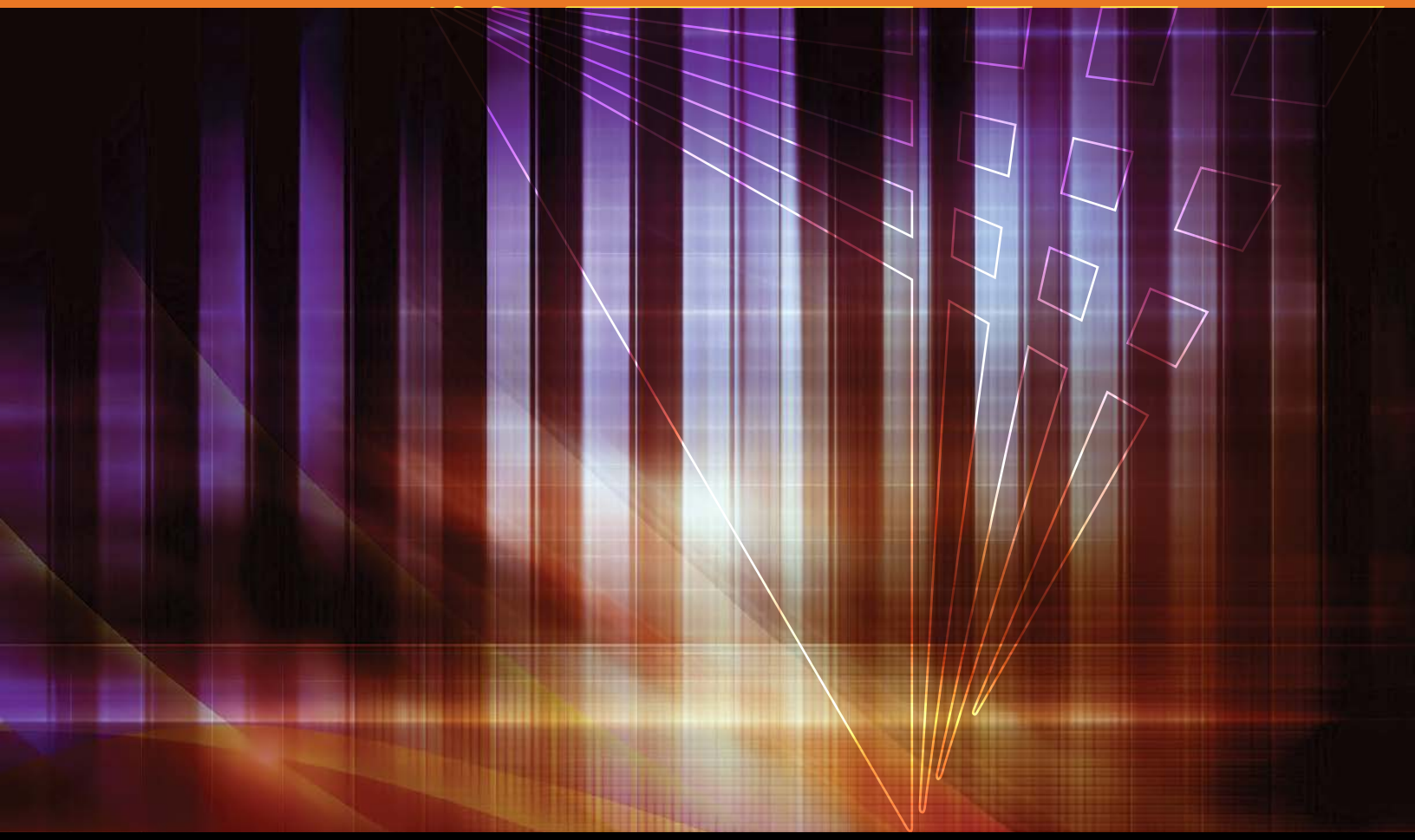
ARMOUR COLLEGE OF ENGINEERING

Strategic Plan Summary



ILLINOIS INSTITUTE OF TECHNOLOGY

ARMOUR COLLEGE OF ENGINEERING STRATEGIC PLAN SUMMARY

Undergraduate Education

At Armour, we educate students to be leaders in the development and use of multidisciplinary approaches and technology to solve complex, socially critical problems. We are committed to excellence in technology-focused education with a renewed emphasis on the entrepreneurial and ethical practice of engineering.

An Armour education fosters innovation and emphasizes the human skills essential to success. Leadership, entrepreneurship, and ethics are built into the curriculum.

As a result of the opportunity to apply ongoing learning to current problems of global impact, engineering students at IIT are prepared to make a contribution on Day One and to have a continuing impact throughout their professional careers.

Graduate Education

Professional Masters and Continuing Education programs in engineering are geared to meet the changing needs of industry and society. Discovery and creation of new technology are the essence of the doctoral programs in engineering.

Research

The research enterprise in Armour expands from fundamental engineering science research to the development of new technologies with application to current industry and markets. Research is conducted by Armour students at the UG, Masters, and doctoral levels.

Faculty, Staff, Community

Armour is fully committed to faculty retention, staff development, community outreach, and the achievement of diversity in all areas.

Key Armour initiatives and strategies within each of the 6 major priorities of the IIT Strategic Plan:

1. Grow and develop the student body

— Build a truly distinctive IIT education

- Armour academic programs and strategies that distinctively define the IIT graduate include: The IIT Engineering Themes, the ACE Program for Undergraduate Research in Engineering (PURE), the Armour Undergraduate R&D Program (Armour R&D), and the ACE Student-Led Projects Program. These engineering undergraduate programs promote leadership, research, innovation, and entrepreneurship[1].
- The IIT Engineering Portfolio (tracks student activities relevant to their engineering education and achievements) [2].
- Summer program that includes new specialized courses of various lengths and levels targeting a wide range of audiences[3].
- Create space for undergraduate engineering research, experimentation, and innovation in various locations on campus supporting both curricular and extra-curricular engineering student activities[4].
- Introduce new approaches to engineering design education (in collaboration with ID) and increase the design content in all engineering curricula[5].

- Collaborate with IIT Kent School of Law to Introduce formal instruction in IP law principles in engineering education[6].
- Assessment and revision of all engineering undergraduate program curricula to enhance relevance, modernize content, and add flexibility[7].
- Revamping of all Professional Masters Programs in engineering to add in-campus Professional Networking and Development activities and workshops targeted to optimal professional placement for all graduates[8].
- Development of new specialized programs (with international/national partners in industry and academia) that support education of working professionals and graduate-level training that combine an array of online, in-campus and off-campus instruction and hands-on/research activities. In collaboration with the School of Applied Technology.

— Balance the university population

- Targeted growth of the Undergraduate and Professional Master domestic enrollment[9].
- Maintain graduate student enrollment with focus on increasing the number and quality of doctoral students[10].
- Increase the number of research personnel in engineering (research associates, post-doctoral trainees, visiting scientists, etc.) that support the doctoral program and enrich the experience and education of doctoral students[11].

— Increase retention, graduation rate, and student placement[12]

- Introduce changes/additions in the engineering curriculum that demonstrate the relevance of engineering education (i.e. IIT Engineering Themes).
- Keep students engaged and motivated throughout the curriculum.
- Explore international opportunities for undergraduate students to apply ongoing knowledge and training gained in classroom activities and campus experiences.
- Build on current local networks and active partnerships to provide more opportunities for students to learn, experiment, and innovate in a real world setting, towards 100% placement after graduation.

— Increase the worldwide alumni population that supports and promotes the university

- Develop an aggressive marketing and communication plan for engineering that will keep alumni around the world informed on Armour news.
- Work with IA to participate and/or organize national and international events that reach Armour's alumni population at home and around the world[13].

2. Promote innovative thinking and excellence throughout the university

— Promote Innovation across the university among faculty, students and staff

- Development of the concept, instructional material, and space configuration for the student work area for project and creative development in the new Rettaliata Engineering Center (a pilot for engineering towards participation in the Innovation Center).
- Transition design and innovation activities within engineering from traditional approaches to collaborative multidisciplinary efforts.
- Introduce educational modules and activities (within the engineering curricula) providing innovation, entrepreneurship, and ethics.
- Commitment to maintain high standards for IPRO courses.

— *Increase internationally recognized faculty scholarship*

- Promote, recognize, and publicize research growth and accomplishments of faculty.
- Establishment of college-level faculty awards to recognize excellence[14].
- Encourage faculty scholarly and leadership activities that provide visibility and improve reputation among peers[15].

— *Enhance university processes to exemplary levels*

- Administrative staff, including financial administration, is re-structured in ACE with the generation of college-level policies and procedures that emphasize effective and efficient operation striving for excellence[16].
- Establishment of a "Standard of Management" (processes and guidelines) of resources for the engineering college at the academic unit level.
- New strategies for early and effective recruitment of doctoral students.

— *Focus on personnel development and diversity enhancements*

- ACE staff training and professional development programs to meet performance expectations.
- Development and support of academic activities that promote diversity in everyday life and practice of the profession.

3. Elevate IIT's visibility and reputation

— *Improve University Ranking*

- Bring engineering USNWR UG ranking below 50 and Grad ranking to mid-60s[17].
- "Theme-focused" distinctive engineering program at IIT to develop our graduates to be successful globally.
- Emphasis on bringing knowledge to practice, and open-ended problem solving using discipline-specific knowledge with innovation, entrepreneurial, and ethical emphasis.
- Increase research expenditures and number of Ph.D. graduates.

—*Establish and enhance specific areas of renowned academic and research excellence*

A main goal is to increase funded research activities in areas of high impact, establishing areas of research uniqueness that achieve excellence (ACE/IIT research niches/pillars of excellence).

- Major research areas for investment and growth in ACE include: sustainable/alternative energy and power engineering, transportation and urban sustainable systems, medical imaging and rehabilitation engineering, manufacturing and new materials, modeling and simulation of complex system, networks and communications.
- Increase the number of faculty engaged in fundamental engineering research that generates doctoral-level projects and work with UG and MS research students.
- Evaluation and strategic reorganization and/or reclassification of research centers in engineering.
- Strategic expansion of the TTT engineering faculty in college-level identified research priority areas[18].
- Strategies for effective recruitment of doctoral students and best use of graduate student support.
- Partnership and collaboration with IIT academic colleges and research institutes (Pritzker, WISER, IFSH), other academic institutions, and national research laboratories in high-priority research areas.
- Formal partnership(s) with a group of clinical institutions (i.e. a consortium for collaboration) to advance research in Bioengineering/Biomedical science and engineering. Strategic reestablishment of the neuro-engineering, imaging, medicine, and science research activities at IIT.

— *Develop a robust marketing strategy based on IIT's strengths and achievements to improve our reputation and recognition*

- Improve content management of Armour College and departmental Web presence.
- Implement an aggressive and effective marketing strategy for ACE.
- Hire a Director of Marketing for Armour.
- Develop college-specific material and strategies for college fundraising and the IIT capital campaign.

4. Enhance IIT's facilities, infrastructure and environments

— *Improve and Update Facilities, Technology and Infrastructure*

- Transformation of E1 building into the Rettaliata Engineering Center will provide a state of the art environment for engineering education and research[19], as well as enhancement of common public spaces. Phase one includes: renovation of classrooms with upgraded technology support, collaborative spaces for UG engineering innovation and interactive learning, Center for Modeling and Simulation, collaborative research facility, and improve common open spaces for student gathering, studying, and independent activities.
- Fundraising and strategic investment to complete the Rettaliata Engineering Center and to renovate laboratories, create new research facilities and shared research resources across all areas occupied by engineering.
- Assessment of all laboratory space in Engineering for best allocation, and use, of laboratory space to support faculty research and growth in priority areas.
- Strategic allocation of existing resources to support research.

— *Focus on improving our Communities and Environments*

- Increase outreach and development of partnership with local companies.
- Develop the Service Engineering Volunteers Program (Service to Community).

5. Develop resources to enable progress

— *Fundraising*

- Work with IA to pursue new gifts to support college and university priorities.
- Faculty participation in alumni events and Capital Campaign related activities.
- Development of an aggressive marketing campaign (college material and strategies) to support fundraising and the IIT Capital Campaign efforts.

— *Tuition*[20]

- Overall student enrollment in Armour to increase 15% within two years.
- Development of additional engineering educational agreements with new partner institutions (2+2 and 2+3 programs).
- Development of new strategic programs including Domestic and International, online/in-campus/off-campus hybrid professional master's programs.
- Develop additional strategies to increase graduate student enrollment and to increase offer and enrollment for summer, short courses, and online engineering education.

— *Research*[21]

- Increase volume of externally funded research to Expenditures of $30M (and/or $350,000/faculty) in next 5 years.
- Increase competitive peer-reviewed research grant applications that include capital equipment and carry full indirect cost, graduate student tuition, and academic year faculty salary.
- Strategic cost-share investment to enable research advancement and growth in priority areas.

— *Expenditure Monitoring and Control*

- Assessment of "Utilization of Resources" in ACE with specific and well-defined metrics.
- Provide Departmental Financial Management support and training for staff.
- Promote the efficient and effective utilization of resources at the academic unit level.

6. Strengthen all of IIT's Colleges/Schools

— *Elevate Engineering to international stature*

Elevating engineering remains the main task of the Engineering Dean, faculty, and staff, focusing on the growth and impact of engineering education and research, promoting innovation and excellence, and distinctively defining the IIT engineering graduate.

Elevating engineering's reputation to international stature is highly dependent on various key factors (the following have already been addressed in prior sections of this document):

- Providing distinctive and relevant education.
- Promoting Innovation and Excellence.
- Increasing funded research activities in areas of high impact.
- Establishing areas of research uniqueness that achieve excellence (IIT research niches/pillar of excellence)
- Increasing the number of faculty engaged in fundamental engineering research that generates doctoral level projects (increasing quality and number of doctoral students produced by the university).
- Increasing publication and faculty participation in professional activities at national and international level.
- Increasing visibility and recognition of engineering accomplishments.
- Developing an aggressive and effective Marketing strategy for the college.
- Achieving diversity in all areas.

— *Develop areas of interdisciplinary strength where colleges, schools and institutes collaborate in both education and research*

- ACE is committed to expanding research focus in newly identified interdisciplinary high-priority areas of strength working in close cooperation with the other IIT colleges and research institutes (Pritzker, WISER, and IFSH).

1 Smart Goal: 100% student participation (one or more program), increase student competitiveness and placement
2 Smart Goal: 100% student participation, increase student placement
3 Smart Goal: 50% increase in engineering summer course offering, increase student recruitment, improve graduation time, expand outreach
4 Smart Goal: 4,000 sq. ft. allocated in 4 buildings (E1, Wishnick, AH, and Siegel)
5 Smart Goal: Contribution from ID to Engineering 100 and other ACE design courses (senior capstone and sophomore/junior design)
6 Smart Goal: Course offering in IP Law for Engineering students
7 Smart Goal: Meet a minimum of 4 elective courses in all curricula
8 Smart Goal: Increase Professional Master's student placement in engineering to 90% and 85% for all graduates combined (M.S., M.A.S., and Ph.D.)
9 Smart Goal: 15% increase in UG enrollment with focus on Domestic students
10 Smart Goal: 25% increase in Ph.D. enrollment (or 4 Ph.D./TTT faculty), 2 minimum peer-reviewed publications per Ph.D. student
11 Smart Goal: 0.5 Research person/TTT faculty
12 Smart Goal: 95% retention, 75% 6 year UG graduation rate, 90% student placement
13 Smart Goal: 15 local, 4-5 national, 1-2 international/year
14 Smart Goal: Research, Teaching, Service, Creativity and Innovation, community/outreach awards
15 Smart Goal: 80% faculty participation in conference organization, proposal/journal review and editorial service, etc.
16 Smart Goal: "The ACE Procedure manual" scheduled for implementation in Fall 2013
17 Smart Goal: UG ranking to top 50, Grad rankings to mid 60
18 Smart Goal: 10% increase in faculty
19 Smart Goal: From Master Plan phases for E1
20 Smart Goals: 15% increase
21 Smart Goal: College Research Expenditures to $30M in 5 years (or $350K/faculty), average OH to 25%-30%, 3 funded Grad students/faculty, 8% average academic salary charge off/faculty