

Attachment II

**DREXEL UNIVERSITY COLLEGE OF ENGINEERING STRATEGIC PLANNING
SUMMARIES OF INTERNAL STAKEHOLDER MEETINGS**

Professional Staff Forum

September 13, 2012

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Scribes: *Stephanie Dingle, Yenneeka Long*

Draft of September 25, 2012

1. What are the three to five most important strategic issues facing the College of Engineering – issues that should be priorities for the strategic plan to address?

Resources

- Space, facilities, equipment and the appearance of the buildings
- Overburdened resources. The staff is overworked; facilities are over used. At what point are we overtaxing the student experience, staff experience, faculty experience?
- Every year bringing in larger and larger freshman class. Taxing all of our resources. We can't keep going like this. The students feel it, and it's making them disengaged as alumni.

Communications

- The college needs a communication strategy and the resources to put it in place. Don't have the staff to reach all of our constituents. Drastic lack of resources to reach them.
- More open communication between all various stakeholders

Alumni

- The College needs to reach out to alumni and get them more involved as external stakeholders.
- Some alumni have never received an e-mail correspondence from the College for anything. We need to involve alumni more than just when we need money.
- Alumni base has to be fostered students are still at the College. One tactic would be to have alumni serve as mentors to first-year students. But coordinating this would be a challenge, and we would need to hire designated staff to facilitate such activities.

- We need to do a better job maintaining the College's connection with its alumni, -- keeping track of them from the point they graduate; providing them newsletters, surveys and other means to keep them engaged with the College.

Industry

- CoE needs to look deeper into Industry; they don't appreciate the industry after the co-op. Lack of relationship with industry (thanking them) Leveraging those relationships, making Drexel known as more than just a place for cheap interns
- Graduate co-op program opportunity – Needs to grow for lack of resources and lack of a plan on how to do it.

Implementation of the Plan

- If wish faculty to buy in to the strategic plan, it will be important that the objectives of the plan be linked directly to their evaluations, funding, pay, etc.)
- It will be important to create performance metrics that allow us to monitor progress on the goals of the strategic plan

2. How would you describe the current identity or image of the Drexel College of Engineering?

Internally

- “The Drexel Shaft” – Why does this image continue? Students frequently find themselves interacting with staff and faculty who are overburdened. CoE people forget who they actually work for...the students.
- We claim to be on the forefront of technology but we are not. The College has been great at starting initiatives and not following through. (Example: The display screens in the Bossone Lobby. We bought the screens, but no one has updated the video content in over a year.)
- The College is a tremendously exciting place to be; the research news is amazing. Faculty are doing amazing work that will change the world. The frustrating part is that we haven't been able tell the story, to get the word out.
- Lots of divisions among the departments and between the departments and the College.
- The College is really dynamic but lacks a framework. We need to establish goals and priorities among our many areas of focus and map out staff and faculty work accordingly.

How to change our image

- A happier staff will make for happier students. At present, staff have little ownership of their work. Staff need a professional development plan that helps us

understand where we can go from here; what opportunities are there for advancement. At present, there are not a lot of avenues for growth.

- There is a lack of College level staff development (*way to motivate/boost morale)
- We as a college need to hire faculty members who have interests in both teaching and in research. Some are more focused on teaching and some are more into research and see teaching a burden. Sort out those, and hire more teaching faculty. Let people focus on what they are excellent at.
- Staff positions, determine adequate staffing levels to achieve desired results

3. How would you like the College to be identified; what would you like it to be known for?

- College of Engineering should be known as a place that's fast paced, urban and offers experiential learning. We need to share the success stories: leaders for STEM, a place led by talented faculty, staff, alumni,
- Research: The College is a place where students can get involved in research as undergraduates. Great aspect that not many Universities have.
- Assessment for accountability as an annual practice not just when ABET comes. (Best Practices on Assessment). Want Drexel College of Engineering identified as the place to go to for accountable assessment. US NEWS top 50 aspirations.
- Utilize our Landmark location, - Using local area conferences and offer tours of Drexel University
- Use Drexel partnerships – Civically engaged University be part of the College's vision
- Is our goal to create engineers who are leaders, managers, bench engineers? What should we be focusing on? What mixture do we want? Determining this will affect the type of students that we will recruit. Need to identify what type of student we want to graduate.
- A great place to learn as well as great place to work. Morale and loyalty are lacking. A drudgery to come to work for some people.
- Drexel has a lot of opportunity to be recognized for something on a national stage – Ex. In the field of renewable energy, the University of Delaware has taken a lead role with the state to create a policy.
- A place where people understand what you do and you understand what other people do.

4. What would you like the College of Engineering to be like in ten years? What would truly transform it, make the biggest difference?

- The College will be able to demonstrate true areas of expertise among its staff, students and faculty.
- Effective mentor programs and efficient guide systems in place for all new faculty, staff and students.
- The College will be recognized both city and statewide as a “great place to learn and a great place to work”.
- A place where employees’ job descriptions are regularly updated and where work responsibilities are balanced & better distributed.
- Nationally recognized for our focused efforts on future trends/cutting edge research.
- Where STEM, outreach programs, research is more accessible to the College, University and others.
- Positive and lasting connections are made throughout the College where students, faculty, alumni and staff are cultivated to improve upon the “Drexel Experience”.

**Faculty Forum:
Biological & Chemical Engineering and
Materials Science & Engineering**

September 12, 2012

Facilitator: *Aleister Saunders*

Scribe: *Ani Hsieh*

1. What are the three to five most important strategic issues facing the College of Engineering - issues that should be priorities for the strategic plan to address?

Faculty

- Hiring, retention, and support of high quality faculty.
- Lower student-to-faculty ratio - existing student-to-faculty ratio has been steadily increasing leading to variability in the teaching quality. Current student-to-faculty ration is not uniform across all departments.
- There is a "cascading" effect to faculty hiring. The better the faculty an institution hires, the more likely it is to attract high-quality faculty in the future.
- It is more important to think about how we can attract the very best person for each position rather than where his or her funding comes from.
- Improving faculty diversity should be a goal for the college.

Space, facilities and physical and human infrastructure

- Improved space for research laboratories, offices, and undergraduate and graduate student spaces. As it is, current infrastructure (e.g., chemical fume hoods) not repaired/installed in a timely manner.
- Undergraduate and graduate students are lacking space that is conducive to informal learning, to hold office hours to support lecture or recitation classes, and general social interactions that can fuel academic development and creativity. This includes office space for graduate students.
- Routine maintenance of existing facilities is not executed regularly and in a timely manner. Older areas look shabby and dirty
- Improved human and physical infrastructure support for faculty endeavors from research, teaching, and service/outreach. Specifically, staff support for research - the current level of bureaucracy leads to increased administrative load on faculty reducing the amount of time faculty spend mentoring students, teaching, and performing research. Specific examples include: lab safety, credit card reconciliation, etc.

- Simply need more staff, especially for grant development. Technology has enabled the downloading of work to end users, which has many benefits, but has also added to the faculty's administrative workload, which takes away from time for research and teaching.

Graduate Studies/Students

- The College currently is lacking a consistent college wide Ph.D. student recruitment effort. More effort is needed to recruit and retain high quality Ph.D. students.
- Recruitment of a more diverse student body is an important goal at both the undergraduate and graduate level.

Research

- Instead of chasing after the "next new thing", there should be a more focused attempt at developing a balanced research portfolio - i.e. diversifying research revenue streams.
- Past attempts at producing large vision research efforts to go after new funding concepts usually lost momentum either because of a lack of strategic vision/plan, lack of critical mass in terms of faculty expertise, and/or mismatched quality between COE and the rest of the university.
- Given current and future research funding trends, corporate funded research should be more prominent in the College's research portfolio..
- The process of developing a balanced research portfolio cannot be separated from the need for the College to focus on hiring and recruiting high-quality faculty and putting more emphasis on research and training Ph.D. students
- How will a University-wide research strategy be achieved if assessment mechanisms are not in place?
- The College lacks a critical mass of faculty in specific research areas to be competitive or recognized as elite.
- Need higher quality faculty in departments outside of COE, such as Chemistry, Physics and Mathematics, that provide service teaching not only to address the need to better prepare engineering students but also to provide collaborative research partners for the College.

Undergraduate Engineering Education

- The preparedness of undergraduates for upper level engineering coursework is a significant question. There is insufficient rigor and quality to the courses in calculus,

physics, chemistry provided in the College of A&S and required of engineering students.

- Need more interactions with faculty in these other departments to discuss curriculum.
- If we are to grow the volume, quality and visibility of research in the College, it will be critical to articulate the importance to the undergraduate program of an increasing level of research. Historically, we've drawn students, at least undergraduates, based on the attraction of Co-op. We will need to consider how to leverage research to attract the students we want.
- Dedicated training in entrepreneurship and leadership.

Budget and the Budget Process

- The University's current budget process is arcane and lacks rationale.
- Budgets haven't kept up with growth of the University and do not reflect the current distribution of students. Budgets are basically the same as 10 years ago.

2. How would you describe the current identity or image of the Drexel College of Engineering?

Internally

- Drexel is generally perceived positively by students due, at least in CoE, primarily to the co-op program. CoE is perceived to have strong and robust ties to industry.
- CoE is perceived primarily as an undergraduate program.
- Drexel is known as a "reliable" place to go, in that Co-op, especially in Engineering, virtually assures students they'll get a job upon graduation.
- There is a lack of diversity (socio-economic, cultural, ethnic, etc.) among the faculty and student populations.
- The quality of student advising is uneven and the freshmen design courses are perceived as juvenile and unproductive.
- Internally, there is a sense that the College carries too much "dead-weight."
- There is an impression that the College and the University are personality driven place where goals and vision are driven by the whims of who is in charge rather than by any widely-agreed upon goals or strategy.

Externally

- Drexel COE is perceived positively in the local, tri-state area; however, name recognition decreases as one moves farther away. While there has been an increase in Drexel's recognition outside of the tri-state area in recent years, the name recognition remains uneven.
- Colleagues who visit generally obtain a very positive impression of the ongoing research activities at COE.
- COE is perceived to have strong and robust ties to industry.
- A strength is that the Computer Science department is part of COE instead of College of Arts & Sciences as is common at other institutions.
- The large amount of advertising for its online programs that Drexel is doing in the public transportation systems nationwide (Seattle, New York City) is hurting the University's overall reputation. Makes people perceive the University as another DeVry or Phoenix.
- The College can build its reputation in different ways for different markets. Addressing a significant social challenge (*e.g.*, water, energy, etc.) would bring us recognition in the general public's eye as well as in science & engineering circles. However, becoming known for specific technical expertise, such as computational methodologies, modeling and simulation, which not necessarily intelligible to the general public could bring us significant recognition in science & engineering circles.

3. How would you like the College to be identified; what would it like to be known for?

- What misperceptions or negative images would you like to clear up?
- What positive elements aren't prominent enough in people's minds?
- High quality teaching and high quality research although not necessarily in that order.
- Would be perceived as a well-organized and well-run institution with specific goals, with strong research capabilities and a clear research focus.
- Have more work that is identified at international conference as Drexel achievements.
- The College will use agreed-upon metrics to enable us to compare ourselves objectively with other peer institutions along both research and teaching parameters. These metrics must help us manage how we achieve our strategic plan and may not impact how Drexel and COE is perceived by outsiders. These metrics will have to be adjusted based on departments and fields of expertise.

3a. What are/should be some COE "identifiable" research strengths?

Potential Areas of Research Strength/Growth

- We should identify specific areas and provide enough resources to enable the proper development of a these areas in terms of new faculty hires, staff support, facilities support, and monetary support. CoE should develop specific "poles" of excellence.
- Energy could be a big area for Drexel, especially in shale gas. However, Penn State has already announced 11 hires related to its goals in this area. Drexel is still "considering" it. On the other hand, the College doesn't currently have enough faculty doing research in related areas.
- Need to be more specific in terms of defining our strengths. Instead of just "energy," we should think about areas such as energy storage, in which we have significant strength.
- Biomaterials – we have real critical mass in this area but not the cohesiveness we need to make a name for ourselves. Is having separate engineering and biomedical engineering colleges a benefit or an obstacle for us?
- Complex oxides
- Have strength in computational methods and simulation that could be applied to numerous research fields.
- The College should strengthen its capacity for translational research. The College of Engineering should be driving the University's initiative in this area, particularly given the commitment to it in the University strategic plan. We could be training our students to do "proof of concept" research. Drexel provides a model for this in the area of biomedical research transition. Can this be expanded to the rest of the University?
- These efforts can be supported by the University via monetary investments, support for vertical integration, etc.
- Need a highly flexible faculty research-wise, able to adapt as external research demands change.

4. What would you like the College of Engineering to be like in ten years? What would truly transform it, make the biggest difference?

- Space that one can be proud of: teaching and research facilities, student spaces, etc.

- Have people know this place as a research school as opposed to a teaching school.
- Having the faculty to get us there with the resources and support provided to these faculty. Hiring high quality faculty can also bring unique resources to COE and the University.
- Be able to hire leaders in their field - possibly hiring high quality well-established senior faculty along with high quality junior faculty.
- Achieve name recognition outside of the tri-state area and not just for the online teaching part. Improve the marketing efforts of what the institution accomplishes.
- The college should be known for providing an excellent education to a diverse student body and for the successful recruitment, retention and training of high-quality Ph.D. students.

**Faculty Forum:
Computer Science and
Electrical & Computer Engineering**

September 12, 2012.

Facilitator: *Raj Mutharsan*

Scribe: *Steve May*

1. What are the three to five most important strategic issues facing the College of Engineering – issues that should be priorities for the strategic plan to address?

Online instruction.

The growing number of premier universities offering free online courses is an educational trend that cannot be ignored. Drexel and the College need to think strategically with regard to this growing trend. Will Drexel be a player or a consumer in this field? That is, will the University and the College contribute distinctive courses of their own or take advantage of online courses provided by other institutions to supplement or supplant their own curricula? Can massively online courses be integrated into the curriculum in a way that significantly improves a student's educational experience? Should Drexel have a course or two that it licenses to other universities, potential generating significant revenue and raising the University's or College's reputation nationally?

An important question regarding online engineering education remains how to integrate lab work and experiments, critical in an engineering curriculum, into online courses. Addressing this question, perhaps through the use of simulation or remote controlled experiments, could be a strategic opportunity for the CoE to be recognized as a pioneer in online engineering education.

Externally identifiable areas of excellence.

Drexel and the CoE are not known for a particular area of research excellence. While Drexel is known for co-op, and previously, E4, the CoE hasn't made a real effort to determine which areas of research it might be known for.

Opportunities among current areas of excellence that Drexel might better market are nanotechnology, the Plasma Institute and the video game design program. CoE should identify three or four areas in which it has current strengths (or believes it could quickly become competitive), for which there is demand or societal need, and in which the College could become highly visible among professionals (and perhaps the general public) and strengthen these areas through hiring decisions and the distribution of resources. In essence, this would be an approach that invests more in areas of strength rather than the implicit strategy of "letting 1000 flowers bloom." By identifying and marketing areas of excellence, CoE will be able to attract better people.

Innovation in undergraduate engineering education

In particular, *early* undergraduate education and the incorporation of computational thinking, modeling and simulation into the curriculum.

Computational thinking: Historically Drexel has been a leader in hands-on, laboratory-based learning. Although CoE graduates are increasingly finding computing central to their work regardless of their major or field of engineering, our students are not receiving adequate training in computational thinking and methods in the CoE undergraduate curriculum, particularly in their first-year experience. We continue to look at computing as something that you do after you've done the "real thing," but in reality computing has become fundamental to all disciplines of engineering. All engineering schools are stuck in the pre-computing era; this is an opportunity for Drexel to lead.

Having a solid understanding of the logic of programming would benefit our graduates, who don't necessarily need to know the details of a particular programming technique. However, the traditional programming approach (*i.e.*, learn how to program in a single programming language with the focus on the language itself) might not be appropriate here. We need a different pedagogical approach that advances students' understanding of how to approach a problem, one that helps them grasp the logic required to address a problem.

It is a problem that we lack the ability to give tests in which students have to use a computer; for instance, testing the student's ability to solve an equation directly on the computer – the way in which real problems are typically solved in engineering. For small classes this can be done, for large classes this is a challenge.

Early Undergraduate Engineering Curriculum: Students don't identify as engineering students in their freshman year. During the freshman year, they typically take 18 or 19 credits a quarter (only two in engineering), with students taking physics, chemistry and math courses outside of the College. Hence, it is difficult to affect their education with changes to the engineering curriculum alone. This is a missed opportunity. When we were known for E4, it was because we took a giant leap. We need to do that now. Gradual adjustments are not enough. We need to take a big step; for instance, incorporating computational thinking at the undergraduate level.

We often hear about innovations in undergraduate engineering at other institutions; however, such innovations typically affect only one or two classes. As the College innovates, it should think across the board: 1300 freshman, not 30 or 60 kids or one or two sections. Doing so would take competitive advantage of our scale and aid us in getting out the message about what we are doing. As an analogy, students had been using laptops for years when Drexel made the decision to require laptops for *every* student. The breadth of that change, and its effect as a result of the University's scale were what brought national attention to the decision.

An anecdotal example specific to our engineering program: an NSF program manager for undergraduate engineering education research pointed out that educational experiments

at Drexel are of amplified importance due to the size of the College, the number of graduates that such experiments affect.

Other areas of strategic importance

- The College could play a stronger role in educating non-engineering students with technical interests. Drexel should be known University-wide (in Nursing, Business, etc.) for producing graduates who are technically literate, which has become increasingly critical to being an educated citizen. And if Drexel is to become known for generating tech-savvy students, CoE must play a critical role in making this happen.
- CoE needs an intentional and strategic diversity plan. Student and faculty diversity is poor. We need to intentionally engage the local community, do more with local neighborhood organizations. Our local community is highly diverse, and a strategic commitment to working with it would help to enhance the College's diversity.
- Integrating engineering across the University, for example through joint Medicine-CoE, Law-CoE programs, offers a big opportunity. Software engineering is the only true cross-college program in the University and has been very difficult to run because of issues such as how credit is assigned.
- The College needs to innovate in our graduate program. Our current graduate curricula are very traditional.
 - With a highly-valued undergraduate co-op program, we should be considering how to extend co-op to graduate students in ways that would benefit them.
 - There are opportunities here for cross-departmental programs (in, say, energy or polymers), possibly for certificates and for cross-college curricula, working with Law, Medicine, etc.
 - On one hand, we must recognize that master's and doctoral students have very different needs than undergraduates; on the other hand, the graduate programs are not constrained by ABET requirements.
 - In thinking about graduate students, however, we must consider that doctoral students are attracted by an institution's reputation in specific areas of research or by specific individuals with whom they might work much more than is true of a master's student.
- More generally, the College would do well to think broadly about how to leverage co-op for the strategic goals we have.
- As a high-tuition institution, Drexel must find a way to provide greater value (and to emphasize this value) to its students. Co-op has been the historical basis of our value equation but may not be sufficient to sustain us as we strive for greater

research orientation and a more diverse student population (in terms of both personal characteristics and career directions).

2. How would you describe the current identity or image of the Drexel College of Engineering?

- How is the College perceived internally, by faculty and students?
- Externally, by prospective students, engineering faculty at other schools, practicing engineers, etc.?

Internally:

- Within the college, faculty members have a strong positive sense of CoE. However, there is also a realization/frustration that we have not been able to leverage the great things that we do for recognition by the broader Drexel community. Within the University, there is (and has been for decades) discontent because other Colleges don't understand how the budgeting process occurs. How does CoE do the things it does within the University budget? Not recognizing the extent of the College's external funding, other colleges of the University believe Engineering receives a greater share of University resources (which is not true).
- Internally at University (not within CoE), there is a growing feeling that engineering is "old Drexel." Engineering used to be the only show in town. Now, media arts, I-school, medicine, law are discussed as the future of Drexel. "You guys were very important historically, but the future of Drexel will be in raising the level of other colleges."
- Among the perceptions of the College are that we are a heavily male institution, lacking in diversity. (Which, unfortunately, is accurate.)
- On the positive side, in their exit interviews, students frequently cite co-op as a strength of the Drexel experience.

Externally:

- Within the Philadelphia region, the College has a very good reputation. There is a sense that there are always events and activities going on here. Additionally, co-op helps Drexel's regional reputation in a positive way simply by exposing employers to our students.
- We hear general statements such as "that is a really good place for engineering education"; that there is good research.
- The co-op program is an "amplifier" for Drexel because of the great exposure it provides employers to our students. We need to think how we can make it an even stronger amplifier for the messages we most want to convey.

- We often find that among our professional and academic colleagues, Drexel is recognized; however, the College has not yet achieved broad recognition outside of individual fields. It is not enough to be known among the experts.
- There is a perception that many junior faculty members use Drexel as a stepping stone to faculty jobs at other schools. How might the College improve faculty retention?
- Drexel is sometimes mistaken for a teaching or a vocational school, like DeVry. Some components of the University's advertising campaign, such as that focused on online programs, seems to enforce this perception.

This question of the College's image is important because answering it will help us identify different constituents and how they perceive us relative to their different expectations and needs. We should identify our objectives by constituent group and be able to articulate to each group the elements of our plan most relevant to them.

3. How would you like the College to be identified; what would it like to be known for?

- What misperceptions or negative images would you like to clear up?
- What positive elements aren't prominent enough in people's minds?

Would like CoE to be identified for:

- Research excellence in targeted areas, ideally with other parts of the University feeding into these areas. Possible areas of excellence: wireless communications, robotics, nanotechnology, plasma, video gaming.
- Educational innovation. Consider/identify a focused objective besides just engineering education (*e.g.*, simulation, computational thinking, remote control). Consider big steps and greater risk taking.

Current negative images:

- The very intense curriculum is viewed by students as a "boot camp."
- Students feel like a number for the first two years; they may have an academic advisor who also serves 100+ other students. The students don't get personal attention their first two years.
- Would like to turn around the perception that CoE is a place primarily for male students.

4. What would you like the College of Engineering to be like in ten years? What would truly transform it, make the biggest difference?

In ten years, the Drexel College of Engineering should:

- Be known as a powerhouse in selected areas of research, and be among the very best in the world in those areas.
- Be recognized as a leader in engineering education, bringing our capacities for creative and innovative education design to bear on the undergraduate curriculum in ways that will allow us to leapfrog other institutions in terms of recognition in this area.
- Be ranked among the top 25 engineering colleges in the nation.
- Be known as the premier *urban* research institution. Located in a major city in the nation's greatest urban corridor, Drexel CoE is in a position to make its setting a competitive advantage, as increasing numbers of people choose to live and work in cities and as more and more technology companies are relocating to urban areas.
- Be larger in terms of both student and size of faculty while decreasing the student-faculty ratio. Strengthen computer science significantly (which currently is too small for the University's needs, 12 faculty for ~900 students).
- Have taken advantage of opportunities in industrial engineering and nuclear engineering. Truly lead the field in these or other new disciplines.
- Be the paramount computer science program in our region. The Philadelphia area does not have a top ten computer science program. This represents an opportunity for Drexel, and, as something crucial for energizing the Philadelphia economy, should help the College gain in recognition and resources.
- Have successfully led the University in an effort to produce graduates across all of Drexel's colleges who are technologically literate -- nurses, lawyers, business people who bring a deep and broad understanding of technology to their respective career areas.
- Have established a stronger co-op presence among the very top technology companies – the Microsofts, Apples, Googles, etc. Have standing co-op positions at these companies.
- Have a stronger alumni network, with alumni more engaged in the College.

- Have garnered a diverse and sustainable stream of resources required to make these ideas really happen and to support a College that is continuously generating new ideas to keep it at the cutting edge, both in research and education. Particularly with respect to research, schools that are better known have one-half to one-third the number of undergraduates that the College has.

Faculty Forum:
Mechanical Engineering & Mechanics and
Civil, Architectural & Environmental Engineering
 September 12, 2012
Facilitator: Dagmar Niebur
Scribe: Ali Shokoufandeh

1. What are the three to five most important strategic issues facing the College of Engineering – issues that should be priorities for the strategic plan to address?

Online Education

- What should be the role of modern technology, e.g. the Internet, in higher engineering and for Engineering Education? The College needs a clear plan to figure this out.
- There must be guidelines that support uniform admission policies and teaching loads for both online and on-campus education.

Encouraging Work Across Boundaries

- The College must create strategic mechanisms that create a culture supporting interaction across the academic units within the college. Specifically, how the college should restructure and what it needs to learn to define and participate in large-scale projects, involving multiple units across the college and the university.
- It's amazing how little we know of the work of our colleagues, within the College as well as across the University. Drexel is almost certainly leaving opportunities untouched as a result.
- There need to be incentives to work with people outside of one's own department or college – a reduced workload to compensate for the additional work required in coordinating across colleges. Maybe someone working across departments or schools would receive an undergraduate research assistant. Maybe a junior faculty member would receive some sort of “credit” in the tenure process.
- The College strategic plan should commit us to something bold that represents a great opportunity but also a great risk, something galvanizing, whether in terms of research thrust or in how we conceptualize undergraduate engineering education.
 - One example would be to promote the development of intellectual property by releasing IP to faculty and encouraging greater entrepreneurship activity among the faculty and students.
 - A successful example of such risk-taking in the past is the creation of BS/MS degree program.

Teaching and Research

- The balance between being an excellent teaching college or a first-class research institution is one of the College's fundamental challenges. Some of the consequences of this decision may include early engagement of undergraduates in faculty research, revamping the BS/MS program to include hands-on research experience for participants, and identifying relevant areas for faculty hiring.
- This strategic issue may also affect the junior faculty evaluations. The emphasis on research activities, research expenditure, internal and external service, PhD production, and teaching efforts will be relevant.
- With 80% of the University's revenue coming from undergraduate tuition, we must find clear ways for undergraduates to benefit from (and to perceive the value in) the College's expanded research agenda.
- If we are to remain excellent in teaching, and even become known as an innovator in engineering and technology education, we need to consider the effect of having 60% of our teaching done by adjunct faculty.
- The College is a school in transition. The question is no longer one of "research or teaching." Our increasing research thrust has been clear for some time, and is even what drew many junior faculty members here over the past decade.
- We're doing pretty well in terms of overall research level and impact given that Drexel doesn't have any kind of national research institute. Our strength is the mentorship that senior faculty provide to junior faculty.

Outreach

The College needs to increase its outreach to alumni, especially former international students. Examples were given of our alumni members who are among the directors of Korean National Science Foundation. We should find ways to build on their success stories and create a large global alumni network.

Undergraduate Engineering Education

- The College should consider converting to a full 5-year BS/MS degree program for all students. It would make a big splash to be able to offer the BS/MS degree path to all students.
- The College's commitment to hands-on education could make us an innovator in undergraduate education in that there is no better place to implement a "guide-by-the-side" approach than as mentors to undergraduates participating in genuine research. The College has the potential to be a leader in this mode of "project-based" teaching that's replacing one-way classroom instruction.
- The College produces too many practicing engineers and not enough who think seriously of going on to graduate school. Not surprising given the socioeconomic characteristics of many of our students, who would have a difficulty time turning

down a solid, high-paying job as a practicing engineer for another several years of poorly-funded graduate study.

- Of our graduates who become practicing engineers, few rise to leadership roles, either in their companies or in the respective fields.
- One of the downsides of co-op is that it selects for students looking to become practicing engineers and may orient them against graduate study.
- Undergraduates have insufficient perception of the role of research in the field, of the guidance that we provide to practicing engineers.
- The Co-op program doesn't tie well to students' educational experiences; this is a real opportunity for us to re-think Co-op, our curricula and our pedagogies.

2. How would you describe the current identity or image of the Drexel College of Engineering?

How is it perceived internally, by faculty and students?

- What should the role and identity of the College be in a Drexel University that's becoming an increasingly comprehensive institution?
- Within the University, the College of Engineering along with College of Medicine and School of Biomedical Engineering are viewed as active research units. This also creates the sentiment that it is other units' turn to catch-up and grow.
- The College has been viewed with both envy and admiration as the "favorite child." On the admiration side, most would recognize the College as the University's major source of research.
- Based on senior exit-surveys, students are very happy with their Co-op experience. The graduates who join the work force as professional engineers are highly regarded by their peers and local industries.
- Faculties in College of Engineering view their involvement in decision making as somewhat marginal.
- Some of the junior faculty view Drexel University as a stepping-stone towards their next job at a better university. There's enough here in terms of mentorship to provide them benefit as junior faculty; however, there's not enough here to sustain their career growth as long-term faculty members.

How is the College perceived externally, by prospective students, engineering faculty at other schools, practicing engineers, etc.?

- Perception of the University as a whole starts with Co-op, followed quickly with the overall technological orientation of Drexel.
- Drexel's Engineering program is not well known among the professional community west of the Ohio River.
- Drexel is well known locally as a Co-op school and as a result is regarded quite highly by practicing engineers in this region.
- Our students are not recruited for leadership roles.
- Drexel PhD graduates are not sufficiently tapped for academic positions. Many prepare themselves for engineering careers and work in research laboratories.
- The Drexel faculties are well respected by their peers in their communities.
- Finally, Drexel undergraduate program attracts high quality students, but additional mentoring of students to attend graduate school and continue to post-graduate programs would be beneficial.

3. How would you like the College to be identified; what would it like to be known for?

- *What misperceptions or negative images would you like to clear up?*
- *What positive elements aren't prominent enough in people's minds?*
- Drexel is misperceived as primarily a coop institution in Engineering, one that trains students well to be practicing engineers but does not prepare them for graduate study or for faculty positions.
- The College should also be known for training its graduates for management and leadership roles.
- It is also a misperception among our colleagues in other Drexel colleges that we receive generous resources from the University. They do not recognize that much of our funding comes from outside sources, and that as a whole the College does not compare well resource-wise to our peer institutions..
- The university also needs to improve its image about the quality of research conducted at Drexel. We need to clarify that "world-class research" is in fact being conducted at the College of Engineering. This should be advocated in venues such as review panels of funding agencies and professional meetings. We also need to promote the commercialization of the intellectual property and the research conducted by the College faculty.

4. What would you like the College of Engineering to be like in ten years? What would truly transform it, make the biggest difference?

- Drexel University should achieve recognition as both a prominent institution in terms of both research and education.
- The College of Engineering should train engineers capable of handling major changes in technology and economy, for example by training agile engineers capable of adapting to new technologies.
- Drexel Engineering should be focused on a few areas of world-class excellence, e.g., Plasma Engineering, or become well known in specific domains, e.g., a place to solve major urban engineering problems.
- The College should also improve its internal culture by increasing the sense of belonging among the faculty and students. The culture of the College and the University will be one characterized by our people's deep engagement with each other; we won't be just "128 independent contractors." A strong sense of community, of mutual benefit rather than of independent researchers.
- Faculty will have more freedom with their intellectual property.
- We also would like the university becomes known as a place that produces leaders. I want my students to say, "I want to be a leader in science, in the engineering field. I want to start my own company."
- Drexel will be recognized nationally as an institution that successfully grappled with the educational challenges of technology.
- Drexel will be much better recognized in East Asia.