

2024-2029

STRATEGIC PLAN

**Empowering Our Community
Through Engineering Excellence**

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Overview

The Herff College of Engineering (HCoE) is continually adapting to better guide the economic growth in the City of Memphis, the State of Tennessee, and the Mid-South region through engineering education and research.

Our mission is to empower and motivate students with the education, resources, and mentorship needed to pursue successful careers in engineering regardless of their financial means. We believe that every person, regardless of their background, should have equal access to high-quality education and the chance to contribute their unique perspectives and talents to the field of engineering.

Accomplishing our mission demands that we provide access to high quality education together with outstanding research that addresses the National Academy of Engineering Grand Challenges with particular emphasis on the needs of our local community, our state, and our nation.

Providing access necessitates out-of-the-box thinking within K-12 institutions and community colleges to strengthen students’ skills in mathematics, physics, and STEM programs, thereby sparking their spirit of innovation and creative thinking and radically improve the social mobility of our constituents. This is accomplished by shifting away from traditional approaches where our engagement in these pathway entry programs is purposeful, strategic, and personalized. HCoE will be a leader in this paradigm shift of attracting bright minds to the field of engineering locally and regionally.

With the growth and innovation in programs, we are well poised to be top ranked that is the center of community engagement and growth. This is reminiscent of the words of Benjamin E. Mays – “*It is not a disaster to be unable to capture your ideal, but it is a disaster to have no ideal to capture. It is not a disgrace not to reach the stars, but it is a disgrace to have no stars to reach for. Not failure, but low aim is sin.*”

Vision

Through strategic partnerships, innovative programs, and targeted initiatives, “we strive to uplift and transform lives by developing an engineering mindset and academic expertise in students, thus creating a more equitable and prosperous future for all.”

The HCoE Engineering Strategic Plan is rooted in the University’s Strategic Plan – ASCEND, sharing the same goals but bringing relevance to the engineering field, our constituents (students and their parents), our clients (corporations, businesses, industry, etc.), and the community.



Figure 1: ASCEND – The University of Memphis Strategic Plan

Seven goals were set to mirror ASCEND, and each goal was assigned leads.

1. Grow Enrollment and Improve Student Preparedness: Isaiah Surbrook and Russell Deaton
2. Foster Student Encouragement and Experience: Joel Bumgardner and Alexander Headley
3. Deliver Academic Programs That Prepare Students for the Workforce: Aaron Robinson, Brian Waldron, Stephanie Ivey
4. Strengthen Research Enterprise: David Greganti, Kit Boone and Stephanie Ivey
5. Recruit, Retain, Reward, and Recognize our People: Sheila Mathis and Kevin Berisso
6. Optimize Operation Efficiency: Luz Gray and David Greganti
7. Generate and Steward Financial Resources: David Greganti, Brian Waldron, Dennis Koerner, Clarice Hunt, and Okenwa Okoli



Grow Enrollment and Improve Student Preparedness

Growing our enrollment is imperative and will necessitate, amongst other things, developing the K-12 pipeline. We need to be the school of choice for students and their parents. The pipeline in our immediate community is weak. Through current and future activities, HCoE will shore-up the K-12 pipeline by working with principals, teachers, and counselors to provide activities that lead to a targeted increase in engineering-ready students that will attend the HCoE.

Increase incoming Undergraduate Enrollment

We need to firstly tell our story through targeted marketing and strategic recruitment with our local community and beyond. Our communication needs to inform parents and students alike, demonstrating we are the college of choice.

We need to target our local school districts, west Tennessee, the State of TN, our region, and nationally as data directs. The target segments include 2-year colleges (community and TCAT), nearby colleges with no engineering, local and regional public schools, and local private schools.

We will work with community colleges to offer entry level engineering courses, allowing transfer students to accelerate more quickly in an engineering program and shorten time-to-degree, such as by offering circuits, statics, and dynamics. High school STEM programs are becoming more of the norm, mostly in the . mechanical engineering and biomedical engineering programs. By expanding STEM teaching in the high schools to include concepts from the other engineering fields (i.e., civil, biomedical, technology, engineering technology), we expect enrollment in these college programs to increase, thereby producing a wider pipeline of students to the Herff College of Engineering. Our physical presence in this space is particularly important to peak student interest in the college academically, and in the exploration of their ideas through involvement in undergraduate research (see Goal 2). In turn, our teaching and research spaces in HCoE will serve as a “destination place” that attracts prospective students to the University of Memphis.

Additionally, we will establish a joint Engineering Living and Learning Community (ELLC) and Summer Bridge program to accelerate math-deficient 1st-year students. Our efforts will include programmatic interventions such as mentoring, monitoring academic progress, undergraduate research assistantships, and scholarships designed to improve retention and graduation rates. We will also adjust HCoE merit criteria to provide greater access and attract more students, as well as increase the number of completion scholarships to support financially strapped juniors and seniors and close the graduation gap.

Transfer students are critical to increasing our enrollment and our programs need to be more friendly with the shortening of prerequisite chains. This will also allow us to attract international students into our undergraduate programs as we target students in Caribbean countries, Bermuda, Latin America, Africa, the Middle East, and elsewhere.

Metrics

- Increase undergraduate enrollment to 1,800 students by year 5 with an annual increase projection of 38, 50, 90, 135, and 150 for each sequential year.
- Increase undergraduate transfers by 100%
- Double our dual enrollment programs
- Develop courses in statics, dynamics, and circuits at Southwest Community College by year 2 and have a majority of students registered in these courses enroll in the college by year 5

- Have >20% of students in local STEM high school programs enroll in the college by year 5
- Monitor and increase local middle-school Algebra I completion – 10% annual increase
- Provide some level of financial assistance to all deserving students
- Vastly grow international undergraduate freshman enrollment
- Award 50 Completion Scholarships per semester
- Monitor graduation rates for increase and shorten time-to-degree from 5.0 to 4.5
- Monitor the joint Bridge – ELLC program to determine effect on retention and graduation rates
- Improve 6-year graduation rate from 27.4 to 50% by year 5
- Improve 1-year retention from 76.4% to 85% by year 5

Offer innovative and cross-disciplinary programs that are attractive to students and parents

We will foster an enhanced student learning environment by providing a positive, uplifting culture and through updating our physical infrastructure to create a more conducive and enjoyable learning environment, one that fosters the sharing of ideas and instructive one-on-one communication between student and faculty member. Much of this is made available within our new addition, the STEM Classroom and Research Building (SCRB), that offers and hosts state-of-the-art lab spaces for innovative, world-class research as well as fabrication space for students to brighten their creativity spark.

Programmatic components are derived from enhanced internal college cross-disciplinary opportunities that then link into other connective programs like supply chain, architecture, business management, city planning, healthcare, and other fields; thereby, vastly broadening the breadth of the learning experience and better reflecting the corporate environment.

Another area of planned enrollment growth is in engineering technology which will serve an untapped population of persons who, after passing through a newly created certificate program in the college, can readily enter the workforce mostly within the industry sector. The Herff College of Engineering wishes to serve as the primary pipeline of skilled technicians to the regional industries.

Metrics

- Increase in recruiting staff and tutors to match our growth
- Track number of students using spaces in SCRB and for what purpose
- Conduct a survey of students using HCoE spaces to ensure satisfaction is >80%
- Track number of students involved in undergraduate research, and how many are involved in research entrepreneurship
- Every program will have a concentration, minor, or undergraduate certificate for Fall 2025 catalog
- Begin to build certificate program within Engineering Technology that produces the requisite skills identified by industry

Offer experiential learning opportunities internships/coops

As an imperative to train workforce-ready engineers of the future, we will provide our students with experiential learning opportunities in and out of the classroom. As an industrial hub, Memphis is blessed with abundant job opportunities for our students. HCoE will use its strong connection with local industry and corporate partners to offer enhanced internship and co-op opportunities to every student. Integral to many of our graduating seniors is completion of a comprehensive design project with their peers. Relevancy in these capstone design courses is paramount to the preparation of our students for the workforce they will soon enter; hence, corporate/industrial partners will provide a project idea backed with funding to aid in their design, data collection, and presentation.

As a Carnegie R1 research university, inclusion of research opportunities within our undergraduate program provides an exceptional learning structure that advances student knowledge beyond the classroom into real-world application and direct impact to communities. The skills attained through these undergraduate research opportunities will strengthen student resumes, elevating them above others and affording them a competitive edge in securing employment. Additionally, engagement in research benefits undergraduate students who desire advanced degrees (master's and PhD) and who we

hope would matriculate into the HCoE graduate program.

Metrics

- 60% of graduates with internship, co-op experience, or engineering-related experience through other forms of employment
- 30% of undergraduates with UG research assistantships
- 20% of undergraduates undertaking undergraduate research thesis

Grow incoming graduate enrollment

A Carnegie R1 institution, HCoE is instrumental in securing our position among other top-tier R1 institutions of higher learning through our research and graduates. We will expand our graduate enrollment through increased success in acquiring external funding which provide the finances to support our students with healthy stipends and fully cover tuition while simultaneously infusing them into cutting-edge research to solve critical challenges facing our nation and our world. HCoE will develop research-driven entrepreneurship opportunities for our graduate students to produce an innovative outlet for the transfer of technology and student ingenuity from our labs to the world through licensing, patents, and startups.

To enable rapid growth, all our proposals to external agencies will, where applicable, be required to support graduate students with an emphasis on doctoral students. We will streamline our routes to doctoral research defense by reducing the required coursework while maximizing research hours, especially for students with bachelor degrees going directly to PhD. While we strongly encourage and welcome students with a master's degree to enter our doctoral program, we will continue to take advantage of the larger pool of prospective students available with a bachelors degree to directly seek their doctorate at HCoE and receive their master's degree along the way without additional years.

We will create industry relevant master's programs that will attract self-paying students locally and internationally. In turn, this will require a targeted marketing campaign to advance our program into multiple sectors with special emphasis internationally in Asia, the Middle-East, Latin America, and Africa.

Metrics

- Increase the number of enrolled PhD students to 140 by year 5
- Have an estimated 4 PhDs per faculty with a goal of an annual rolling average of 35 PhD graduates by year 5
- Faculty members to graduate at least one PhD student annually
- Double number of international MS self-paying graduate students (currently 2022: MS=69)
- Reduce post bachelor's degree required course hours to 24 (excluding dissertation)
- Monitor faculty return on investment (ROI) (i.e., compounded growth in research productivity and recognition) for those receiving college-supported doctoral students
- Provide a mechanism to offer health insurance for graduate students

#2 Foster Student Encouragement and Experience

At the Herff College of Engineering (HCoE), we believe that academics is only a part of the overall student experience, that specialized activities outside the classroom that foster self-exploration, inquisitive learning, creativity, development of life-skills, and pursuit of one's dreams and imagination are paramount to the success of our students well beyond graduation. HCoE commits to providing a conducive environment for this style of holistic, expansive, and experiential learning.

Internships and Co-Ops

HCoE will assist our students in obtaining internships and co-ops that connect learned material in the classroom to practical real-world applications and engage in professional development that vastly elevates their chances of employment in a growing competitive market. Aiding our determination to offer these programs is HCoE's location where the City of Memphis and more broadly, the Mid-South region, serves as a major hub for multimodal transportation and supply chain logistics, serves as a medical capital within the southeast United States, is widely known for its prolific freshwater resources and environmental diversity, boasts expansive manufacturing and industrial markets, and is the world and regional headquarters to many companies including AutoZone, Federal Express, International Paper, to name just a few.

Our Careers Office will liaise with our corporate, industry, and governmental partners to form internship and co-op pathways for our students and ensure that each student participates in at least one internship during their time at HCoE. A key component of this program is to offer a professional development prep course to aid students in searching for jobs, interviewing, resume building, exemplifying professional conduct, writing communications, and much more. Subsequently, we will grow our Careers Office to include more fully trained staff to match the needs of our external partners with our students.

Metrics

- Create a fully trained and staffed Careers office
- Track the number of students that take the professional development prep course
- Track rate of successful internship placements
- Conduct survey of hiring agencies on quality of student interview and resumes

Foster innovation and self-explore ideas

With the opening of our new 65,000-square-foot STEM Classroom and Research Building (SCRB) in fall 2024, and in concert with the University's Crews Center for Entrepreneurship, we will offer makerspaces to our students to spur ideation. We will facilitate space with 3D printing, machining shop, and collaborative brainstorming space to allow students to test their innovations and explore their ideas. This will enhance creativity within our student body geared towards solving real-world issues through engineering and entrepreneurship.

We will also increase enrollment in our current Vertically Integrate Projects (VIP) and Transformative Tech courses that enable undergraduate student involvement in research on a for credit basis (see experiential learning: Goal 1).

Metrics

- Expand cross-listing for Transformative Tech and other courses
- Measure the number of students participating in CREWS Center opportunities or other tech innovation competitions with the intention to increase participation year-to-year
- Track the number of students registered to use maker space and/or CREWS space, ensuring these resources are not being under utilized
- Build collaborative/exploratory space(s) by year 5 from gift dollars and track the number of students utilizing the space and equipment
- Perform satisfaction survey of students on using the space

Infuse collaboration among disciplines in key courses such as senior design

The vast majority of engineering companies or related businesses include multiple facets of engineering, well beyond any singular discipline; hence, this characteristic should be mirrored in HCoE. We do this by cross-listing our courses with other disciplines such as biology, physics, chemistry, city and regional planning, business, and public health while adhering to ABET. HCoE will take this concept farther by having industry financially sponsor senior projects for their capstone experience and share their expertise as group mentors. At a minimum, 25% of the capstone projects will include multiple engineering disciplines and, when possible, engage students from disciplines outside engineering.

Metrics

- Track the number of industry sponsored senior projects across the college annually with a target of 90% by year 5
- Track the number of industry sponsored multidisciplinary senior projects across the college annually with a target of 25% by year 5
- Track the number of students taking cross-listed courses with a 10% increase by year 3 and a 25% increase by year 5 without adversely prolonging time to graduation
- Track number of students receiving interdisciplinary certificates with an anticipated increase of 20% by year 5

Provide opportunities for undergraduates to engage in faculty research

We will fund an enhanced undergraduate research scholars program that will give our students the opportunity to participate in exciting, impactful, worldclass funded research with our faculty Principal Investigators. In addition to offering paid employment on research projects, we will count these activities as course credit toward graduation via a Research Studies course. Student researchers will be encouraged to undertake the undergraduate honors thesis in their major that, in turn, may encourage them to matriculate into our graduate research programs.

Metrics

- Track number of students enrolled in Research Studies courses
- Increase number of students enrolled in Honors Thesis research
- Have a sustained count of students presenting at conferences
- Have 1 in 10 undergraduate students as co-authors on publications by year 5
- Monitor number of students receiving internship credit through participation on faculty research such that numbers are sustained or increasing

Provide mentorship and support network to students

HCoE is devoted to the success of our students. Research shows that mentorship can have a huge positive impact on students academically, socially, and professionally. We will create a mentoring program led by our alumni body with participation from our college and departmental advisory boards. Mentors will consist primarily of professional mentors; however, we will also empower our student-led organizations and upperclassmen to also serve as mentors to lower classmen. Departments will be expected to run their mentorship programs.

Metrics

- Create a mentoring program of industry professionals in each of the five departments
- Provide the opportunity for every student to receive mentoring
- Increase number of student organizations that provide upper-level class mentors
- Conduct student surveys on effectiveness of mentorship
- Measure improvements in GPA and graduation rates of mentored students versus not mentored (or historical values)

Offer travel enrichment awards

As we continue to deliver an outcomes-based education, it is critical to expose our students to real-world experiences. One such avenue is through participation in domestic and international conferences, workshops, competitions, and other engagement opportunities. Hence, HCoE will establish an endowment fund to support student travel and offer other funds so they can pursue interests that lead to these professional development outlets.

Metrics

- Create an endowment of \$150,000 to support \$500-\$600 travel awards to approximately 10 students per year by year 4
- Increase number of students engaging in international experiences such as Study Abroad by 15% by year 5
- Develop a donor funded travel pool for students attending competitions, conferences and workshops to present their work and network with others.



Deliver Academic Programs that Prepare Students for the Workforce

Increase industry-relevant/credentialed programs

As a valued leader in the community for producing high-quality graduates, HCoE and local industry share a close bond where our exiting students must be better equipped to meet the expectations of industry. To this end, HCoE will begin to offer programs that produce industry-relevant credentials. Certificate programs will be made available at the undergraduate and graduate levels, with some general areas of demand already known: AI, manufacturing, mechatronics, and sustainable engineering. Alternatively, students may earn industry credentials through professional programs (i.e., Auto-ISAC, Construction, CompTIA, etc.).

Metrics

- Track number of students earning certificates/credentials
- 50% of graduating students earning certificates/credentials on top of degree by year 5

Increase satisfaction of graduates and employers with student preparation

Our objective is to ensure that HCoE graduates be gainfully employed in their related engineering specialty or will matriculate into graduate programs upon completion of their bachelor degrees. Our students' professional careers start in HCoE; therefore, we commit to continued refinement of our curriculum and program objectives to best equip our graduates with the knowledge and skills requisite for professional growth and attainment. We will capture stakeholder input to ascertain relevance of our engineering curriculum. Accordingly, we will conduct annual college-wide surveys of students and employers, making them available through a central data repository for sharing and transparency. We will make the necessary changes to increase the satisfaction of our graduates and employers.

Metrics

- Establish baseline benchmark satisfaction levels
- Increase satisfaction rate of both graduates and employers to 90% by year 5

Increase students' participation in workforce preparation programs

In addition to offering internships and co-ops, engaging our undergraduates in world-renowned research, and developing skills for resume building and interviewing (see Goal 2), we will ensure the marketability and employability of our graduates by emphasizing our Career Services and conducting an annual career fair that is host to several companies seeking engineers from our program. Additionally, we will increase student workforce preparation activities (i.e., engineering apprenticeship program, attendance at professional conferences, participating in industry talks, etc.).

Metrics

- Establish baseline activities and current participation levels
- 85% of students engaged in these programs by year 5

Emphasize workforce preparation as a vital part of the engineering curriculum

Integral to HCoE curriculum will be the inclusion of content derived from industry that will supplement a portion of traditional course material and assign real-world problems to theoretical concepts. Therefore, we will emphasize open-ended problem solving as a greater percentage of course goals. HCoE will also implement a rather novel approach to the traditional and required senior capstone course whereby industry will sponsor our capstone projects to encourage student critical thinking approach to real-world problem solving. These projects will vary by sponsor but will seek to address problems of value to the industry sponsor. The result will be an increased confidence in the students' problem-solving abilities as well as the showcasing of students' level of preparedness to the industry sponsor.

We will conduct frequent consultations with our Industrial Advisory Board and other local industry partners to address requisite skills needed of our students, thereby increasing their marketability and meet industry workforce demands. We will also utilize post-graduate survey responses to evaluate the effectiveness of this program and make changes as dictated by the opinions of our students.

Metrics

- Add industry specific course content to 15% of curriculum by year 5
- Incorporate conduct research on a topic toward finding a solution to a problem to 25% of undergraduate curriculum by year 5
- Track the number of industry-sponsored senior projects across the college annually with a target of 90% by year 5



Strengthen Research Enterprise

Increase research investment and return on investment college-wide

Research is the engine within the workhorse of institutions of higher learning. It is what enables societal change through experiential learning and in many instances sets the directions for societal and national behavior and growth. As we embrace more fully our role as a Carnegie R1 institution, we will aggressively invest in and recruit more tenure-track faculty to conduct research of measurable societal value and impact at HCoE. These faculty will conduct research that will generate much academic discussion and will output trained domestic and international graduates to meet our Nation's manpower needs. Our main research thrusts are intrinsically linked to certain Grand Challenges posed by the National Academy of Engineering (NAE), the broader impacts of which will be to the betterment of our local community, our state, and our nation.

We will track all research investments at all levels of the college and associated outcomes. Additionally, for the first three years of this strategic plan, we will recoup a large portion of departmental carryforward, departmental IDCR, and departmental share of faculty buyout funds for strategic reinvestment in the college with an anticipated high return on those investments.

We will create more thematic research centers and institutes focused on directed multidisciplinary research and will establish financial support mechanisms for them to thrive. The objective is to enable centers and institutes that will be self-sustaining through the solicitation and award of external funding. These research centers and institutes will form a major thrust for our growth in research expenditure, transfer of technology, funding, and graduation of doctoral students, impacting our community with research education and spinoffs.

We will work with university administration on development of a fee-for-service revenue policy similar to pricing structure among engineering firms to catalyze research growth and support operational costs.

Metrics

- Increase to 66 total tenure track faculty by year 5
- Establish current benchmarks at college and department levels to gauge growth
- Redistribute research produced discretionary funding accordingly to high ROI entities, Tenure Track faculty initiatives, and monitor these investments for their ROI (i.e., compounded growth in research productivity and recognition)
- Demonstrate increased funding, patents, publication rates related to investments
- •Monitor grant budgets to ensure allocated funds to graduate assistants are applied accordingly with increased enrollment and graduation rates

Build strong partnerships and engage across departments, colleges, and with other colleges/universities

Interdisciplinary and multidisciplinary research lend themselves to more rapid and meaningful research outputs. We will develop and foster collaborative professional development programs (e.g., workshops, team science initiatives, professional speaker series) with College of Arts and Science (CAS), College of Education (CoE), College of Business, School of Public Health, and other partnering colleges to allow for the aggressive pursuit of mutually beneficial research of impactful societal value.

We will create a new joint Faculty Research Grant that leverages funding from HCoE, CAS, CoE (at a minimum) to award larger-scale grants (~\$25,000) for collaborative proposals.

We will facilitate relationships with other institutions by inviting guest speakers for research seminars, actively develop relationships at national conferences, invite faculty from local universities to join HCoE research events, increase our adjunct faculty pool with leading scientists from other universities/colleges to serve in the capacity of master's and doctoral committee members, and develop other relatable partnerships.

We will reposition HCoE staff for greater effectiveness through reorganization of the reporting structure whereby all research functions will report to the position of Associate Dean of Research and Graduate Studies.

Metrics

- Increase number of multi-department, multi-college proposals submitted/awarded by 10% growth per year
- Increase number of external institutions on proposals submitted/awarded (also track types of institutions; increase engagement with MSIs, HBCUs, etc.) by 10% growth per year
- Grow the number of student REU opportunities obtained by three by year 5

Increase industry-based research collaboration

Our current research engagement with industry can be greatly enhanced considering industry presence in our local community. We commit to expanding our research interactions, funded and prospective, with industry that reflects our commanding presence in the Mid-South and desire to be a positive contributor to our community. We will explore a new industry market, aerospace engineering. To accomplish these objectives, we will host annual collaborative brainstorming events between industry and our research faculty to build mutually beneficial, long-term research partnerships. We will increase awareness of our research capacities through strategic marketing campaigns, especially in high-interest areas such as additive manufacturing, materials for extreme environments, hypersonics, artificial intelligence, EVs, robotics, cybersecurity, biomedical technologies, water and the built environment, and others.

Metrics

- Increase number of projects engaging industry by 15%/year
- Increase gifts from industry for research by 20%/year
- Increase research awards from industry partnerships by 200% in the next 5 years

Enhance research culture

Being a Carnegie R1 research institution, we must revamp our research culture, by making strategic investments in our faculty, mentoring junior faculty, developing college-wide research seminar series, and facilitating the ideation process. We will identify 3 to 4 key research focus areas for HCoE for targeted investment and broad collaboration in areas of bio/advanced materials engineering, additive manufacturing, energy, water and the built environment, human-machine interaction, AI, or others. Some of these key areas may already exist while others will be new research explorations. We will coalesce related research interests that will lead to multidisciplinary viable research centers and institutes and become thought leaders who will solve critical NAE Grand Challenges.

We will offer competitive graduate student stipends and subsidize the majority of their health insurance through funded research. We will continually monitor our competitiveness to attract, recruit, and graduate the best students. As appropriate, we will support technical staff through grants funding to further facilitate the pre-/post-award processes, machining of research apparatuses, and computation capabilities to name a few functions.

We will also develop training programs for new faculty members, post docs, graduate students, and undergraduates on topics related to grant development, responsible conduct of research, fiscal and ethical responsibility, and other topics of relevance.

Metrics

- Increase research expenditures to \$29M by year 5
- Monitor cutting edge research leading to tech transfer and spin-offs
- Build 2-3 large multi-disciplinary research centers/institutes by year 5
- Engage at least 50% of faculty in research seminars in year 1, increasing to 80% by year 5
- Conduct at least 2 townhall meetings to illustrate research on campus both in the college and in other programs that would spark collaboration
- Increase number of undergraduate students engaged in research to 30% by year 5 (currently at 7%)
- Increase number of undergraduates entering PhD program by 15%/year
- Increase number of students and faculty engaged in entrepreneurship by 10%/year (research products/ outcomes with commercial potential)
- Track graduate/undergraduate students conference presentations, publications, and awards, VIP, REU participation (and similar)
- Monitor outcomes from Faculty Research Grants such as publications, grant submission, and receiving a research award(s)

#5

Recruit, Retain, Reward, and Recognize our People

Celebrate daily the exceptionalism of our faculty, staff, students, and alumni through acknowledgment and appreciation

Research is the engine within the workhorse of institutions of higher learning. It is what enables societal change through Herff College of Engineering will celebrate our faculty and staff among peers for being part of our engineering family. Our desire is to maintain a high morale and sense of belonging. Without our staff and faculty, we would not be able to conduct the day-to-day activities of transforming our students through engineering education and research. Therefore, we will regularly celebrate and recognize our faculty and staff achievements through activities that highlight and communicate the extraordinary endeavors and accomplishments we witness daily.

Similarly, we will regularly recognize and appreciate the endeavors and contributions of our alumni..

Metrics

- Highlight research awards, service positions of notoriety, publications, speaking engagements, and other great accomplishments of our faculty by regularly posting to our website and on social media, incorporating into our marketing material, and within the dean’s quarterly newsletter
- Weekly spotlight staff actions that positively impact our students, faculty and/or programs within Tiger Spotlight
- Celebrate the success of our alumni through annual recognition
- Celebrate the success of our students’ accomplishments through semi-annual recognition at college/departmental awards functions and via social and printed media

Expand faculty and staff awards

Interdisciplinary and multidisciplinary research lend themselves to more rapid and meaningful research outputs. We will We will recognize the excellence of our faculty and staff through awards at the college and university levels. To create an equitable means of recognition, we will create award measurement criteria and decision rubrics and develop diverse committees to review and make nominations.

Metrics

- Increase the number of submissions of staff excellence to the Harriet R. Montgomery Service Excellence Award, receiving at least two awards annually
- Be cognizant of making staff nominations to university awards: Presidential Excellence Award, TIAA Excellence Award, Community Service Outreach Award, and others with a nomination made annually to at least one.
- Be cognizant of making faculty nominations to university awards: Willard R. Sparks Eminent Faculty Award, Alumni Association Distinguished Teaching Award, Alumni Association Distinguished Research, Creative Achievement & Excellence in Engaged Scholarship Awards, and others with a nomination made annually to at least one.
- Celebrate recipients of College Annual Awards by faculty and staff annually in a forum that best supports attendance by peers
- Increase number of nominations and awards from professional societies

Offer competitive salaries, startup packages, alternative work options, and other incentives

Faculty start-up packages are a strong determinant of success. In concert with Goal 4, we will invest in our faculty and staff offering competitive packages to ensure retention. To facilitate an accommodating work environment, HCoE will meaningfully assess the possibilities, benefits, and modalities of offering hybrid work options among staff. We will provide better feedback to staff on performance with prompt and viable corrective action and develop promotional opportunities for staff within the college. Managers and supervisors will be encouraged to reward staff for exceptional work.

In recruitment efforts, we will provide clear job descriptions and expectations in the position announcement, work to increase applicant pool diversity, and ensure hiring committees reflect diversity of the college and its student body.

To be able to recruit and retain the best people, we will strive to offer competitive salaries, start-up packages, student/ staff support, equity adjustments, and research space for tenure-track faculty.

Metrics

- Conduct a baseline survey on faculty/staff perspective on college performance in the areas of compensation, incentives, and work schedules followed annually to monitor progression of initiatives and their effectiveness toward positive change
- Measure the increase in number of applicants and the diversity of the applicant pool produced by advertising new jobs in professional organizations (e.g., National Society of Black Engineers, Society of Woman Engineers, Hispanic Society of Professional Engineers, others)
- Show a consistent adherence to the development of a diverse hiring committee for each hire
- Survey new faculty on the benefit of holding early performance reviews
- Survey comparative universities and their salaries to provide a potential target to address salary compression

Foster the professional growth of faculty and staff through supporting attendance at workshops, certificate programs, training programs, conferences, and by other means

Our faculty and staff excel when they can continue to grow professionally and expand their skillsets and interests. Active life-long learning can best be exemplified in a university setting where the main objective is the attainment of knowledge and exploration of ideas. This pursuit should not be one solely ventured but supported through administration. Hence, we will provide paid opportunities for staff to participate in the following: in-person/online training; software, team building, or other workshops; or attendance at conferences to advance them professionally.

We will provide financial support to tenure-track faculty to attend conferences, grant writing workshops, teaching workshops, and administration training to aid in their early success and advance their early professional development. We will also promote continued education through the university scholarship program.

Metrics

- Bring in national speakers/trainers for professional development topics of broad interest to faculty and staff and assess their effectiveness
- Assess effectiveness of workshops on faculty and staff productivity

#6

Optimize Operation Efficiency Address administrative hierarchy

Celebrate daily the exceptionalism of our faculty, staff, students, and alumni through acknowledgment and appreciation

As we embrace our growth trajectory, it is pertinent to operate an optimized administrative hierarchy that streamlines operations, eliminates superficial barriers, and facilitates the success of faculty, staff and students. It is important that we remove bottlenecks that impede growth to facilitate faster decision making and job processing with clear definitions of responsibility and authority. As such, we will evaluate the current job duties of all staff and realign reporting structure, duties, and salaries as appropriate.

Metrics

- Highlight research awards, service positions of notoriety, publications, speaking engagements, and other great acAlign the college research staff under the Associate Dean for Research
- Conduct regular customer satisfaction surveys (e.g., end of call survey, online survey, satisfaction kiosk, etc.) to ensure operations are meeting their needs and to identify and address any inefficiencies.

Pre-/post-award support

The Herff College of Engineering has witnessed a steep growth in research awards and expenditures since attaining the R1 classification. This has overwhelmed our post-award mechanism. To facilitate faster and streamlined processing of awards, we will centralize pre-/post-award support into a Research Support Services (RSS) office that will: (1) support faculty in developing proposals; (2) monitor project budget expenditures/allocations, subawards and contracts, purchases, and other post-award activities; and (3) prepare student contracts and faculty compensation contracts. We will work in concert with Office of Sponsored Programs and Grants Accounting to enhance operational efficiency and ensure service excellence.

Metrics

- Ensure RSS response happens in a timely manner (i.e., 1-2 days)
- Ensure submitted proposals happen within the agency deadline
- Conduct regular customer satisfaction surveys (e.g., faculty survey, UoM admin surveys, sponsor survey, satisfaction kiosk, etc.) to ensure pre-/post-award operations are timely, effective, and meet the needs of the intended parties.

Engineering Technical Support staff

Continued exponential growth in research is expected over the next five years and alongside this growth will be increases in student enrollment and faculty numbers. We will also be increasing the experiential learning components of our curricula, which requires restructuring of our utilization of technical support staff. Therefore, we will realign the Engineering Technical Support staff under a new Assistant Director of Engineering Technical Support and subsequently restructure the responsibilities of the current technical support staff positions. Additionally, upon completion of the new STEM Research and Classroom Building, we will hire a building manager to oversee the operation of the building.

Metrics

- Align technical support staff responsibilities to better support college operations and research initiatives to the exclusion of managing laboratories
- Develop a fee rate structure that covers salaries/benefits of technician time, maintenance of shop equipment, purchasing of materials, and other related costs

#7

Generate and Steward Financial Resources

Direct research dollar returns to research initiatives

The Herff College of Engineering has witnessed a steep growth in research awards and expenditure since attaining the Carnegie R1 classification. To enhance this growth, we will decisively invest in our active faculty researchers, hire new world-class researchers, and constructively engage faculty who want to reenergize their research efforts. Another investment target is facilitation of forums that promote ideation leading to multidisciplinary research awards.

We will pursue a strategy that focuses on research awards that yield high IDCR; therefore, research awards from federal programs like NSF, NIH, HHS, DOD, DOE, and DOI will be prioritized.

We will also provide complete financial transparency to faculty and staff on research expenditures and allocations.

Metrics

- Reinvestment into research should have a notable ROI (i.e., compounded growth in research productivity and recognition)
- Utilize a decision rubric to guide funding reallocation
- Measure the effectiveness of multidisciplinary research ideation through workshops and townhall meetings
- Produce IDCR in year 1 at \$1.2M and grow to \$7.5M by year 5
- Have federal funding represent 70% of incoming research dollars by year 2

Invest in student resources (lab space, instrumentation) that encourage exploration of ideas and innovating thinking

HCoE must increase experiential learning activities to engage and prepare our students for the workforce and entrepreneurial endeavors. Therefore, we will activate maker spaces in the new STEM Research and Classroom Building that will allow students to develop and explore innovative outcomes. As our enrollment flourishes, we will convert existing spaces into innovation workshops filled with instrumentation that fuels the creativity spark in our students.

Metrics

- Conduct a survey among students on their exploration ideas and determine the equipment/instrumentation necessary to effectuate their creative spirit
- Obtain philanthropic gifts to support a named space and equipment/ instrumentation
- Promote and run competitive entrepreneurial capstone senior projects with cash prizes to facilitate actualization of the resulting ideas

Diversify funding portfolio

HCoE will invest in opportunities that grow and diversify our funding sources through broadening the base of scholarship giving, expanding from whom we seek research funding, obtaining financial investment from industry to support certificate program, bolster our alumni and corporate giving support, and enlarge the pool of philanthropic donors.

Another area of growth that is anticipated to produce revenue for reinvestment is from training fees and

fee-for-service contracts. Research institutes have the greatest likelihood for developing joint ventures that can be profit driven. We will also develop enduring partnerships with State of TN agencies and mutually beneficial partnerships with

universities and colleges across our state.

To facilitate these numerous objectives, we will invest in marketing and engagement to greatly increase awareness of who we are and how we will positively improve citizens’ quality-of-life and influence and cultivate economic vitality locally, regionally and nationally through engineering education and research..

Metrics

- Create a technical certificate program that supports the needs of industry and
- Work with business and finance to develop a fee-for-service function tied to revenue accounts
- Survey the local industries on their interest in developing and supporting an Industrial Engineering program, a program in advanced manufacturing, as well as in mechatronics.
- Develop profit producing public-private partnerships within the UMRF
- Strengthen partnerships with State agencies
- Increase research collaboration on joint proposals among Tennessee’s universities and colleges by 20% in overall awards
- Create/Grow fee-paying industry-relevant MS program
- Grow meaningful industry and philanthropic relationships that will increase giving to \$3M annually

APPENDIX

Strategic Planning Team

The Herff College of Engineering Strategic Plan Committee was constituted of 17 members in addition to two university representatives. Ten of the committee members are faculty and staff with seven members from industry.

- Dr. Dennis Koerner, co-chair and President and CEO of ITN, LLC
- Dr. Brian Waldron, co-chair and Professor in Civil Engineering
- Dr. Kevin Berisso, Associate Professor in Engineering Technology
- Dr. Mariquita “Kit” Boone, pre-award coordinator for HCoE
- Dr. Joel D. Bumgardner, chair and Professor in Biomedical Engineering
- Dr. Russell Deaton, Associate Dean of Academic Affairs and Administration
- Luz Gray, project coordinator in CAESER
- David Greganti, business officer III for HCoE
- Dr. Alexander Headley, Assistant Professor in Mechanical Engineering
- Clarice Hunt, Director of development for HCoE
- Dr. Stephanie Ivey, Associate Dean for Research for HCoE and Professor in Civil Engineering
- Sheila Mathis, project coordinator for HCoE
- Dr. Okenwa Okoli, Dean for HCoE and Professor in Mechanical Engineering
- Dr. Aaron Robinson, Associate Professor in Electrical and Computer Engineering
- Isaiah Surbrook, Assistant Dean for Engineering Student Services & Diversity



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