# **FRANK H. DOTTERWEICH** COLLEGE OF ENGINEERING



### PAGE 2

TABLE OF	
CONTENTS	5

03	A MESSAGE FROM THE DEAN,
07	STRATEGIC PRIORITY ONE
	EXCELLENCE IN UNDERGRADUATE
	ENGINEERING EDUCATION
11	STRATEGIC PRIORITY TWO
	ELEVATE GRADUATE ENGINEERING
	EDUCATION
15	STRATEGIC PRIORITY THREE
	ENHANCE RESEARCH AND
	SCHOLARSHIP
19	STRATEGIC PRIORITY FOUR
	AMPLIFY OUTREACH AND
	ELEVATING COLLEGE VISIBILITY
23	STRATEGIC PRIORITY FIVE
	INCREASE INDUSTRY AND
	COMMUNITY ENGAGEMENT

### **Engineering What's Next...**

### A Vision for TAMUK Engineering 2028

### - Built on Tradition, Driven by Excellence -

#### Dear Friends, Colleagues, and Javelina Engineers,

For nearly 90 years, the Frank H. Dotterweich College of Engineering has shaped generations of engineers—leaders who have built industries, strengthened communities, and transformed lives. Our legacy is one of resilience, excellence, and purpose-driven engineering.

Today, we embrace a defining moment filled with limitless possibilities. **Engineering What's Next... - A Vision for TAMUK Engineering 2028** is more than a strategic plan — it is a bold commitment to the future of our students, our faculty, and our profession. Engineering is evolving at an unprecedented pace, demanding not only technical excellence but also <u>adaptability</u>, leadership, and a deep sense of responsibility. To meet this challenge, we must honor our past while embracing the opportunities ahead.

#### A Vision Shaped by Collaboration

This vision is the result of <u>two years of thoughtful collaboration</u> — a roadmap built by and for the Javelina Engineering family. It is focused, ambitious, and intentional, guiding us toward a future of <u>excellence and impact</u>.

Thank you to all the faculty, staff, students, and College of Engineering Advisory Board members who participated in the multiple workshops and open forums. Your time, expertise, and feedback have been invaluable in shaping this plan. Your commitment to this vision truly reflects our collective aspirations. It's because of your dedication and collaborative spirit that we are now poised to move forward together. Thank you for being a vital part of this journey — your contributions are the foundation of our future success.

#### Our Strategic Priorities: A Roadmap for Transformation

To set our path as a focused, cohesive, and energized community, this strategic plan presents <u>five key strategic priorities</u>, each with a number of associated objectives:

- 1. Excellence in Undergraduate Engineering Education Strengthening and sustaining undergraduate enrollment while focusing on career readiness and maintaining the highest academic standards.
- 2. Elevating Graduate Engineering Education Increasing graduate enrollment, streamlining admissions, and providing stronger academic and professional support to shape the next generation of engineering leaders.
- 3. Enhancing Research and Scholarship Expanding research funding, fostering interdisciplinary collaborations, and building a strong research culture that drives innovation and societal impact.
- 4. Amplifying Outreach and Elevating Visibility To strengthen our reputation and elevate our visibility, we must <u>expand outreach</u>, <u>industry connections</u>, and <u>strategic partnerships</u>. Central to this effort is <u>deepening our engagement with K-12 institutions</u>, including teachers and school counselors. Engineering is not always introduced at the middle or high school level, meaning many students miss the opportunity to explore it as a career. By partnering with regional school districts and delivering impactful outreach programs, we can <u>inspire future engineers early</u> sparking interest and raising awareness before students even make their college decisions. Through these efforts, we will attract a <u>broader and talented student body</u>, ensuring they are well-prepared and motivated to pursue engineering excellence.
- 5. Increasing Industry and Community Engagement Our success is deeply connected to the strength of our relationships with <u>industry</u>, <u>alumni</u>, and the broader community. By deepening collaboration with industry and community partners, we enhance educational experiences, drive research, and align our programs with workforce needs. We will continue to cultivate partnerships that provide students with <u>real-world experiences</u> such as internships, cooperative education programs, and industry-sponsored research projects, ensuring our graduates are well-prepared to meet workforce demands.

#### A Deep Commitment to Student Success

At TAMUK Engineering, we are dedicated to providing a transformative educational experience that empowers every student to thrive academically, professionally, and personally. By integrating rigorous coursework with hands-on learning and high-impact practices, we ensure our students graduate with not only technical proficiency but also problem-solving and leadership skills that position them for success.

We share the responsibility of offering the mentorship and resources necessary to help students navigate their academic journey, make informed decisions, overcome challenges, and achieve their full potential.

By working together, we will:

- Advance the academic mission by strengthening faculty support, developing innovative programs, and expanding strategically based on student needs and workforce demands.
- Elevate the student experience by improving retention and graduation rates, enhancing career readiness, and sharpening our value proposition.
- Foster a Culture of Care and Engagement. We are committed to creating a welcoming environment that truly supports our community, fostering a more engaged and participatory culture. Through the Caring Campus Initiative, we ensure that every student, faculty, and staff member is respected, valued, and empowered. Together, we will build an environment where all can succeed.

#### **Measuring Success and Overcoming Challenges**

While the strategic plan outlines our broad vision for the future, the <u>operational plan</u> provides clear metrics for each goal, ensuring that the administration, faculty, and staff remain committed to achieving meaningful results.

This plan is a flexible roadmap, allowing TAMUK Engineering to adapt to evolving challenges and opportunities. Attaining our goals will require careful resource allocation, the development of new revenue streams, and a heightened emphasis on fundraising and grant-writing. <u>Success will</u> <u>depend on a united effort</u> from students, alumni, faculty, staff, and supporters.

We will need commitment and creativity, focus and flexibility, energy and passion. Above all, we will need to draw upon our historic strengths—our <u>distinctive heritage, character, tenacity, and heart</u> that define our Javelina Spirit.

#### A Call to Action: Our Moment to Lead

The road ahead is ambitious, but as Javelina Engineers, we rise to every challenge. This vision will only succeed if we work together.

I invite our <u>faculty, staff, students, alumni, and industry partners</u> to be active participants in this transformation. <u>Whether</u> through mentorship, research, outreach, or collaboration, your contributions will shape the future of TAMUK Engineering.

TAMUK Engineering has much to be proud of and a powerful future ahead.

Together, we will continue to redefine what is possible. Our spirit is unified, our impact is shared, and our future is limitless.

This is who we are - this is our mission - this is our moment.

With gratitude and excitement for what lies ahead,

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Heidi A. Taboada, Ph.D. Professor and Dean Frank H. Dotterweich College of Engineering Texas A&M University-Kingsville

## STRATEGIC PRIORITY ONE EXCELLENCE IN UNDERGRADUATE ENGINEERING EDUCATION

Recognized for its excellence across the South Texas region, the Frank H. Dotterweich College of Engineering is committed to remaining the leading institution in undergraduate engineering education.

Our strategic focus is built on three key pillars: growing a strong and sustainable undergraduate enrollment, enhancing student retention through robust support systems, and enriching experiential learning opportunities.

By advancing these areas, the college aims to develop a highly skilled, workforce-ready talent pool—equipped with both the academic foundation and hands-on experience needed to excel in today's competitive market.

#### Strategic Goal 1: Leadership in Undergraduate Engineering Education

To strengthen our leadership in undergraduate engineering education by growing a strong and sustainable undergraduate enrollment, highly focusing on career readiness, and maintaining the highest standards of academic excellence. We are committed to providing a transformative educational experience that prepares students for successful careers and advanced studies while continuously evolving to meet industry needs and improve student success metrics.

**Strategic Objective 1.1:** Cultivate a welcoming and dynamic academic environment that attracts top talent and supports sustainable growth in engineering education.

**Strategic Objective 1.2:** Enhance career readiness by strengthening industry partnerships and equipping students with the skills, knowledge, and experiences necessary for professional success or further academic pursuits.

**Strategic Objective 1.3:** Maintain the highest standards of academic excellence by maintaining accreditation for all programs, ensuring continuous improvement in alignment with regional and national industry expectations.



To cultivate an environment that intentionally prioritizes student success by identifying challenges and providing targeted support services. Through tailored interventions and resources, we seek to guide our students toward timely degree completion and ensure they have the support needed to thrive throughout their academic journey.

**Strategic Objective 2.1:** Enhance the retention of freshmen students by providing meaningful early engagement experiences, effective academic advising and mathematics placement, and college preparation. Through the redesigned GEEN 1201 class and initiatives like a freshman capstone project, we aim to foster a strong welcoming environment from the start, connecting students to resources and support services that will guide them throughout their academic journey.

**Strategic Objective 2.2:** Ensure success of sophomore, junior, and transfer students by connecting them to university resources, encouraging participation in engineering student organizations / extracurriculars, and offering appropriate support services for their retention and professional development

**Strategic Objective 2.3:** Strengthen student preparedness for the Fundamentals of Engineering (FE) exam through targeted workshops, practice exams, and curriculum alignment.

STRATEGIC PRIORITY ONE EXCELLENCE IN UNDERGRADUATE ENGINEERING EDUCATION

### STRATEGIC PRIORITY ONE EXCELLENCE IN UNDERGRADUATE ENGINEERING EDUCATION



Strategic Goal 3: Prioritize transformative extracurricular activities that enhance their career readiness

To prepare our students for the complexities of a global landscape and dynamic engineering careers, we will prioritize transformative extracurricular activities that enhance their career readiness. By promoting high-impact practices and fostering professional growth through intentional engagement in student organizations, conferences, and networking opportunities, we will ensure our graduates are equipped with the soft skills and global competencies necessary for success.

**Strategic Objective 3.1:** Elevate our students' career readiness by emphasizing high-impact practices, including internships, coops, undergraduate research, service learning, and study and research abroad programs. High-impact practices not only enrich students' technical education but also help them develop critical soft skills, improve cultural awareness, and broaden realworld perspectives.

**Strategic Objective 3.2:** Strengthen students' professional engagement by promoting participation in professional organizations and attendance at regional and national conferences. These activities foster a sense of community, develop leadership, and provide networking opportunities, which are critical for personal and professional growth.

#### STRATEGIC PRIORITY ONE EXCELLENCE IN UNDERGRADUATE ENGINEERING EDUCATION

# Key Performance Indicators (KPIs)

- Number of undergraduate students enrolled
- Percentage of first-time-in-college students retained after their first year
- Percentage of sophomores and juniors retained
- Overall undergraduate retention rate at key milestones (first, second, and third year)
- Percentage of students graduating within 4 years
- Percentage of students graduating within 6 years
- Percentage of accredited programs
- Number of students participating in tutoring and other support services
- Percentage of undergraduate students engaged in high-impact practices by graduation and number of high-impact practices per student
- Number of students attending regional and national conferences and networking events annually
- Percentage of students participating in engineering student organizations
- Percentage of students passing the FE exam
- Percentage of students employed in engineering or enrolled in graduate school within 6 months of graduation
- Percentage of students completing an internship, co-op, undergraduate research experience or any other High Impact Practice
- Number of industry partnerships and employer engagement activities per year
- Student satisfaction with advising, academic support, and extracurricular activities (measured via surveys)



## STRATEGIC PRIORITY TWO ELEVATE GRADUATE ENGINEERING EDUCATION

This strategic priority focuses on transforming the Frank H. Dotterweich College of Engineering into a hub of graduate education excellence by significantly increasing graduate enrollment and fostering an environment conducive to student success and career readiness.

The strategy aims to achieve significant growth in graduate student enrollment through targeted recruitment efforts, a streamlined admission process, and enhanced support services.

#### Strategic Goal 1: Expand Graduate Enrollment in the College of Engineering

To strengthen the College's position as a leader in graduate education. We will actively seek to increase graduate enrollment by targeting a broader pool of domestic and international applicants, while simplifying the admissions process to create a seamless experience for prospective students.

**Strategic Objective 1.1:** Expand recruitment efforts to attract both domestic and international graduate students and leverage partnerships with industry.

**Strategic Objective 1.2:** Expand our Ph.D. program by attracting and retaining top students, fostering a vibrant research community that drives innovation and strengthens our reputation as a leader in advanced engineering education.

**Strategic Objective 1.3:** Streamline the admissions process by reducing application processing time and improving communication with prospective students to ensure a seamless and more attractive experience.



Strategic Goal 2: Cultivate an Academic Environment that Improves Student Success

Foster an academic environment that promotes student success by providing intentional support services and opportunities for professional development and research, ensuring students are well-prepared for timely graduation and career advancement.

**Strategic Objective 2.1:** Increase the number of students graduating on time by continuously revising and optimizing academic programs to create a streamlined and competitive path to degree completion.

**Strategic Objective 2.2:** Foster a culture of continuous learning and research by expanding opportunities for professional development and scholarly engagement.

### STRATEGIC PRIORITY TWO ELEVATE GRADUATE ENGINEERING EDUCATION

#### Strategic Goal 3: Ensure Career-Ready Graduates

We will equip graduate students with the advanced skills, knowledge, and experience needed to excel in their careers by maintaining state-of-the-art facilities, offering an innovative, industry-relevant curriculum, and enhanced career services.

**Strategic Objective 3.1:** Maintain and upgrade state-of-the-art research facilities and instructional resources that support advanced learning and foster innovation.

**Strategic Objective 3.2:** Develop an innovative, flexible curriculum aligned with industry needs and emerging trends in engineering.

**Strategic Objective 3.3:** Strengthen career readiness by expanding industry partnerships, internships, and professional networking opportunities.

#### STRATEGIC PRIORITY TWO ELEVATE GRADUATE ENGINEERING EDUCATION

# Key Performance Indicators (KPIs)

- Number of MS students enrolled
- Number of Ph.D. students enrolled
- Average time taken to process graduate applications
- Percentage of admitted students who enroll in the graduate programs
- Number of formal partnerships established with industry for graduate student recruitment
- Percentage of graduate students retained from year to year
- Percentage of graduate students (MS and Ph.D.) graduating within the expected timeframe (1.5-3 years for MS, 3-5 years for Ph.D.)
- Number of low-producing degree programs, as defined by the THECB
- Percentage of graduate students participating in professional development activities (workshops, conferences, research projects)
- Percentage of graduate students participating in internships, co-ops, or industry-sponsored projects
- Number of new graduate programs launched that align with industry needs



## STRATEGIC PRIORITY THREE ENHANCE RESEARCH AND SCHOLARSHIP

The Frank H. Dotterweich College of Engineering is committed to creating research opportunities for both faculty and students, promoting research outputs that make a meaningful impact on society.

Growing research funding is crucial for expanding the college's influence and research capabilities.

This goal will be achieved by creating a research-driven culture, developing a cadence of accountability, supporting large-scale proposal submissions, and targeting multidisciplinary research opportunities.

The college acknowledges that future engineering research is multidisciplinary, involving multiple investigators and demanding the establishment of core, shared-use facilities.

#### Strategic Goal 1: Increase Research Engagement and Productivity

This goal aims to strengthen the college's research output by encouraging a higher percentage of faculty to engage in research activities and improving key research metrics. By fostering a research-driven culture, the college will enhance its scholarly contributions, secure more funding, and advance its reputation as a leader in engineering research.

Strategic Objective 1.1: Increase faculty participation in research activities.

Foster a culture of research excellence by increasing the percentage of faculty actively engaged in research projects.

Strategic Objective 1.2: Boost key research metrics

Drive continuous improvement in research productivity, including the number of research proposals submitted, awards received, awarded amounts, and research expenditures.



## Strategic Goal 2: Strengthen Research and Innovation in Key Areas of Regional and National Significance

This goal aims to elevate the College's research influence by concentrating on critical areas that align with regional and national priorities. By focusing efforts on high-impact research topics, the College will contribute to addressing societal challenges and solidifying its leadership in engineering research.

**Strategic Objective 2.1:** Identify and Prioritize Key Research Areas - Focus on identifying and aligning research efforts with priority areas that match regional and national needs.

**Strategic Objective 2.2:** Expand Partnerships for Large-Scale Research Initiatives - Strengthen and build strategic partnerships to drive impactful research and foster innovation.

### STRATEGIC PRIORITY THREE ENHANCE RESEARCH AND SCHOLARSHIP

#### Strategic Goal 3: Enhance and Promote Multidisciplinary Research and Collaboration

The College recognizes that addressing future research challenges requires multidisciplinary teams. By promoting collaborative, cross-departmental, multi-institutional research, the College will advance innovation and problem-solving in engineering, ultimately contributing to a broader impact.

**Strategic Objective 3.1:** Promote Networking Events and Forums – Facilitate opportunities for collaboration by organizing events that bring together diverse disciplines and expertise.

**Strategic Objective 3.2:** Encourage Multidisciplinary Involvement for Junior Faculty – Support junior faculty in engaging with interdisciplinary research early in their careers to broaden their research scope.

**Strategic Objective 3.3:** Adapt Tenure and Promotion Policies - Update policies to recognize and reward faculty contributions to collaborative and multidisciplinary research efforts.

#### STRATEGIC PRIORITY THREE ENHANCE RESEARCH AND SCHOLARSHIP

# Key Performance Indicators (KPIs)

- Number of proposals submitted
- Number of awards received
- Average total amount awarded per proposal
- Annualized amount received
- Annual research expenditures per faculty member
- Number of new strategic partnerships formed with industry, government, and community organizations each year
- Number of journal research publications,
- Number of patents
- Percentage of faculty and students involved in multidisciplinary research projects annually
- Number of attendees at multidisciplinary networking events and forums organized by the College each year
- Number of seed grants provided to junior faculty for multidisciplinary research initiatives annually



#### STRATEGIC PRIORITY FOUR

## AMPLIFY OUTREACH AND ELEVATING COLLEGE VISIBILITY

Significantly enhance the Frank H. Dotterweich College of Engineering's presence and influence at regional, national, and international levels.

By strategically expanding outreach initiatives and strengthening the college's brand, we aim to increase engagement with key stakeholders, attract top talent, and position the college as a leading voice in engineering education and research.

This will involve targeted communication efforts, community partnerships, and high-profile events that showcase our achievements and thought leadership, ultimately elevating the college's reputation and impact.

## Strategic Goal 1: Increase Public Awareness and Engagement through Targeted Marketing and Continuous Improvement

Position the Frank H. Dotterweich College of Engineering as a leading institution in engineering education by implementing comprehensive outreach and communication strategies. These efforts aim to elevate the college's reputation, engage diverse audiences, and foster strong connections with prospective students, industry partners, and the broader community.

**Strategic Objective 1.1:** Elevate the Frank H. Dotterweich College of Engineering's reputation and influence by developing comprehensive outreach strategies that effectively engage with diverse audiences, including prospective students and the general public.

**Strategic Objective 1.2:** Enhance the college's communication and outreach initiatives by leveraging data-driven insights to refine and optimize messaging, ensuring it resonates with target audiences and fosters sustained interest in the College's programs and opportunities.



## Strategic Goal 2: Strengthen the College's Recruitment and Outreach Initiatives through Strategic Partnerships and Innovative Digital Engagement

Expanding the College's reach and influence through strategic partnerships and innovative recruitment strategies. By enhancing engagement with prospective students and educational institutions, the College aims to build a more diverse and talented student community.

**Strategic Objective 2.1:** Broaden the College's influence by cultivating strategic partnerships and enhancing recruitment efforts to connect with a larger and more diverse pool of prospective students and educational institutions.

**Strategic Objective 2.2:** Advance the College's recruitment capabilities by developing and deploying digital platforms and tools that provide prospective students with engaging, interactive, and personalized experiences, fostering stronger connections with the College.

### STRATEGIC PRIORITY FOUR AMPLIFY OUTREACH AND ELEVATING COLLEGE VISIBILITY

Strategic Goal 3: Foster a Collaborative Culture of Engagement that Increases Participation of Faculty and Staff in Outreach and Recruitment Events

Cultivating a culture within the College where faculty and staff are actively engaged in outreach and recruitment efforts, enhancing the College's ability to attract and inspire prospective students.

**Strategic Objective 3.1:** Engage faculty and staff in outreach and recruitment activities, contributing their expertise and enthusiasm to the College's recruitment efforts.

#### STRATEGIC PRIORITY FOUR AMPLIFY OUTREACH AND ELEVATING COLLEGE VISIBILITY

# Key Performance Indicators (KPIs)

- Digital Outreach & Engagement:
  - Social media reach & engagement
  - Media presence
- Event & Community Engagement:
  - Event participation
  - Prospective student engagement
  - Alumni & industry engagements
- Recruitment & Partnerships:
  - New partnerships
  - Collaboration effectiveness
  - Conversion rate of prospects to applicants
- Marketing & Branding Impact:
  - Content distribution & effectiveness
  - Brand perception & awareness



## STRATEGIC PRIORITY FIVE INCREASE INDUSTRY AND COMMUNITY ENGAGEMENT

Fostering a collaboration between academia and industry sectors while expanding community involvement.

This strategic priority aims to harness the synergistic potential of industry partnerships to enhance educational opportunities, drive innovative research, and facilitate the transfer of technology.

By fostering strong connections with industry and community stakeholders, the college seeks to align its programs with industry needs, improve student outcomes, and contribute meaningfully to the regional economy.



## STRATEGIC PRIORITY FIVE INCREASE INDUSTRY AND COMMUNITY ENGAGEMENT

## Strategic Goal 1: Strengthen Industry Collaborations for Enhanced Educational and Research Capabilities

Elevate the College's role as a leader in engineering education by forging stronger ties with industry partners. Through collaborative efforts, we will increase opportunities for industry-sponsored research, enhance educational facilities, and expand our network across Texas to support career readiness and professional development for our students and faculty.

**Strategic Objective 1.1:** Expand Industry-Sponsored Research and Education Opportunities: Increase the number of industry-sponsored research and educational projects, enabling faculty and students to engage in solving real-world industry problems and enhancing the College's capabilities.

**Strategic Objective 1.2:** Upgrade Educational and Research Facilities: Collaborate with industry partners to secure donations of advanced equipment and funding for educational and research facilities, ensuring that departments are equipped with state-of-the-art technology that reflects current industry standards.

**Strategic Objective 1.3:** Broaden Industry Connections Across Texas: Establish and strengthen connections with industry professionals and alumni in various regions of Texas, supporting diverse opportunities for collaboration, internships, and career advancement for students.

**Strategic Objective 1.4:** Develop Industry-Relevant Short Programs: Identify emerging needs within industry sectors to offer targeted short courses, certificates, or micro-credentials that provide competency-based skills applicable in the professional environment.

**Strategic Objective 1.5:** Expand Access to Engineering Education for Working Professionals: Increase access to advanced engineering education by offering flexible learning options tailored to the needs of working professionals, enabling them to pursue higher education without disrupting their careers.

#### STRATEGIC PRIORITY FIVE INCREASE INDUSTRY AND COMMUNITY ENGAGEMENT

# Key Performance Indicators (KPIs)

- Percentage of senior design projects funded or supported by industry partners
- Count of new industry-sponsored research projects initiated each year
- Number of donations (equipment)
- Total dollar value of donations received for educational and research facilities
- Number of new partnerships formed with industry and alumni annually
- Count of new short programs, certificates, or micro-credentials developed and offered each year
- Number of working professionals enrolled in flexible graduate programs annually
- Total number of students participating in industry-sponsored internships each year
- Number of alumni actively participating in industry-related initiatives each year
- Number of attendees and participating companies at industry-related events
- Number of continuing education programs offered and total enrollment of industry professionals



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Engineering What's Next...

A Vision for TAMUK Engineering 2028

- Built on Tradition, Driven by Excellence -

