University of Idaho
College of Engineering

Cascaded Plan
2017-2025
A Focus through July 2019 to Waypoint 1

For over 125 years the College of Engineering at the University of Idaho has been providing exceptional learning and research opportunities for students from Idaho and around the world. The College of Engineering has six academic departments and offers undergraduate and graduate degree programs in Biological Engineering, Chemical Engineering, Civil 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 only a bachelor's 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 1872 students including 1518 undergraduate 354 graduate students. The college has 100 faculty and 65 staff dedicated to our mission that are located state-wide on campuses in Boise, Coeur d' Alene, Idaho Falls, and on the main campus in Moscow, Idaho.

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.

Vision
To be a destination engineering program known for an exceptional student experience, research with impact, an 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 depicted in its 2016-2025 Strategic Plan. With the full scope of the UI Strategic Plan in mind, our Cascaded Plan is focused on these 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 of 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 the Dean (LS) and the Cascaded Planning Committee.

	Tasks	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep	3-Oct	10-Oct	17-Oct	24-Oct	31-Oct	7-Nov	14-Nov	Break	28-Nov	5-Dec	12-Dec	Break	2-Jan	9-Jan	16-Jan	23-Jan	30-Jan	6-Feb	13-Feb	20-Feb	27-Feb	Resp
	Revise SWOT analysis	X																											LS
	Each Goal team propose metrics	X																											CPC
	Each Goal team lead discussions on CSP		X	X																									CPC
Gather broad input	Edit goal metrics				X																								LS
	Distribute surveys				X																								LS
	Surveys due						X																						LS
	Write the initial draft of the COE metrics				X	X	X																						CPC
	Meetings with goal teams				14th		30th																						CPC
	Submit draft metrics to Provost							3rd																					LS
	Meeting with goal teams									18th																			CPC
	Solicit feedback from dean office staff									19th																			LS
	Solicit feedback from the COE AB									21st																			LS
	Send update on process to all faculty/staff											X																	LS
	Solicit additional feedback from COE fac & staff											X	X																CPC
Establish Metrics	Meeting with goal teams to finalize metrics													9th															CPC
	Submit revised metrics template to Provost															X													LS
	Develop tactics to achieve metric target values															X		X											CPC
	Review metrics with other colleges																5th												LS
1st draft	Develop initial draft of CSP with resource needs																	X		13th	5th								LS
	Disseminate initial draft to SP committee																	X		7th									LS
	Finalize initial draft of CSP																					10th							CPC
Gather feedback	Solicit feedback on initial draft of SP																				X	X	X						CPC
	Departments discuss and submit feedback																					X	X	x					CPC
	Solicit feedback from COE AB																						27th	x					LS
	Incorporate feedback into second draft																							X	x				LS
2nd draft	Review 2nd draft of CSP																								9th				CPC
	Solicit feedback on 2nd draft of CSP																								X				CPC
	Incorporate feedback into final draft																								X				LS
	Review final draft of CSP																									15th			CPC
	Finalize CSP																									X	X		LS
Final CSP	Submit CSP to provost																											1-Mar	LS

Metrics

In concert with the UI Strategic Plan, our college will also 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—but others that are more unique to our own role. While there are many metrics that we could track we have decided to stay focused on this minimal number through 2025.

UI College of Engineering Strategic Plan - Goal 1 Innovate										
UI Performance Measures	COE Proposed Performance Measures	UI Baseline 2014-15	COE Baseline 2014-15	Baseline COE%	UI Final Goal 2025	UI % Increase	COE Goal 2025	COE % Increase	Final COE %	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 COE office is reported; not including funding of COE 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.

UI College of Engineering Strategic Plan - Goal 2 Engage										
UI Performance Measures	COE Proposed Performance Measures	UI Baseline 2014-15	COE Baseline 2014-15	Baseline COE%	UI Final Goal 2025	UI % Increase	COE Goal 2025	COE % Increase	Final COE %	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 UISP 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	COE 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	COE Proposed Performance Measures	UI Baseline 2014-15	COE Baseline 2014-15	Baseline COE%	UI Final Goal 2025	UI % Increase	COE Goal 2025	COE % Increase	Final COE %	Notes
Enrollment	Enrollment from the data set used in reporting headcounts to the SBOE, IPEDS, and the Common Data Set as of census+C3 date.	11,372	1,760	15.5%	17,000	50%	2600	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	COE Proposed Performance Measures	UI Baseline 2014-15	COE Baseline 2014-15	Baseline COE%	UI Final Goal 2025	UI % Increase	COE Goal 2025	COE % Increase	Final COE %	Notes
	Number of women students	NA	195	NA	NA	NA	572	293%	NA	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 COE has more desirability among international students.
	Percentage of women in faculty positions in the College of Engineering	NA	8%	NA	NA	NA	15%	88%	NA	Assume 25 additional faculty positions

Goal 1: Innovate
Scholarly and creative work with impact

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.

The COE will support Goal 1 and the university aspiration to achieve the Carnegie Highest Research classification from its current Carnegie Higher Research listing by conducting cutting-edge research and facilitated interdisciplinary research. In line with the UI projected metrics, the COE will increase extramural funded research and the number of PhD 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 Navitas[1] 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; https://www.navitas.com/organisation/story/398?us=1 .

COE Dashboard

Research Expenditures

	2012-13	*2013-14*	*2014-15*	*3-yr AVG*
(in Millions)	**13.9**	**11.8**	**10.1**	**11.9**

Research Expenditures

Projected	*2017*	*2018*	*2019*	*Waypt 2 (2022)*	*2025*
(in Millions)	**11.2**	**12.6**	**14.7**	**17.4**	**20.2**

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Number of PhDs Awarded

	2012-13	*2013-14*	*2014-15*	*3-yr AVG*
PhDs	*19*	*21*	*18*	*19*

Number of PhDs Awarded

Projected	*2017*	*2018*	*2019*	*Waypt 2 (2022)*	*2025*
PhDs	**19**	**20**	**21**	**27**	**36**

Waypoint 1: Goal 1 Metric Targets for the College of Engineering:

Primary Tactic Number	Selected Performance Measure	COE Baseline Value	July 2017	July 2018	July 2019	Comments
1, 4	Terminal Degrees (PhD)	18	19	20	21	
2, 3, 5, 6, 7	Research Expenditures	10.1	11.2	12.6	14.7	

Goal 2: Engage
Outreach that inspires innovation and culture

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 C: 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
Organizational engagement is important for UI branding amongst entities that hire our students, sponsor our students within the EO program, support our outreach events (Career Fairs, Women in Engineering Day, Design Expo, etc.), support our capstone design projects, support our competition projects, and contribute to corporate endowments.   In 2016, stakeholders invested $250,000 in these endeavors. By 2025 we intend for this amount to double in 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 COE 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 COE educational outreach events such as the 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 COE 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 Metric Targets for the College of Engineering:

Primary Tactic Number	Selected Performance Measure	COE 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

Goal 3: Transform
Educational Experience that improves lives

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. The COE will participate in this growth in a significant way. Based on the results of a survey of COE faculty and staff, the COE 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 the COE 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 COS and CLASS 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 the COE.
4. Expand the impact of the Engineering Outreach (EO) 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 program[1] and continued attention to the 3+1 ECE program with WCSU[2] in China.

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.
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 BS degree program to Moscow and Coeur d'Alene.
12. Partner with the College of Business to achieve more sustainable professional masters degree programs.
13. Collaborate with faculty in COS and CLASS on first year retention efforts.

Notes: [1] Navitas and the UI signed an agreement to establish a pathway program for international students starting Fall 2017; https://www.navitas.com/organisation/story/398?us=1 .
[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 the COE 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 Metric Targets for the College of Engineering:

Primary Tactic Number	Selected Performance Measure	COE 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	The number of graduates are highly coupled to enrollment but lag it.

Goal 4: Cultivate
A valued and diverse community

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 USA.

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 the COE. 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 the COE. 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 student clubs in COE to engage in K-12 outreach about engineering.
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 of Engineering.

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 the COE to determine reasons for failed searches, faculty attrition, etc. and track retention rates for all faculty in the COE.

Waypoint 1: Goal 4 Metric Targets for the College of Engineering:

Primary Tactic Number	Selected Performance Measure	COE 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
3, 6, 7	Women Faculty	9	-	-	-	Depends on new positions, replacements

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 Cascaded Plan.

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