluded by saying that the minor is growing. Based on feedback from last year's students, the program was redone. Because of additional funding, it was possible to make this program available to many more students.

Engineering Teams and Leadership Program
Erica Dawson, Director of the Engineering Teams and Leadership Program, gave a presentation on that program. She indicated that their "mission is to grow powerful leaders who take on our world's biggest challenges with knowledge, skill, insight and courage. Cornell Engineering Leaders stand for integrity, curiosity, self-awareness, responsibility for impact, compassion, growth, and determination". She added that the program is structured on a three-tier model for students based on:
- Something for the Few: project team leaders seminar, international experience (Israel Innovation Tour), individual coaching and teambuilding.
- Something for the Many: existing classes, stand-alone seminars (i.e., engineering ethics, managing conflict, strengths assessment, etc.), speakers (i.e., Jeremy Donovan, BS MS '97, *"How to Give A TED Talk"*).
- Something for All: exposure to model, Engineering 1050s classes.

Comments on funding the Leadership Program:
- Fund the program through engineering alumni. Make them part of the process. Erica responded that some of our project teams are doing this (i.e., Agua Clara).
- Lance added that the Leadership Program was established due to the generous funding of an alumnus.

Comments on international experience with Leadership Program:
Erica noted that students will be working on diverse teams, often globally. Comments from members included:
- Asia is a huge market in the future. How about forming remote teams? Global teams are usually done remotely, by communicating by phone, videoconferencing, Skype, etc. Erica responded that they are pairing students remotely with students from India. Also, three international trips are planned for this year. In January 2014, she will travel to Honduras with the Agua Clara team to help them with their communication skills and to give them feedback and guidance.
- International exposure is extremely important. Different cultures have different ways of thinking about leadership and engineering, politics, persuasion, and how ideas get propogated and disseminated.
- Global interactions are essential to people's success. There are different norms when working with a global team. Be creative with international relationships with other universities.

Erica concluded her presentation by discussing future needs of the Leadership Program, including: additional teaching capacity, space, defining a field and expanding collaborations (AEM class support).

The Council members gave positive feedback about the impact that the DBME and ELP programs have had on the College. They also agreed that the DBME and ELP differentiates our students from their peers and provides them with the knowledge and skills to enhance and develop their career opportunities. Several members offered to speak in courses and provide informal mentoring to students participating in these programs.

Entrepreneurship in Ithaca
Lance Collins gave an overview of three entrepreneurial initiatives at Cornell:

1. Southern Tier Innovation Hot Spot initiative: will bring together research and development expertise and technologies at Cornell University, Binghamton University and the Ceramics Corridor Innovation Center in Painted Post to create a regional, high-tech business start-up incubator. Lance noted that we would use these funds to cover operational costs. Cornell will work with Ithaca College and TC3 on this initiative. It will start in the PopShop and move into the eHub. This would be competitive space that would be professionally managed. Lance added that it's good to get these teams out of the academic environment and into the real world.

2. Start-up NY initiative: recently announced by Governor Cuomo to improve the economic environment in NY State by creating tax-free communities for new and expanding businesses in proximity to university campuses. Mary Opperman has been charged with this initiative. Lance indicated that with this initiative a start-up company could build on Cornell property. The group is looking for unique incubator space.

3. Future initiative: In September, Lance gave a presentation to the Tompkins County Area Development (TCAD) group about increasing entrepreneurial activity in Tompkins County by leveraging the new Cornell NYC Tech Campus. Lance sees a future where Cornell produces the technology. He added that the local community needs to weigh in on this. Greg Galvin indicated that he is on the TCAD Board and has set up a task force that will make recommendations on this initiative. Greg also indicated that the community needs to better advertise and market the technology being produced at Cornell. TCAD is on the path of working on marketing to promote Cornell. Lance pointed out that establishing a fund would be important to enhance this initiative.

Comments on entrepreneurial initiatives at Cornell
- Creating a seed fund (i.e. through equity enhancement) would be helpful. Lance indicated that this is already being done.
- Y Combinator company (a start-up incubator and accelerator that provides seed money) holds hundreds of competitions. Perhaps this could be replicated locally.
- Leverage the NY campus to cover start-ups. Geographically, this will make them more marketable.

- This fits with "breaking the rules" and is something that could be branded as being unique to Cornell.

Presentation by Kessler Fellows and PopShop undergraduate students
Tracey Brant, Director, Kessler Fellows, and selected Kessler Fellows students involved in the PopShop shared their experiences and impact of their programs on their entrepreneurial pursuits.

Kessler Fellows Program:
The Kessler Fellows Program was established in 2008 thanks to a gift from Andrew J. Kessler '80 who felt that engineering students need a better understanding of the business side of invention and innovation. The program consists of three phases: a spring course that introduces students to issues related to starting and leading a new enterprise; a summer internship at a start-up technology company or innovations unit in a larger company; and a fall seminar. The students work on both engineering and business projects.

Tracey announced that the Kessler Fellows Program just received a pledge that will allow them to continue for five more years. She added that Greg Galvin was one of the founding members.

Feedback by Kessler Fellows
- Matthew Carter '14, Biological Engineering (Caribou Biosciences).
  Got hands on experience and worked directly with CEO. Was co-author on patent. His passions were validated and he was given a job offer from Caribou.

- Georgia Crowther '14, Mechancial Engineering (SocialBicycles)
  The company was founded in 2010 for bike sharing. Worked mainly on developing hardware, including 3-D printing. Has a job offer from SocialBicycles and plans to work there after she graduates.

- Lee Hamstra '14, Materials Science and Engineering (Ecovative Design)
  Company was founded by RPI graduates. Platform was a combination of agricultural and bio. Did rapid prototyping. Will co-author an article.   The two main skills he developed were the ability to deal with ambiguity and sales experience.

- Megan Musacchio '14, Operations Research and Engineering (Enlight Biosciences)
  Worked with start-ups in different life cycles. Drug delivery platform. Co-author on *Nature* article. Would like to continue there part-time.

- Yoni Saltzman '14, Independent Major (Planetary Resources)
  Planetary Resources was founded in 2010. Company wants to expand the Earth's resource base. He managed and strategized a $1 million kick-starter campaignto be launched in April 2014. Tested and developed a solar panel system. Was able to use his interest in astronomy. Learned he enjoyed working on cutting edge technology.

Kessler Fellows and PopShop

- Manita Herlitz-Ferguson'14, Operations Research and Engineering (SUNN)
  Is also pursuing the Dyson minor. Participated in SUN, a start-up company. Primary project was marketing research. Started SUN's first online marketing campaign and worked on software and hardware design. Worked at PopShop. Said it was great to be surrounded by creative people.

- Ricky Panzer '14, Independent Major (Splat)
  Was the first Kessler Fellow to participate in his own startup. The device, called Splat (Smartphone-Powered-Laser Tag), is the product of a tech company called Spontaneous Tech Inc. started in 2011 by a group of Cornell students, including CEO Ricky Panzer. The device plugs into your smart phone to transform it into a video game console that allows you to participate in games such as laser tag. Splat got so much momentum that he took a leave of absence. The experience taught him the importance of relationships and culture.

PopShop:

PopShop is a student-run space in Collegetown where Cornell students gather to brainstorm and collaborate on startups. The shop, sponsored by Entrepreneurship@Cornell — a University initiative designed to promote entrepreneurship across all colleges and departments — was founded in 2012 by a team of students with the motto "stop by, start up" and the vision of helping students turn their ideas into companies.

- Ben Dreier '15, Computer Science, student manager of PopShop.
  This space is meant to inspire students to start their own company while they're at Cornell and to provide mentorship. He noted that having passionate alumni willing to help students has been amazing. They've given advice to students, including free legal advice on how to start a real company. He added that he recently signed an offer to work with the Microsoft team.

- Ali Hamed '14, Independent Major, one of the founding members of PopShop.
  Hamed talked about how the PopShop came to be. When he was a freshman he started his own company. What he didn't have was a peer group to learn from each other. He indicated that when you're an entrepreneur it's good to have a community that inspires and understands you. A community of people who'll say "yes"! He pointed out that the PopShop has enabled him to spread his love of start-ups to the broader Cornell community. For him, the most rewarding part of this venture has been working with the group of student entrepreneurs with whom he co-created the space. "The people I've met have been inspirational, brilliant, and have become some of the closest friends I could ever have asked for", he said.

- Rahul Shah '16, Computer Science (Speare).
  Shah is driven to create technology that helps people connect to information in a more meaningful way. Speare's mission is to use Semantic Technologies and Data Analytics to help digital news sites engage, understand, and connect with their audience. He

indicated that the digital news industry is going to change drastically over the next few years, and that his company wants to catalyze the shift. The vision for Speare was rooted in his frustration for how difficult it is to keep up with information, especially the news. He knew something had to be changed, and quickly realized that the digital news industry feels the same way.

Comments on ways to improve the Kessler Fellows and PopShop Programs

- A video montage of the speakers would be a great way to promote this program. Tracey Brant noted that these stories are starting to be captured and that Dawn McWilliams and Lance are helping to promote them.

- How do they manage their time with their rigorous curriculum? Hamed pointed out that it's difficult to balance. It would be great if they could combine what they're learning in PopShop in studios (i.e., studios in the School of Architecture). Panzer said he had to take a one-year leave to manage his company. He added that thanks to a professor who gave him credit for an independent project, he'll be able to graduate on time.

- What courses would be helpful to students? Dreir noted that courses and projects on ambiguity would be great. Hamstra pointed out that he would like more time to design and be critiqued. His CADD skills were not up to par and a CADD class would have been useful.

- Students also mentioned that professors are hesitant to value creativity and added that creativity should be graded.

The student presentations were followed by a working lunch meeting between the Engineering College Council and Johnson School Advisory Council Members. The discussions at the luncheon focused on Engineering/Johnson collaborations at the graduate level.

Comments on Engineering/Johnson School Collaborations
- The Council should discuss whether the college needs the Johnson school more than they need us or vice versa.

- The business folks don't realize how much they need to know about the business process of engineering, or the technical lingo. There's an opportunity for us to create a curriculum around non-technical people.

- Best practices are important skills to know.

- The Johnson School is teaching higher level business rather than the nuts and bolts. A course about managing the engineering process would be useful. Managing engineers does not require that you be one. This could benefit undergrads, MEng and up.

- Stanford has partnered with a MBA program and engineers to do product development, commercialization and funding.

- It is important to know how to turn something into a product and to know the cycle of development. Engineers should be more than just the fundamentals (they need to know marketing, commercialization, etc.).

Cornell Tech Comments
- Concern was expressed during the luncheon indicating that faculty don't feel supported in their endeavors. Also, there were concerns that we haven't made enough progress with regard to IP support.

- Lance responded that at the Tech campus, there's been a short-term focus on IP. For faculty and Ph.D.'s the issue has been tech transfer. Progress has been made, but not as much as desired. He added that we're in a transitioning mode and things are evolving. We can't let Cornell Tech fail. The vision for Cornell and NYC Tech is converging.

- Design is what people pay for. Everyone realizes the impact of devices (i.e., a lot of what makes the Apple product successful is that they understand the human experience).

- Perhaps we should have a department chair endowed for this purpose.

After this discussion, Duane Stiller adjourned the ECC into Executive Session.