

Strategic Plan

Strategic Plan (2020 - 2025) - College of Engineering

Mission / Vision / Values

Mission

The Penn State College of Engineering is a recognized world leader in impactful teaching and learning; research; and service to the University, the profession and society.

We promote a culture of equity and inclusion, wherein everyone is welcome; everyone is respected; everyone's opinion and contributions are valued; and everyone strives for excellence in themselves, in their colleagues and in the institution.

We deliver purposeful residential and online programs that prepare undergraduate and graduate students from around the world for life-long learning and impactful careers in the public and private sectors. These programs recognize the importance of deep disciplinary knowledge as well as transdisciplinary, team-based thinking and problem solving, and global awareness. We lead by example and help our students advocate for change to ensure a sustainable future and become effective citizens.

We provide innovative and supportive experiences designed to foster a more welcoming community; one that makes a career in engineering more accessible and achievable for talented and hardworking students, post-docs, staff and faculty from a range of backgrounds; and that inspires a commitment to excellence and ethics.

We provide the resources, infrastructure, and collaborative pathways that enable faculty to thrive as world renowned educators and pursue transformational research agendas. In collaboration with industry, non-profit organizations, governmental agencies, and other academic institutions and partners around the globe, our faculty-led research initiatives across all areas of engineering create jobs, fuel economic growth with sustainable and ethical practices, inform policy, solve global problems, and positively impact humanity.

Vision

The Penn State College of Engineering will be recognized locally, regionally, nationally, and internationally as a leading influence in creating a diverse and welcoming community that achieves excellence in engineering education, research and service with the power to inspire change and impact tomorrow.

The cornerstones of our College are Excellence, Equity, Sustainability and Social Mobility. While each is critical to the College's advancement, they are interdependent - any one of the four cannot be achieved without the other three. The cornerstones anchor the College's culture and decision-making processes. The College's capstone is impact - on the institution, profession, people, and society.

Institutional Values

INTEGRITY: We act with integrity and honesty in accordance with the highest academic, professional, and ethical standards.

RESPECT: We respect and honor the dignity of each person, embrace civil discourse, and foster a diverse and inclusive community.

RESPONSIBILITY: We act responsibly, and we are accountable for our decisions, actions, and their consequences.

DISCOVERY: We seek and create new knowledge and understanding, and foster creativity and innovation, for the benefit of our communities, society, and the environment.

EXCELLENCE: We strive for excellence in all our endeavors as individuals, an institution, and a leader in higher education.

COMMUNITY: We work together for the betterment of our University, the communities we serve, and the world

Optional Additional Values

The cornerstones of our College are Excellence, Equity, Sustainability and Social Mobility. While each are critical to the College's advancement, they are interdependent any one cannot be achieved without the other three. The cornerstones are the anchors of the College's culture and decision making process. The College's capstone is impact on the institution, profession, people and society.

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2020 - 2025

Supporting Evidence

College of Engineering Strategic Plan draft 20201113.docx Engineering Strategic Plan Nuventive format final.docx

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Goal 1

Foundation

Equity Action Plan

Goal

Grow a pervasive, welcoming, equitable and inclusive culture and climate throughout the College's students, faculty and staff that exemplifies the Penn State values.

1.1: Equity Action Plan Timeline

Unit Objective

Create, implement, audit and iterate an Equity Action Plan that enables us to achieve our aspirational culture. The Equity Action Plan must be actionable, tenacious and sustainable in our pursuit of equity and inclusion throughout the College.

Key Performance Indicator(s)

Degree of engagement of faculty, staff and students in the Equity Action Plan; Evidence of cultural change

Mapping

Penn State Foundations:

F3 - Advancing Inclusion, Equity, and Diversity

Penn State Supporting Elements:

No Associated Supporting Element Connection

Penn State Thematic Priorities:

• TE3 - Support And Empower Our Outstanding Faculty And Staff

1.2: Equity and Inclusion

Unit Objective

Be steadfast in pursuit of equity and inclusion throughout everything we do and increase the levels of engagement of our faculty and staff in dialogue and programs focused on making equity and inclusion habitual.

Key Performance Indicator(s)

Number of faculty and staff engaged, evidence of representation; reduction in instances of bias

Mapping

Penn State Foundations:

• F3 - Advancing Inclusion, Equity, and Diversity

Penn State Supporting Elements:

 OP2 - Establish Processes For Continual Institutional Assessment, Improvement, And Innovation, Including More Systematic Review Of Administrative And Academic Organizational Performance And Financial Stewardship

Penn State Thematic Priorities:

TE3 - Support And Empower Our Outstanding Faculty And Staff

1.3: Create program designed after the best practices of the National Science Foundation's ADVANCE program

Unit Objective

Create, implement, audit and iterate a program designed around the best practices of the National Science Foundation's ADVANCE program to "broaden the implementation of evidence-based systemic change strategies that promote equity for STEM faculty in academic workplaces and the academic profession" (Quotation take from NSF Program Solicitation 20-554.) and ASPIRE Alliance Institutional Change Effort to "Deepen the preparation of all

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STEM faculty to be inclusive and effective in their undergraduate teaching, research mentoring, and advising" (Quotation from aspirealliance.org)

Key Performance Indicator(s)

Increased diversity of faculty; evidence of faculty success; evidence of increased student success

Mapping

Penn State Foundations:

F0- No Foundation Connection

Penn State Supporting Elements:

• OP3 - Develop A Culture Of Academic Business Modeling To Support Innovation

Penn State Thematic Priorities:

TE3 - Support And Empower Our Outstanding Faculty And Staff

1.4: Revise and implement criteria for promotion of faculty members

Unit Objective

Revise and implement criteria for promotion of faculty members (and tenure, in the case of tenure-line faculty) that sustain a faculty who are dedicated to student success, strive for impact, continuously advance in scholarship and embrace and advance equity and inclusion.

Key Performance Indicator(s)

Increased recruitment, retention, and success of a more diverse and impactful faculty

Mapping

Penn State Foundations:

• F6 - Ensuring A Sustainable Future

Penn State Supporting Elements:

 OP2 - Establish Processes For Continual Institutional Assessment, Improvement, And Innovation, Including More Systematic Review Of Administrative And Academic Organizational Performance And Financial Stewardship

Penn State Thematic Priorities:

- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- TE3 Support And Empower Our Outstanding Faculty And Staff

1.5: Create a future faculty postdoc program

Unit Objective

Build upon best practices from peer institutions and develop and implement a future faculty postdoc program designed to increase the diversity of our faculty.

Key Performance Indicator(s)

Increase in diversity of faculty applicant pool; increase in the diversity of faculty

Mapping

Penn State Foundations:

F3 - Advancing Inclusion, Equity, and Diversity

Penn State Supporting Elements:

• IS1 - Prioritize Investment In Our People.

Penn State Thematic Priorities:

TE3 - Support And Empower Our Outstanding Faculty And Staff

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1.6: Engage students in the process of equity action planning

Unit Objective

Engage undergraduate and graduate students who bring diversity of identities, experiences, strengths and knowledge to Penn State in the process of equity action planning.

Key Performance Indicator(s)

Degree of engagement of students in the Equity Action Plan; Evidence of cultural change

Mapping

Penn State Foundations:

• F3 - Advancing Inclusion, Equity, and Diversity

Penn State Supporting Elements:

• IS1 - Prioritize Investment In Our People.

Penn State Thematic Priorities:

• TE4 - Prepare Our Students For Success In Their Careers And In Life

Goal 2

Foundation

Representative Student Body

Goal

Assure equitable access for students to enter and persist in world-class undergraduate and graduate engineering programs; and increase the recruitment, retention, and success of a demographically balanced undergraduate and graduate student body.

2.1: Recruit, support and retain undergraduate and graduate diversity

Unit Objective

Recruit, support and retain undergraduate and graduate students who bring diversity of identities, experiences, strengths and knowledge to Penn State.

Key Performance Indicator(s)

Increased diversity of student body, increased student success, growth of graduate student population

Mapping

Penn State Foundations:

• F1 - Enabling Access To Education

Penn State Supporting Elements:

OP1 - Improve The Design, Oversight, Integration, And Effectiveness Of Organizational Processes

Penn State Thematic Priorities:

• TE4 - Prepare Our Students For Success In Their Careers And In Life

Goal 3

Foundation

Intra-Institutional Collaboration

Goal

In furtherance of Penn State's collaborative culture, expand the College's leadership in intra-institutional partnerships that drive global impact in research and scholarship in a sustainable world and a just society.

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3.1: Define the "scope"

Unit Objective

Define the "scope" of engineering as a community and discipline of sustainable, impactful change throughout society.

Key Performance Indicator(s)

Evidence of changing recognition of the scope of engineering; evidence of success of intra-institutional collaborations

Mapping

Penn State Supporting Elements:

CO1 - Focus On Impact Through Partnerships

Penn State Foundations:

F6 - Ensuring A Sustainable Future

Penn State Thematic Priorities:

 SP - Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.

3.2: Formalize faculty co-hiring initiatives

Unit Objective

Formalize faculty co-hiring initiatives intended to attract faculty, diverse in identities, experiences, strengths, and knowledge, who will thrive and have impact in a collaborative environment.

Key Performance Indicator(s)

Number of new partnerships formed; evidence that co-hires strengthen the reputation of the College

Mapping

Penn State Foundations:

• F0- No Foundation Connection

Penn State Supporting Elements:

• IS1 - Prioritize Investment In Our People.

Penn State Thematic Priorities:

TE3 - Support And Empower Our Outstanding Faculty And Staff

3.3: Expand intra-institutional seed grant programs

Unit Objective

Expand intra-institutional seed grant programs

Key Performance Indicator(s)

Efficacy of programs in stimulating new research collaborations and funding, efficacy of programs in increasing inclusion of participants, efficacy of programs in increasing the consideration of sustainability within research objectives

Mapping

Penn State Supporting Elements:

CO1 - Focus On Impact Through Partnerships

Penn State Foundations:

• F6 - Ensuring A Sustainable Future

Penn State Thematic Priorities:

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- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- TE3 Support And Empower Our Outstanding Faculty And Staff

3.4: Establish intra-institutional research centers

Unit Objective

Establish intra-institutional research centers

Key Performance Indicator(s)

Efficacy of centers in stimulating new research funding, efficacy of centers in increasing inclusion of participants; evidence of centers in increasing the consideration of sustainability within research objectives; evidence of enhanced reputation of the College

Mapping

Penn State Supporting Elements:

CO1 - Focus On Impact Through Partnerships

Penn State Foundations:

• F6 - Ensuring A Sustainable Future

Penn State Thematic Priorities:

- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- TE1 Advance The Frontiers Of Knowledge

3.5 - Encourage faculty initiative and strengthen research support infrastructure

Unit Objective

Encourage faculty initiative and strengthen research support infrastructure

Key Performance Indicator(s)

Growth of single-investigator and small-group research projects and funding, efficacy of programs in increasing inclusion; evidence of enhanced reputation of the College.

Mapping

Penn State Foundations:

F5 - Driving Economic Development

Penn State Supporting Elements:

IS3 - Drive Innovation And Discovery

Penn State Thematic Priorities:

SP4 - Fully Engage Our Research Infrastructure

3.6: Expand and enhance global intra-institutional partnerships

Unit Objective

Expand and enhance global intra-institutional partnerships

Key Performance Indicator(s)

Development of College global partnership network incubating international programing, virtual engagements, intrainstitutional grants, research projects, faculty and staff exchanges, and international recruitment of graduate students; demonstrated increasing inclusion; demonstrated increasing sustainability; evidence of enhanced reputation of the College.

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Mapping

Penn State Supporting Elements:

CO1 - Focus On Impact Through Partnerships

Penn State Foundations:

- F4 Enhancing Global Engagement
- F6 Ensuring A Sustainable Future

Penn State Thematic Priorities:

- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- SP5 Forge Broad And Relevant Partnerships

Goal 4

Foundation

Educational Innovation

Goal

Offer undergraduate and graduate educational programs that prepare students for success in careers and life through engaged learning, that develop deep commitments to integrity and inclusivity, that reflect current and anticipated trends in industry and research, including the criticality of sustainability, that expand the reach of engineering through intersections with other academic disciplines, and that leverage technology and multiple modes of delivery to meet the varied needs of our students to learn throughout their lifetimes and to ensure program resilience in the face of crises.

4.1: Increase use of equity-focused and engaged pedagogies

Unit Objective

Increase use of equity-focused and engaged pedagogies in undergraduate and graduate programs, including intracollege courses.

Key Performance Indicator(s)

Evidence of acceptance of the value of inclusive teaching; fraction of faculty adopting inclusive teaching methodologies.

Mapping

Penn State Foundations:

• F2 - Engaging Our Students

Penn State Supporting Elements:

No Associated Supporting Element Connection

Penn State Thematic Priorities:

- TE4 Prepare Our Students For Success In Their Careers And In Life
- 4.2: Integrate ethics, inclusivity, and sustainability into undergraduate programs.

Unit Objective

Integrate ethics, inclusivity, and sustainability into undergraduate programs.

Key Performance Indicator(s)

Student attitudes, knowledge, and skills about ethical responsibilities, inclusivity and sustainability.

Mapping

Penn State Foundations:

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- F3 Advancing Inclusion, Equity, and Diversity
- F6 Ensuring A Sustainable Future

Penn State Supporting Elements:

• No Associated Supporting Element Connection

Penn State Thematic Priorities:

- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- TE4 Prepare Our Students For Success In Their Careers And In Life
- 4.3: Enhance undergraduate programs through curricular innovation.

Unit Objective

Implement enhancements in undergraduate programs including First-Year Seminars, intra-college courses, General Education and courses within the majors.

Key Performance Indicator(s)

Student feedback on effectiveness and utility of FYE and FYS, Entrance to major success rate, overall student satisfaction

Mapping

Penn State Foundations:

• F2 - Engaging Our Students

Penn State Supporting Elements:

No Associated Supporting Element Connection

Penn State Thematic Priorities:

- TE4 Prepare Our Students For Success In Their Careers And In Life
- 4.4: Enhance access to, and success in our undergraduate programs

Unit Objective

Enhance access to, and success in our undergraduate programs, with special focus on students who start their studies at a Commonwealth Campus

Key Performance Indicator(s)

Availability of first and second-year CoE courses on CWC, ETM success rates, GPA trends after transition to UP, Graduation rates for students who transition from CWC to UP

Mapping

Penn State Foundations:

• F1 - Enabling Access To Education

Penn State Supporting Elements:

• OP1 - Improve The Design, Oversight, Integration, And Effectiveness Of Organizational Processes

Penn State Thematic Priorities:

- TE4 Prepare Our Students For Success In Their Careers And In Life
- 4.5: Increase co-curricular engagement of undergraduate students

Unit Objective

Increase co-curricular engagement of undergraduate students

Key Performance Indicator(s)

Numbers of students involved in co-curricular activities and programs; student reports of learning gains

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Mapping

Penn State Supporting Elements:

 CO - Penn State will partner directly and effectively with our constituencies in sharing consequential research, creative works, and scholarship worldwide.

Penn State Foundations:

F2 - Engaging Our Students

Penn State Thematic Priorities:

- TE4 Prepare Our Students For Success In Their Careers And In Life
- 4.6: Implement new, innovative graduate programs and enhancements of current graduate programs

Unit Objective

Implement new, innovative graduate programs and enhancements of current graduate programs

Key Performance Indicator(s)

Number of new programs created, graduate enrollments, student satisfaction

Mapping

Penn State Foundations:

• F1 - Enabling Access To Education

Penn State Supporting Elements:

• OP1 - Improve The Design, Oversight, Integration, And Effectiveness Of Organizational Processes

Penn State Thematic Priorities:

- TE4 Prepare Our Students For Success In Their Careers And In Life
- 4.7: Optimize use of technology and multiple delivery modes, including micro-credentials, to enhance learning and to meet needs of our students and graduates.

Unit Objective

Optimize use of technology and multiple delivery modes, including micro-credentials, to enhance learning and to meet needs of our students and graduates.

Key Performance Indicator(s)

Number of courses offered in alternative delivery modes (online, hybrid, micro-credentialling, etc.); Increased student success and retention

Mapping

Penn State Foundations:

F1 - Enabling Access To Education

Penn State Supporting Elements:

• IS - Penn State will think creatively and act boldly to ensure that its academic infrastructure aligns with and supports the University's mission and vision.

Penn State Thematic Priorities:

- TE2 Foster A Curriculum That Integrates Multiple Modes Of Delivery, While Leveraging Online Capabilities And Enhanced And Emerging Digital Learning Options
- 4.8: Fully integrate use of institutional data into processes for innovation and continuous improvement in undergraduate and graduate educational experiences.

Unit Objective

Fully integrate use of institutional data into processes for innovation and continuous improvement in undergraduate and graduate educational experiences.

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Key Performance Indicator(s)

Percent of related projects supported/guided by institutional research that uses integrated data.

Mapping

Penn State Foundations:

F1 - Enabling Access To Education

Penn State Supporting Elements:

 OP - Penn State will lead nationally in the design, development, and deployment of effective and agile organizational processes that support the University's mission.

Penn State Thematic Priorities:

TE2 - Foster A Curriculum That Integrates Multiple Modes Of Delivery, While Leveraging Online Capabilities
 And Enhanced And Emerging Digital Learning Options

Goal 5

Foundation

Participation in Governance

Goal

Enable and encourage all members of the faculty and staff to contribute to the governance of their units, the College, the University, their professions, and their communities in a way that recognizes the value of diverse perspectives.

5.1: Build a culture that values, recognizes, and rewards governance and service.

Unit Objective

Build a culture that values, recognizes and rewards governance and service.

Key Performance Indicator(s)

Evidence of the positive impact of broader participation in governance; evidence of increased job satisfaction

Mapping

Penn State Foundations:

F0- No Foundation Connection

Penn State Supporting Elements:

• IS1 - Prioritize Investment In Our People.

Penn State Thematic Priorities:

• TE3 - Support And Empower Our Outstanding Faculty And Staff

5.2: Encourage professional development plans for staff that include a service/governance component.

Unit Objective

Encourage professional development plans for staff that include a service/governance component.

Key Performance Indicator(s)

Evidence of the positive impact of broader participation in governance; evidence of increased job satisfaction; increase in retention

Mapping

Penn State Foundations:

• F0- No Foundation Connection

Penn State Supporting Elements:

- IS1 Prioritize Investment In Our People.
- OP1 Improve The Design, Oversight, Integration, And Effectiveness Of Organizational Processes

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Penn State Thematic Priorities:

• TE3 - Support And Empower Our Outstanding Faculty And Staff

Goal 6

Foundation

Administration Effectiveness

Goal

Improve the administrative and service organizational structure, to better enable the College to accomplish its mission, attain its vision, integrate sustainability into its operations, and achieve its goals so that every employee in these units understands the invaluable role they play in the College's overall success.

6.1: Improve the impact of administration and service activities

Unit Objective

Review current administrative and service structure based on the new strategic plan and reorganize as necessary to improve the impact of our administrative and service activities.

Key Performance Indicator(s)

Evidence of positive impact from reorganization; increased job satisfaction; increased retention, evidence of the impact of resources freed up and redirected to high priority initiatives; evidence of increased beneficial impact to the environment through improvements in operations.

Mapping

Penn State Foundations:

• F6 - Ensuring A Sustainable Future

Penn State Supporting Elements:

 OP2 - Establish Processes For Continual Institutional Assessment, Improvement, And Innovation, Including More Systematic Review Of Administrative And Academic Organizational Performance And Financial Stewardship

Penn State Thematic Priorities:

- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- TE3 Support And Empower Our Outstanding Faculty And Staff

6.2: Streamline Administrative Processes

Unit Objective

Eliminate unnecessary and streamline necessary requirements to increase efficiency and improve sustainability to create more time for staff and faculty to innovate in their jobs, develop as professionals and derive greater job satisfaction.

Key Performance Indicator(s)

Evidence of the positive impact of streamlined administration; evidence of increased job satisfaction; increase in retention

Mapping

Penn State Foundations:

F6 - Ensuring A Sustainable Future

Penn State Supporting Elements:

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 OP2 - Establish Processes For Continual Institutional Assessment, Improvement, And Innovation, Including More Systematic Review Of Administrative And Academic Organizational Performance And Financial Stewardship

Penn State Thematic Priorities:

- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change and address the challenges of providing safe and abundant water, clean and renewable energy sources, and plentiful and nutritious food.
- TE3 Support And Empower Our Outstanding Faculty And Staff

6.3: Building on our experience from remote work to develop new models for work location for staff.

Unit Objective

Building on our experience from remote work to develop new models for work location for staff

Key Performance Indicator(s)

Evidence of the positive impact of broader availability of remote work; evidence of increased job satisfaction; increase in retention; increase in beneficial impacts to the environment through reduced transportation to the traditional workplace

Mapping

Penn State Thematic Priorities:

- DI3 Develop A More Robust Digital Infrastructure And Culture
- SP Penn State will be a leader in creating comprehensive solutions to mitigate the dangers of climate change
 and address the challenges of providing safe and abundant water, clean and renewable energy sources, and
 plentiful and nutritious food.

Penn State Foundations:

F6 - Ensuring A Sustainable Future

Penn State Supporting Elements:

- IS1 Prioritize Investment In Our People.
- 6.4: Encourage professional development plans for staff.

Unit Objective

Encourage professional development plans for staff.

Key Performance Indicator(s)

Evidence of the positive impact of broader participation in professional development; evidence of increased job satisfaction; increase in retention. THIS OBJECTIVE EXHISTS IN GOAL 5, OBJECT 5.2 - SAME TEAM ADDRESSING NEED - DUPLICATE

Mapping

Penn State Foundations:

• F0- No Foundation Connection

Penn State Supporting Elements:

IS1 - Prioritize Investment In Our People.

Penn State Thematic Priorities:

- TE3 Support And Empower Our Outstanding Faculty And Staff
- 6.5: Institute robust development initiatives to support the College's Strategic Plan.

Unit Objective

Institute robust development initiatives to support the College's Strategic Plan.

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Key Performance Indicator(s)

Increased financial support for the College's initiatives; evidence of impact of donations; evidence of increased ties between the College and its graduates; evidence of the impact of an expanded donor base

Mapping

Penn State Foundations:

• F0- No Foundation Connection

Penn State Supporting Elements:

• IS1 - Prioritize Investment In Our People.

Penn State Thematic Priorities:

• TE3 - Support And Empower Our Outstanding Faculty And Staff

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