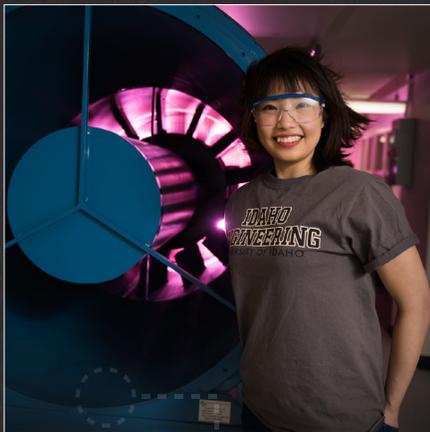
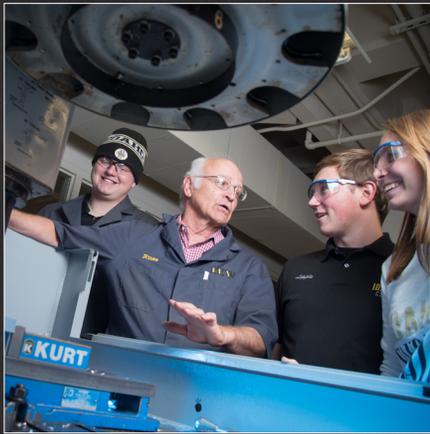


COLLEGE OF ENGINEERING

CASCADED PLAN

2017-25

A Focus through Waypoint 1 - July 2019





The University of Idaho College of Engineering (ENGR) has provided exceptional learning and research opportunities for students from Idaho and around the world for more than 125 years. The college has six academic departments and offers undergraduate and graduate degree programs in Biological Engineering, Chemical Engineering, Civil and Environmental Engineering, Computer Engineering, Computer Science, Electrical Engineering, Materials Science Engineering, and Mechanical Engineering. We offer graduate only degrees in Engineering Management, Geological Engineering, Nuclear Engineering, and Technology Management and a bachelor's only degree in Industrial Technology. Additionally, we provide a variety of certificate programs in focused areas of study. In the fall semester of 2016 the college enrolled 1,872 students including 1,518 undergraduate 354 graduate students. The college has 100 faculty and 65 staff dedicated to our mission that are located state-wide at centers in Boise, Coeur d' Alene, Idaho Falls, and on the main campus in Moscow, Idaho.

Larry Stauffer
Dean, College of Engineering
University of Idaho

OUR MISSION

Our mission is to prepare students for global professional practice, for admission to advanced degree programs, for leadership in their public and private lives, and for life-long learning in their chosen professions. We promote discovery, development, and dissemination of knowledge through excellence in research, and provide quality academic courses and continuing education to enhance the capability of practicing professionals. Through our scholarly activity, we have the responsibility to be a major contributor to our state, region, and nation's economic and technology base, while contributing to the body of knowledge for an array of research topics.

OUR VISION

Our vision is to be a destination engineering program known for an exceptional student experience, research with impact, inclusive culture, and meaningful outreach that advances Idaho and beyond.

APPROACH

This Cascaded Plan of the College of Engineering describes our part in enabling the University of Idaho to fulfill its aspirations outlined in its 2016-2025 Strategic Plan. With the full scope of the UI Strategic Plan in mind, our Cascaded Plan is focused on the first few years. Furthermore, we are focused on Goals 3 and 4 of the UI Strategic Plan, specifically to grow our enrollments, increase student success, and create a more inclusive and rewarding college community. While we participate in all four goals of the UI Strategic Plan we will focus on those objectives where we can make the biggest impacts. For each goal we present tactics that we will employ with success measured against the metrics for each goal. For this first period, performance tactics were selected

that require minimal new resources yet will produce immediate impact for Goals 3 and 4 as well as prepare us for results for Goals 1 and 2. At Waypoint 1 (July 2019) we will undergo a major assessment of our progress and adjust our tactics to manage our improvement for Goals 3 and 4 and focus on significant impact for Goals 1 and 2. This approach will enable us to be successful for Waypoint 2 (July 2022) as well.

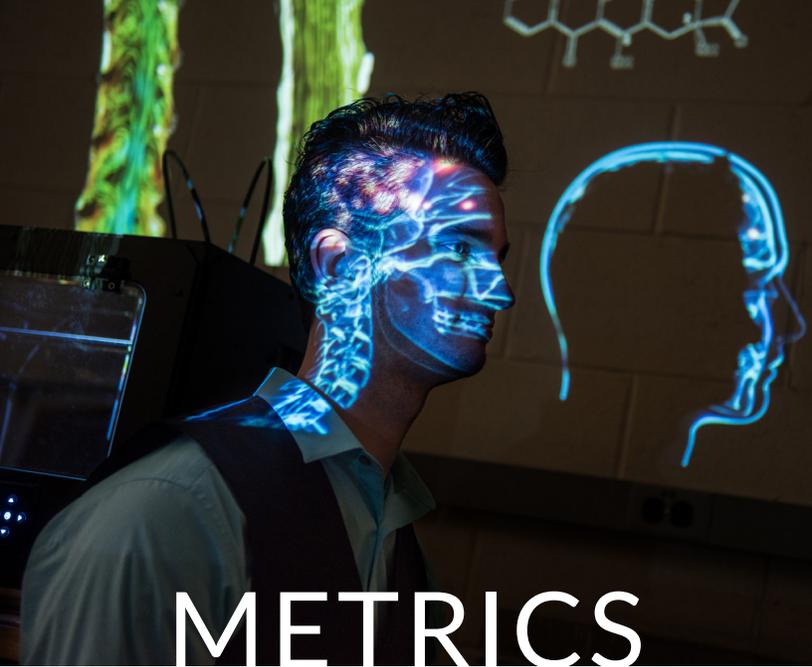
Our Cascaded Plan was developed over the course of seven months through a processes of surveys, meetings, and planning sessions involving many stakeholders from our departments and advisory boards. It evolved through a planned effort between Dean Larry Stauffer and members of the college Cascaded Planning Committee.

APPRECIATION

The college would like to express its appreciation to the members of the Cascaded Planning Committee for the many hours of effort to solicit input and feedback from stakeholders and research ideas to develop this College of Engineering Cascaded Plan.

College of Engineering Cascaded Planning Committee

| | |
|------------------|--|
| Larry Stauffer | Dean, College of Engineering |
| D. Eric Aston | Chair, Chemical and Materials Engineering |
| Steve Beyerlein | Chair, Mechanical Engineering |
| Patricia Colberg | Chair, Civil Engineering |
| Mohsen Guizani | Chair, Electrical and Computer Engineering |
| Joe Law | Associate Dean for Undergraduates |
| Maria Pregitzer | Director of Student Services |
| Ching-An Peng | Chair, Biological Engineering |
| Vivek Utgikar | Associate Dean for Research |
| Barry Willis | Associate Dean for Outreach |



METRICS

In concert with the UI Strategic Plan, our college will use metrics to guide our efforts and tactic prioritization. Our list of metrics includes two of the university’s priority metrics—**terminal degrees and enrollment**—and others that are more unique to our own role. While there are many metrics we could track, we decided to stay focused on a minimal number through 2025.

UI College of Engineering Strategic Plan - Goal 1 Innovate

| UI Performance Measures | ENGR Proposed Performance Measures | UI Baseline 2014-15 | ENGR Baseline 2014-15 | Baseline ENGR% | UI Final Goal 2025 | UI % Increase | ENGR Goal 2025 | ENGR % Increase | Final ENGR % | Notes |
|---|--|---------------------|-----------------------|----------------|--------------------|---------------|----------------|-----------------|--------------|---|
| Terminal degrees in given field (PhD, MFA, etc) | Number of PhD degrees awarded as reported by Institutional Effectiveness and Accreditation. | 275 | 18 | 6.5% | 425 | 55% | 36 | 100% | 8.5% | Faculty and staff want the same or greater increase; Carnegie R1 target will need STEM PhD graduates to double. |
| Research Expenditures (\$-million) | Research expenditures based on EIPRS data. Only funding run through the ENGR office is reported; not including funding of ENGR faculty processed through other offices. Millions \$. | \$95 | \$10.1 | 10.6% | \$160 | 68% | \$20 | 100% | 12.5% | Faculty and staff want a greater increase than university; Carnegie R1 target will need expenditures to double. |



METRICS CONTINUED

UI College of Engineering Strategic Plan - Goal 2 Engage

| UI Performance Measures | ENGR Proposed Performance Measures | UI Baseline 2014-15 | ENGR Baseline 2014-15 | Baseline ENGR% | UI Final Goal 2025 | UI % Increase | ENGR Goal 2025 | ENGR % Increase | Final ENGR % | Notes |
|--|--|---------------------------|-----------------------|----------------|---------------------------|---------------|----------------|-----------------|--------------|--|
| Number of External Organization Contacts | Number of External Organization Contacts: Defined as the number of External Stakeholder Organizations contributing projects for Senior Design and employees taking courses through our Engineering Outreach program. | Not specifically measured | \$250,000 | N/A | Not specifically measured | N/A | \$500,000 | 100% | N/A | UI does not measure this specific metric. However, the UI SP promotes Extension Contacts and calling for a 13% increase. We will measure External Contacts in terms of financial commitment and seek to double it. |
| Alumni Participation Rate | ENGR Alumni Participation Rate: What percentage of our alumni contribute financially to the college? | 9% | 6.5% | 70% | 15% | 63% | 15% | 130% | N/A | Faculty and staff want an alumni contribution rate to match that of the rest of the UI; therefore we will more than double our rate. |

UI College of Engineering Strategic Plan - Goal 3 Transform

| UI Performance Measures | ENGR Proposed Performance Measures | UI Baseline 2014-15 | ENGR Baseline 2014-15 | Baseline ENGR% | UI Final Goal 2025 | UI % Increase | ENGR Goal 2025 | ENGR % Increase | Final ENGR % | Notes |
|-------------------------|---|---------------------|-----------------------|----------------|--------------------|---------------|----------------|-----------------|--------------|--|
| Enrollment | Enrollment from the data set used in reporting headcounts to the SBOE, IPEDS, and the Common Data Set as of census date. | 11,372 | 1,760 | 15.5% | 17,000 | 50% | 2,600 | 50% | 15.3% | Faculty and staff want the college enrollment to grow the same as the UI. |
| Graduates (All degrees) | Number of graduates from the annual data used to report for IPEDS and the Common Data set for the most recent year and includes certificates. | 4,628 | 331 | 7.2% | 6,500 | 40% | 497 | 50% | 7.6% | Faculty and staff want the number of college graduates to grow at a somewhat greater rate than that of the UI. |

UI College of Engineering Strategic Plan - Goal 4 Cultivate

| UI Performance Measures | ENGR Proposed Performance Measures | UI Baseline 2014-15 | ENGR Baseline 2014-15 | Baseline ENGR% | UI Final Goal 2025 | UI % Increase | ENGR Goal 2025 | ENGR % Increase | Final ENGR % | Notes |
|-------------------------|---|---------------------|-----------------------|----------------|--------------------|---------------|----------------|-----------------|--------------|---|
| | Number of women students. | N/A | 195 | N/A | N/A | N/A | 572 | 293% | N/A | Triple the number of women students of an enrollment that grows 50%. In terms of the proportion of women students, increasing from 11.1% of student population to 22% |
| | Number of international students. | 766 | 216 | 28.2% | 2,000 | 261% | 648 | 300% | 32% | Growth of international students slightly greater than UI growth as the ENGR has more desirability among international students. |
| | Percentage of women in faculty positions in the College of Engineering. | N/A | 8% | N/A | N/A | N/A | 15% | 88% | N/A | Assume 25 additional faculty positions. |



INNOVATE

Scholarly and creative work with impact

Goal 1:

The College of Engineering will produce scholarly and creative products of the highest quality and scope, resulting in significant positive impact for the region and the world.

Objective A: Build a culture of collaboration that increases scholarly and creative productivity through interdisciplinary, regional, national and global partnerships.

Objective B: Create, validate and apply knowledge through the co-production of scholarly and creative works by students, staff, faculty and diverse external partners.

Objective C: Grow reputation by increasing the range, number, type and size of external awards, exhibitions, publications, presentations, performances, contracts, commissions and grants.

ENGR will support the university's Goal 1, the university aspiration to achieve the Carnegie Highest Research classification from its current Carnegie Higher Research listing, by conducting cutting-edge research and facilitating interdisciplinary research. In line with UI projected metrics, ENGR will increase extramural funded research and the number of Ph.D. graduates.



Primary Tactics to achieve increased number of PhD graduates and research expenditures:

1. Adopt best practices for attracting top quality graduate students (e.g., bridge funding, fellowships, and TA support).
2. Expand proposal preparation support including a grant writer.
3. Seek diversified funding resource streams (e.g., industrial and national laboratory partnerships).

Additional tactics

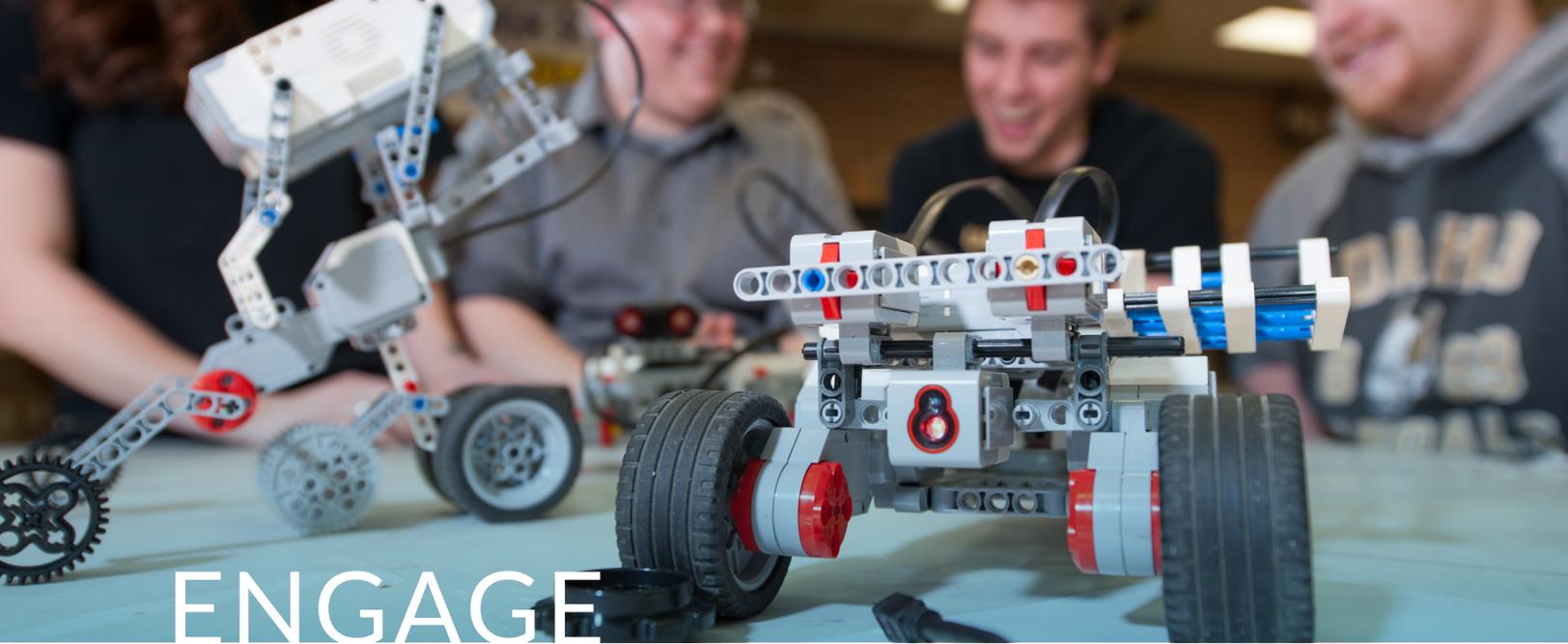
4. Actively participate in the Navitas¹ program to recruit more international graduate students.
5. Actively participate in the UI's signature CAFÉ project to support Agribusiness in Idaho.
6. Augment resources for faculty hiring and retention (e.g., endowed or joint positions).
7. Recruit theme-based research faculty and postdoctoral associates across academic units.

NOTES:

¹ Navitas and the UI signed an agreement to establish a pathway program for international students starting Fall 2017.

WAYPOINT 1 | Goal 1: INNOVATE

| Primary Tactic Number | Selected Performance Measure | ENGR Baseline Value | July 2017 | July 2018 | July 2019 |
|-----------------------|------------------------------|---------------------|-----------|-----------|-----------|
| 1, 4 | Terminal Degrees (Ph.D.) | 18 | 19 | 20 | 21 |
| 2, 3, 5, 6, 7 | Research Expenditures | 10.1 | 11.2 | 12.6 | 14.7 |



Outreach that inspires innovation and culture

Goal 2:

The College of Engineering will suggest and influence change that addresses societal needs and global issues, and advances economic development and culture.

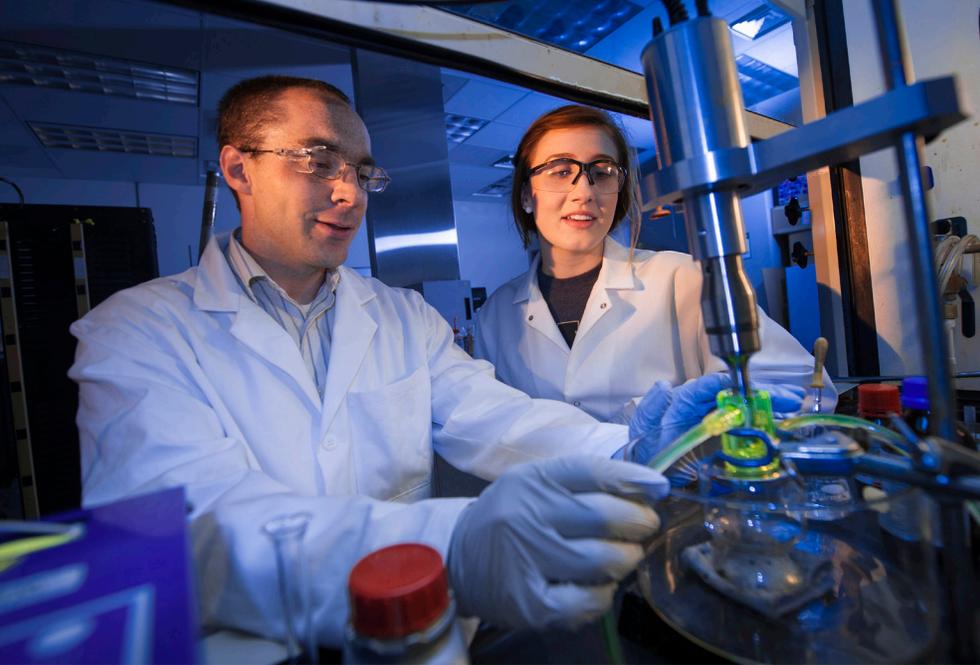
Objective A: Inventory and continuously assess engagement programs and select new opportunities and methods that provide solutions for societal or global issues, support economic drivers and/or promote the advancement of culture.

Objective B: Engage individuals (alumni, friends, stakeholders and collaborators), businesses, industry, agencies and communities in meaningful and beneficial ways that support the University of Idaho's mission.

External Organization Contacts and Alumni Participation

Engagement is important for UI branding amongst organizations that hire our students, sponsor our students within the Engineering Outreach distance learning program, support our events (Career Fairs, Women in Engineering Day, Design EXPO, etc.), support our capstone design projects, support our competition project teams, and contribute to corporate endowments. In 2016, stakeholders invested \$250,000 in these endeavors. By 2025 we intend to double these two-way partnerships, especially those surrounding our student educational experience.

The alumni participation rate at the UI overall is 9%. Yet the participation rate of alumni of the College of Engineering was only 6.5% in 2015. Faculty and staff aspire that we have the same rate of participation as the rest of the university. Set to increase to 15% by 2025, we aspire to the same which will call for a 130% increase. Pursuing this goal will also help augment the upcoming UI capital campaign. Through careful planning, staffing, and participation we will improve this rate.



Primary tactics to achieve external organization contacts and alumni participation rates:

1. Mobilize ENGR and department advisory boards to reach out to other alumni, encouraging greater participation in supporting and celebrating student achievement.
2. Seek more robust industry funding for capstone design projects.
3. Partner with organizations to upgrade lab/shop equipment including in-kind contributions as well as cash donations.
4. Expand the number of sponsors for ENGR educational outreach events such as the Annual Engineering Design EXPO and Women in Engineering Day.

Additional tactics

5. Add another Development staff and assign them responsibility for different departments with more department chair participation.
6. Seek funding to expand our ENGR career liaison to be full-time within our college.
7. Better integrate alumni and development databases for use by department chairs and non-development staff.

WAYPOINT 1 | Goal 2: ENGAGE

| Primary Tactic Number | Selected Performance Measure | ENGR Baseline Value | July 2017 | July 2018 | July 2019 | Comments |
|-----------------------|------------------------------|---------------------|-----------|-----------|-----------|---|
| 1, 4, 6 | External Contacts | \$250K | \$280K | \$310K | \$340K | Growth each year would allow us to increase Engineering Design Expo as well as pre-college outreach, make lab/shop improvement, and increase technological complexity and the cost of parts that can be purchased within capstone projects as well as expand the number of trained mentors available to oversee fabrication activities. |
| 2, 3, 5, 7 | Alumni Participation | 6.5% | 7.5% | 8% | 9% | Growth each year should translate into ~75 new alumni donors each year |



TRANSFORM

Educational Experience that improves lives

Goal 3:

The College of Engineering will increase our educational impact.

Objective A: Provide greater access to educational opportunities to meet the evolving needs of society.

Objective B: Foster educational excellence via curricular innovation and evolution.

Increase Enrollment and Number of Graduates

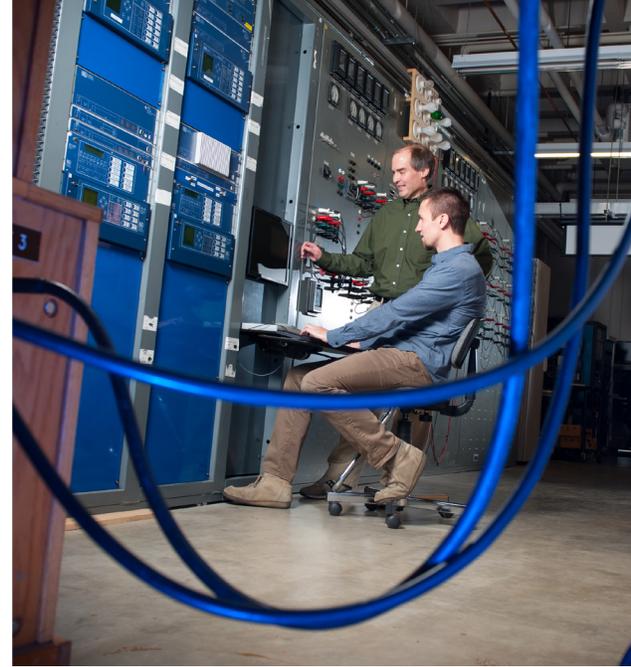
The UI desires to increase enrollment by 50% from a baseline of 11,372 students to 17,000 by the year 2025. ENGR will participate in this growth in a significant way. Based on the results of a survey of ENGR faculty and staff, ENGR will match the university's desire of 50% growth to 2,600 bachelor, master, and doctoral students by 2025. In order to achieve this growth we must employ new tactics to increase the rate of growth from the current annual rate. As this goal is the primary focus of Waypoint 1 the majority of the tactics we are employing are targeted at success in this area. Most of our tactics are focused on recruiting new students to the UI.

Increasing the number of graduates from ENGR is highly correlated to enrollment growth yet we can make even more progress by increasing our retention. Our college is in a situation where we can have relatively little impact on first year retention but are highly dependent on the success of faculty in the UI College of Science and College of Letters Arts and Social Science in the classroom so must focus our efforts on student success outside of the classroom.

To increase our enrollments and graduates there are tactics that will have an immediate impact (such as tactics 1 and 4) and other tactics that will take years to realize significant results. In the latter case we will take some actions now (such as tactics 5 and 9) in preparation for results for Waypoint 2.

Primary tactics to achieve the enrollment growth and number of graduates:

1. Begin the planning and fundraising process for improvements to modernize our laboratory facilities and to add new classrooms (including large video enabled classrooms), laboratories, and offices to accommodate upcoming growth.
2. Develop and execute a comprehensive marketing plan that highlights our unique strengths and program characteristics for improving recruitment of undergraduate and graduate students.
3. Facilitate an initiative to targeted community colleges for the transfer of students into ENGR.
4. Expand the impact of the Engineering Outreach (EO) distance learning program by offering more summer courses, undergraduate courses, complete graduate degrees in key areas, and utilizing EO resources in support of on-campus course delivery



5. Expand the student ambassador model to increase recruitment and retention of students in all majors.
6. Explore ways to develop and support K-12 pipeline programs to attract new students to the college.
7. Develop an initiative to grow targeted scholarships to recruit students.
8. Increase the number of international students by actively cooperating/participating in the Navitas program¹ and continued attention to the 3+1 ECE program with WCSU² in China.

10. Develop an additional degree program in the computing area to target broader student interest and demand.
11. Expand the availability of the Industrial Technology B.S. degree program to Moscow and Coeur d'Alene.
12. Partner with the College of Business to achieve more sustainable professional master's degree programs.
13. Collaborate with faculty in COS and CLASS on first year retention efforts.

Additional tactics

9. Assign someone in the CS program in Coeur d'Alene with regional recruiting responsibility for computer science and the college in general, at targeted high schools and community colleges.

NOTES:

¹ Navitas and the UI signed an agreement to establish a pathway program for international students starting Fall 2017.

² AY 2017-18 will be the fourth year of a partnership with Wenzheng College of Soochow University; we anticipate 15-20 EE students to transfer to the UI for AY 2017-18.

Required Enrollment Growth in ENGR for 2,600 students | Bachelor, Master, Doctorate declared majors only

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|------------|----------|--------|------|------|------|------|------|------|------|------|------|
| Enrollment | 1760 | 1805 | 1877 | 1952 | 2050 | 2173 | 2303 | 2418 | 2515 | 2591 | 2617 |
| Growth | baseline | actual | 4% | 4% | 5% | 6% | 6% | 5% | 4% | 3% | 1% |

WAYPOINT 1 | Goal 3: TRANSFORM

| Primary Tactic Number | Selected Performance Measure | ENGR Baseline Value | July 2017 | July 2018 | July 2019 | Comments |
|-----------------------|------------------------------|---------------------|-----------|-----------|-----------|--|
| 1-4, 5-10 | Enrollment | 1760 | 1805 | 1877 | 1952 | The top priority for Waypoint 1 |
| 4, 11-13 | Graduates | 331 | 338 | 344 | 351 | Growth each year should translate into ~75 new alumni donors each year |



CULTIVATE

A valued and diverse community

Goal 4:

The College of Engineering will foster an inclusive, diverse community of students, faculty, and staff and improve cohesion and morale.

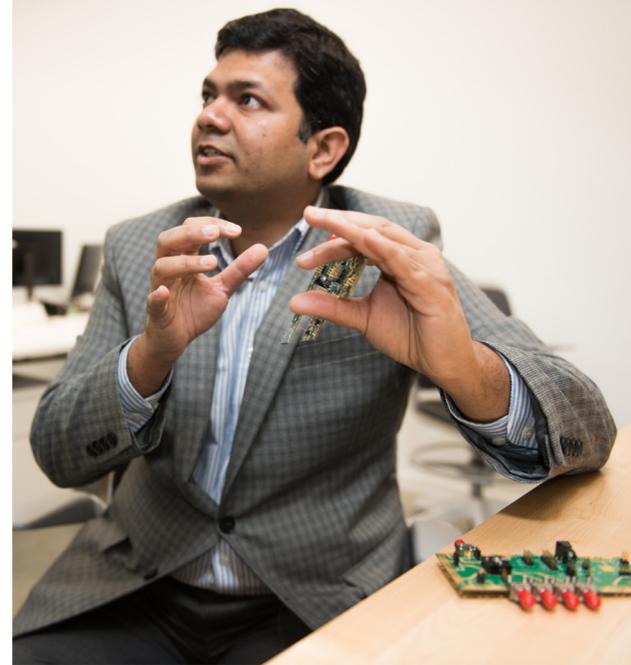
Objective A: Build an inclusive, diverse community that welcomes multicultural and international perspectives.

Women and International Students and Women Faculty

In order to increase the diversity of our student body and foster a more inclusive campus community, we need to be more ambitious in our efforts to attract female students and seek to triple the number by 2025. Assuming a concurrent increase in total enrollment of 50%, this will result in a student body that is about 22% female, roughly averaging the percentage of female students currently studying engineering at other public institutions in the United States.

We also recognizes the need to be more successful in our efforts to recruit and retain international students. The College of Engineering intends to triple the number of international students by 2025. Assuming a concurrent increase in total enrollment of 50%, this will result in international students comprising about 32% of the study body in ENGR. We anticipate that many of these students will be enrolled in our graduate programs.

In order for the College of Engineering to better prepare our students for a modern and diverse workplace, it is critical that we make a concerted effort to increase the number of female faculty in the College. The current number of female faculty in both tenure-track and non-tenure track positions totals 9 or about 8% of the total. The national average is 14.5%, with the University of Washington leading the region with almost 23% women. We have not set any specific targets for this goal since it will be largely dependent on enrollment growth that results in the creation of new faculty lines in ENGR. We have, however, determined a number of strategies that will help us be more successful in recruiting and retaining female faculty members when positions become available.



Primary tactics to achieve female and international student enrollments and number of women faculty:

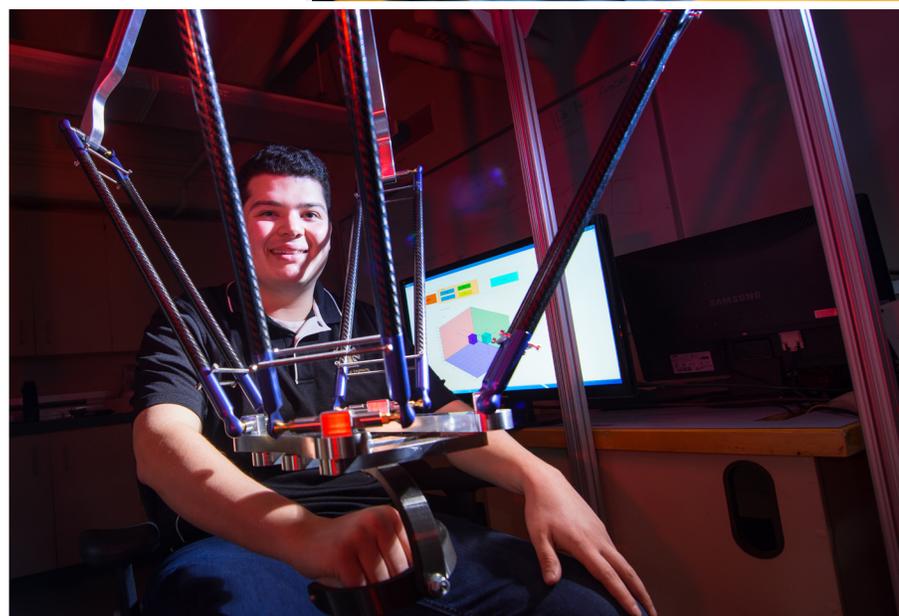
1. Increase pre-college exposure to engineering by female high school students.
2. Incentivize ENGR student clubs to engage in K-12 outreach.
3. Promote recruitment practices that increase the number of women candidates that apply to faculty openings.
4. Develop and deploy a diversity plan for the college.

Additional tactics

5. Promote student recruitment practices that pay attention to enhancing the diversity of the student body such as a more diversity appealing and gender balanced web presence.
6. Collaborate with other colleges and the local community to facilitate employment of faculty partners.
7. Encourage departments in ENGR to determine reasons for failed searches, faculty attrition, etc. and track retention rates for all faculty in college.

WAYPOINT 1 | Goal 4: CULTIVATE

| Primary Tactic Number | Selected Performance Measure | ENGR Baseline Value | July 2017 | July 2018 | July 2019 | Comments |
|-----------------------|------------------------------|---------------------|-----------|-----------|-----------|---|
| 1, 2, 5 | Women Students | 195 | 205 | 215 | 225 | ~40% of enrollment goal reached by 2019 |
| 4 | International Students | 216 | 231 | 246 | 259 | ~40% of enrollment goal reached by 2019 |
| 1, 2, 5 | Women Faculty | 9 | ~ | ~ | ~ | Depends on new positions, replacements |



University of Idaho
College of Engineering

uidaho.edu/engr/cascade