The Big Idea

There is a close correlation between how engineering colleges rank and the amount of industry funding they receive. Top-ranked colleges often tend to also be close to large cities, where more companies are based. Based in Ithaca, the College of Engineering (COE) must be particularly thoughtful and creative to attract established and emerging industry leaders to campus and open the door to new partnerships with Cornell centers and faculty.

COE has a legacy of supporting innovative faculty, students, and alumni who bring research discoveries and new technology into the entrepreneurial sphere. The college also recognizes the importance of building upon this tradition and implementing strategies that truly – and rapidly – drive innovation and entrepreneurship.

A proposed Cornell Engineering Entrepreneurship Institute would serve as the physical home for all engineering entrepreneurship efforts — providing the focal point for philanthropic giving and creating a visible, outward-facing entity for individuals and industrial partners interested in connecting with COE technologies, innovations and research opportunities. Under the institute, COE would pursue a number of strategic initiatives to maximize the opportunities for the engineering community.

Strategic Initiatives

- Establish new approaches to entice research interactions with industrial partners: Begin with a targeted, widely-advertised effort to entice industry researchers to come to Cornell and conduct critical measurements.

- Establish an Entrepreneurship Fellows program for faculty on sabbatical: Open the program to all COE faculty, as well as non-Cornell faculty with potential for recruitment opportunities.

- Establish a Postdoctoral Entrepreneurship Fellows program: Make Cornell the top place for newly graduated Ph.D. students to transition into entrepreneurship.

- Expand entrepreneurship opportunities for graduate and undergraduate students: Expanding the scope of existing programs and attracting funding to keep them operational into the future.

Outcomes

These efforts, led by the newly created office of the Associate Dean for Innovation and Entrepreneurship, will further support faculty careers, create the next generation of innovative leaders, and help establish new streams of economic growth in both New York state and across the nation — furthering the university’s Land-Grant mission. Through this work, COE aims to become a nationally recognized leader for catalyzing entrepreneurship among the academic community.
SUMMARY

The College of Engineering (COE) has a legacy of supporting innovative faculty, students and alumni who bring research discoveries and new technology into the entrepreneurial sphere. The college also recognizes the need to build upon — and rapidly accelerate – this work.

To address the need to truly drive innovation and entrepreneurship in COE, the new position of Associate Dean for Innovation and Entrepreneurship (I&E) was created in Spring 2021. The responsibility of this new office is to foster, support, organize and expand entrepreneurship across the college and at all levels of engagement. From translation to commercialization, developing the institutional framework to guide this process offers enormous opportunities for providing more professional development, enhancing education, fueling industry partnerships and ensuring graduates’ success.

The overarching goals of this new office cover five key areas: 1) to advance the college’s educational mission at all levels, 2) to optimize research interactions and collaborations with industry, 3) to accelerate research translation into commercial practice, 4) to enable business development, and 5) to communicate COE successes in innovation and entrepreneurship with both internal and external audiences.

The COE will work at the undergraduate, graduate, postdoctoral and faculty levels to build and organize the entrepreneurial frameworks needed to keep the college moving forward successfully. The strategic initiatives listed below describe the initial work of I&E to maximize the opportunities for the engineering community.

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STRATEGIC INITIATIVES

Establish an Engineering Entrepreneurship Institute in the COE

Institutes serve as organizational hubs to give visibility and credibility to priority areas within the university. The goal of the proposed Cornell Engineering Entrepreneurship Institute is to serve as the physical home for all engineering entrepreneurship efforts — providing the focal point for philanthropic giving and creating a visible, outward-facing entity for individuals and industrial partners interested in connecting with COE technologies, innovations and research opportunities.

Establish new approaches to entice research interactions with industrial partners

The COE has a healthy relationship with industry research partners, but more can be done to increase industry interactions and research funding. Industrial interactions are equally important for students since companies that fund research tend to hire the individuals that conduct the research.

An initial focus should be a targeted, widely-advertised effort to entice industry researchers to come to Cornell and conduct critical measurements. This strategy resides within a legal framework that allows faculty, postdocs and students to conduct measurements, without interpreting the results.
As such, the college can meet the needs of companies who lack the bandwidth or state-of-the-art facilities to perform necessary, but complex measurements. Four facilities — the Cornell High Energy Synchrotron Source (CHESS), the Cornell Center for Materials Research (CCMR), the Cornell NanoScale Science and Technology Facility (CNF), and the Cornell Institute of Biotechnology (BioTech) — have already been successfully working with industry in this manner. Now, the college needs to reinvigorate these efforts and market these opportunities to a wider audience.

Other colleges and individual faculty who operate unique equipment could be enlisted to broaden the range of available facilities in Ithaca. For example, the College of Human Ecology has an MRI machine, and the College of Veterinary Medicine can perform studies on new drug candidates. By aggregating these efforts across the university, the Ithaca campus will be able to brand itself as The NIST of Academia — similar in structure to the National Institute of Standards and Technology (NIST) run by the U.S. Department of Commerce.

Capitalizing on Cornell’s capacity to perform measurements will bring new technical leaders to campus, where they have the potential to develop other working relationships with faculty, staff and students. The measurements themselves do not compromise the university’s non-profit status, and closer faculty partnerships can also serve as recruiting conduits for students entering the workforce. Over time, this concerted effort will help create a technology corridor between the Finger Lakes and Manhattan — fueling economic development across the state.

The impacts of this effort are multifaceted. First, industry researchers will have a reason to come to Ithaca, wherein they can meet and discuss measurements as well as research interests. These conversations can lead to mutual interests, and eventually to research funding. Faculty also may be recruited for specific consulting opportunities as a result of these interactions. Students will interact with the industrial visitors, which may lead to internships or other employment opportunities.

**Establish an Entrepreneurship Fellows program for faculty on sabbatical**

Many COE faculty members are interested in learning and experiencing entrepreneurship in its many forms. However, they often do not have the opportunity to pursue these goals until they go on sabbatical, when they have more bandwidth to explore and experience new things.

Establishing a Faculty Entrepreneurship Fellows program can serve to give faculty an immersive entrepreneurial experience and provide institutional support while they are on sabbatical. Some faculty have already done this on their own, founding companies or developing start-ups without any formal Cornell guidance.

This program would significantly enhance faculty retention and recruitment, as well as the learning environment for students at all levels.

Sabbaticals are often used by recently tenured faculty to scope new opportunities at other institutions. Providing an exciting and potentially lucrative entrepreneurship experience to faculty can remind them that Cornell is still a highly collaborative and innovative institution. The Entrepreneurship Fellows program would be open to all COE faculty and to non-Cornell faculty who show strong potential for recruitment opportunities.
The COE can host target-hire opportunities to evaluate if candidates are potentially interested in moving to Cornell, and to determine if that individual is a good fit for the institution. This opportunity is particularly important for the recruitment of innovative and highly-sought individuals from underrepresented groups.

Faculty that spend one year immersed in entrepreneurship efforts will take that experience back to their classrooms. For example, problems sets will become peppered with examples from their entrepreneurship experience, and teaching examples will come from an entrepreneurial perspective — which will subtly promote entrepreneurship in the COE student body.

Graduate students primarily focus on the research at hand, and only a handful recognize the commercial opportunities that are associated with their hard work. Faculty who complete an immersive entrepreneurial experience will be re-energized to identify the commercial value of new research, and can pass that insight along to the individuals in their research groups.

Establish a Postdoctoral Entrepreneurship Fellows program

The field of higher education is changing in ways that encourage researchers to explore academia as it relates to driving commercial innovation. Currently, many postdocs are primed and ready to start companies of their own, and this is an excellent opportunity for the COE to match this accelerating interest.

In New York City, Cornell Tech has already developed a successful model for such efforts, called the Runway Startup Postdoc Program — part business school, part research institution and part startup incubator. As part of the Jacobs Technion-Cornell Institute, the program ushers recent Ph.D. graduates in digital technology fields through the shift from an academic mindset to an entrepreneurial outlook. Runway postdocs bring ideas for unproven products and markets, and they receive a wide range of mentorship from both academic and business experts.

Driven by COE, there is interest in establishing a similar, 2-year programmatic fellowship for postdocs, and the Cornell Office of the Vice President for Research and Innovation is already interested in pursuing this at the university-level too.

The mission would be to make Cornell the top place for newly graduated Ph.D. students to transition into entrepreneurship, and a college-level program could support 10 postdoctoral fellows annually.

A successful Postdoctoral Entrepreneurship Fellows program will lead to successful companies and fruitful exits. Postdoctoral fellows push the envelope of research at the university, and the fellows program will lead to impact beyond just research. A successful postdoctoral program will incentivize and inspire such alumni to give back to the people and the institutions that helped them succeed — opening the door to new research partnerships, education experiences, student internships, job opportunities, scholarships and more.

Expand entrepreneurship opportunities for graduate and undergraduate students

COE has been proactive over the past decade to provide entrepreneurship opportunities to engineering students. These efforts have been graciously supported by a number of alumni donors as well. For
example, the Kessler Fellows Program, the Engineering Commercialization Fellows program and the Scale-Up and Prototyping Awards are aggressive and forward-thinking opportunities for COE students.

The I&E office is charged with continuing these excellent programs, expanding their scope and attracting funding to keep them operational into the future. This work is initially focused on philanthropic funding opportunities.