



TOGETHER,

**WE WILL**

# FIVE-YEAR STRATEGIC PLAN

2015 – 2020



## LETTER FROM the Dean

Five years ago, the Louisiana State University College of Engineering set out to improve lives, transform Louisiana and change the world. And, in many ways, we achieved those goals. We increased our graduate enrollment by 50 percent, added new faculty, expanded our programming, formed mutually-beneficial bonds in the local, national and even international communities, led a highly-successful campaign to renovate and expand our facilities, and we pinpointed what defines the LSU Engineer and developed those key attributes within our students to set them apart from the rest.

Now, as we charter the next five years, we will build upon that strong foundation and expand our reach—**and we'll do so together.**

The power of collaboration and a “Together, We Will” mentality will drive our future efforts. Together, our faculty, staff and students, along with our alumni, community and industry partners and friends, will work to develop solutions for Louisiana’s greatest challenges, particularly in the areas of energy, coast and waterways, healthcare, infrastructure and manufacturing; recruit and train the next generation of well-rounded, diverse LSU Engineers for careers in engineering, construction management, computer science, as well as academia; and foster the internal and external relationships we’ve successfully forged, while using innovative strategies to cultivate new ones.

At the same time, we’ll stay true to and support the congruent goals of the university’s Flagship Agenda 2020, improving research and educational enterprise to bring LSU to a new level of excellence.

Our goals are ambitious, but I’m confident they’re achievable with the help and support of stakeholders like you. Thank you for your interest in the work of the College of Engineering. We’re glad you’ve joined us.

**Mary Julia “Judy” Wornat**  
Interim Dean, College of Engineering  
William G. Reymond Professor of Chemical Engineering  
Robert Hughes Harvey Professor of Chemical Engineering

### OUR MISSION

*The primary mission of the College is to impart knowledge and learning skills to our students while also harnessing our individual talents to generate collective synergies that transform society.*

### VISION 2020

*We will realize the remarkable potential of our students, staff, faculty and alumni to improve the quality of life for Louisiana and beyond.*

At the crux of every culture lie those great challenges that impact our way of life—those endemic problems and seismic events that force us to discover new solutions that save life and property, heal the sick, build better defenses and protect our natural resources.

For Louisiana, these challenges are undeniable. From coastal erosion to decaying infrastructure, our engineers are challenged every day to develop cost-effective solutions that improve our quality of life.

As Louisiana’s flagship institution, it is our responsibility to educate and create. It is also our responsibility to work as a team of scholars and staff to improve the quality of life for Louisiana and beyond. Working together, LSU’s College of Engineering and its engineers, construction managers and computer scientists will:

- Solve Louisiana’s greatest challenges through advances in engineering.
- Create a knowledge-based economy for Louisiana by addressing the shortage of engineers, construction managers and computer scientists.
- Foster a social network of vested individuals who are passionate about our College and our state.
- Reinvent how we do business to better serve the needs of our state and nation.

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Delacroix, Louisiana.



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*As Louisiana's flagship institution, it's our responsibility to solve the challenges facing the region and nation.*

*The College of Engineering welcomes the opportunity to develop solutions to challenges in these five areas —energy, coast and waterways, healthcare, infrastructure, and manufacturing— to improve the everyday lives of our citizens.*

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- Develop cost-effective and environmentally friendly sources of energy
- Create solutions to save our coast and waterways
- Engineer better healthcare
- Provide a safer and more cost-effective national infrastructure
- Improve America's manufacturing competitiveness

*Energy is essential to the progression of life. But how we harvest energy and convert it into useful products with minimal side effects continues to challenge modern society. Our researchers will develop cost-effective energy solutions and employ new technologies to enhance the production and safety of energy while minimizing environmental impacts.*

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## Goal

Provide fundamental and applied advances to improve energy efficiency, power generation, oil and gas production, energy storage and energy transformations while mitigating harmful effects on our environment and climate.

## Objectives

- Build the resources and framework needed to sustain long term productivity in key energy research areas.
- Develop technologies that improve the safety and efficiency of oil and gas production from both traditional and unconventional resources.
- Develop more efficient, environmentally friendly and lower-cost processes, materials and models for fuel production from oil and natural gas.
- Develop new catalysts for the conversion of both conventional and renewable fuels.
- Develop more efficient gas turbines with advanced materials and designs.
- Lessen the environmental impact and safety issues associated with the production and use of conventional fuels.
- Develop materials, processes and models for new batteries, fuel cells, electrolyzers, photovoltaics and wind turbines.
- Reduce the energy demands in refining, gas-to-liquids processing and other energy-intensive petrochemical and manufacturing processes.

*Much of Louisiana's economy depends on the health of our wetland and waterways. From commercial fishing, shipping and commerce to offshore oil fields and refineries, Louisiana's long-term economic vitality depends on engineered solutions that conserve our coast and environment. Through research and innovation, we will seek solutions that protect and nourish our natural infrastructure.*

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## Goal

Establish LSU as one of the eminent programs in Coastal Engineering and Water Management, which will produce fundamental knowledge and cutting-edge technologies, and in turn, solutions to save our coast and waterways.

## Objectives

- Build state-of-the-art laboratory facilities in coastal and river engineering for developing and testing cost-effective, nature-based solutions.
- Cultivate innovation of resilient and sustainable coastal infrastructure that provides a wide range of ecosystem services.
- Develop cyber-enabled tools for the evaluation and optimization of innovative solutions to meet the challenges of rising sea level and coastal subsidence.
- Increase the international visibility of our coastal engineering program and foster transdisciplinary collaborations.
- Improve understanding and management of freshwater resources and waterways.
- Enhance coastal resilience and aid emergency management needs of Louisiana and the northern Gulf of Mexico by establishing a transdisciplinary, coastal hydroscience center for tide, wind-wave and hurricane storm surge computations.

*Engineers solve society's problems, make ideas reality and generate prosperity that improves the quality of life. But an engineer's work is, perhaps, most relevant when it involves life itself. We will identify innovative solutions to diagnose, treat and cure some of the world's toughest medical challenges.*

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## Goal

Provide effective solutions for advanced healthcare and improved human wellness by strengthening the College's innovation in biomedical engineering and biotechnologies.

## Objectives

- Translate research from the laboratory to application via aggressive promotion and engagement of the technology commercialization offices of LSU.
- Boost the research capabilities of the College and collaborate with other agencies to maximize the societal impact.

*Digital and built infrastructure are critical to economic growth and competitiveness. To ensure the economic vitality of our state and nation, we will invest in research and development that improves our industrial and information technology infrastructure.*

## Goal

Forge a College-wide multidisciplinary strategy to provide more sustainable and resilient infrastructural systems for the state and the nation.

## Objectives

- Develop a formal operational structure through the development of a research network within the College to facilitate interdisciplinary, collaborative efforts in the following areas: sustainability, safety, resiliency, buildings, manufacturing facilities, roads and bridges, power plants, electrical grids, computing systems, software, cybersecurity, informatics systems, intelligent systems and visualization technology.
- Build lasting relationships with funding agencies interested in infrastructure, and obtain stable funding in support of faculty research.

## Goal

Develop and enhance partnerships with industries and agencies at the regional and national levels.

## Objectives

- Through the U.S. Department of Commerce's Investing in Manufacturing Communities Partnership (IMCP) designation, the Smart Industrial Manufacturing Institute (SIMI) will be established to leverage the broad partnership of 83 leading organizations across all sectors of the petrochemical industries in Louisiana.
- Nurture collaborative relationships with owners and operators of critical infrastructural systems in Louisiana, including, but not limited to, electrical power industry, grid operators, government agencies of the road network and other public infrastructural systems.
- Build university and industry-cooperative research initiatives, teams and centers.

*In a fiercely competitive marketplace, research and development is only one piece of a larger strategy that leverages the collective resources of government, industry and academia to advance innovation. The National Center of Advanced Manufacturing, which is building the next generation of spacecraft to take mankind into deep space, is one example of how LSU will partner with government and industry to provide advanced manufacturing solutions to industry-relevant problems.*

## Goal

Position Louisiana as a regional force in manufacturing research and development by providing diversity to the manufacturing base and modernizing the existing one, emphasizing value-added products.

## Objectives

- Research, develop and master use of advanced manufacturing technologies to advance the field and the tools' practical application in the marketplace, and as a result, establish and attract new manufacturing industry to our region.
- Strengthen ongoing efforts and target new initiatives in the following areas: additive manufacturing, multi-scale manufacturing, large-scale, light-weight manufacturing and manufacturing relevant to biotechnology.
- Establish relevance in chemical product manufacturing processes and innovation related to bulk and added-value product development and manufacturing.

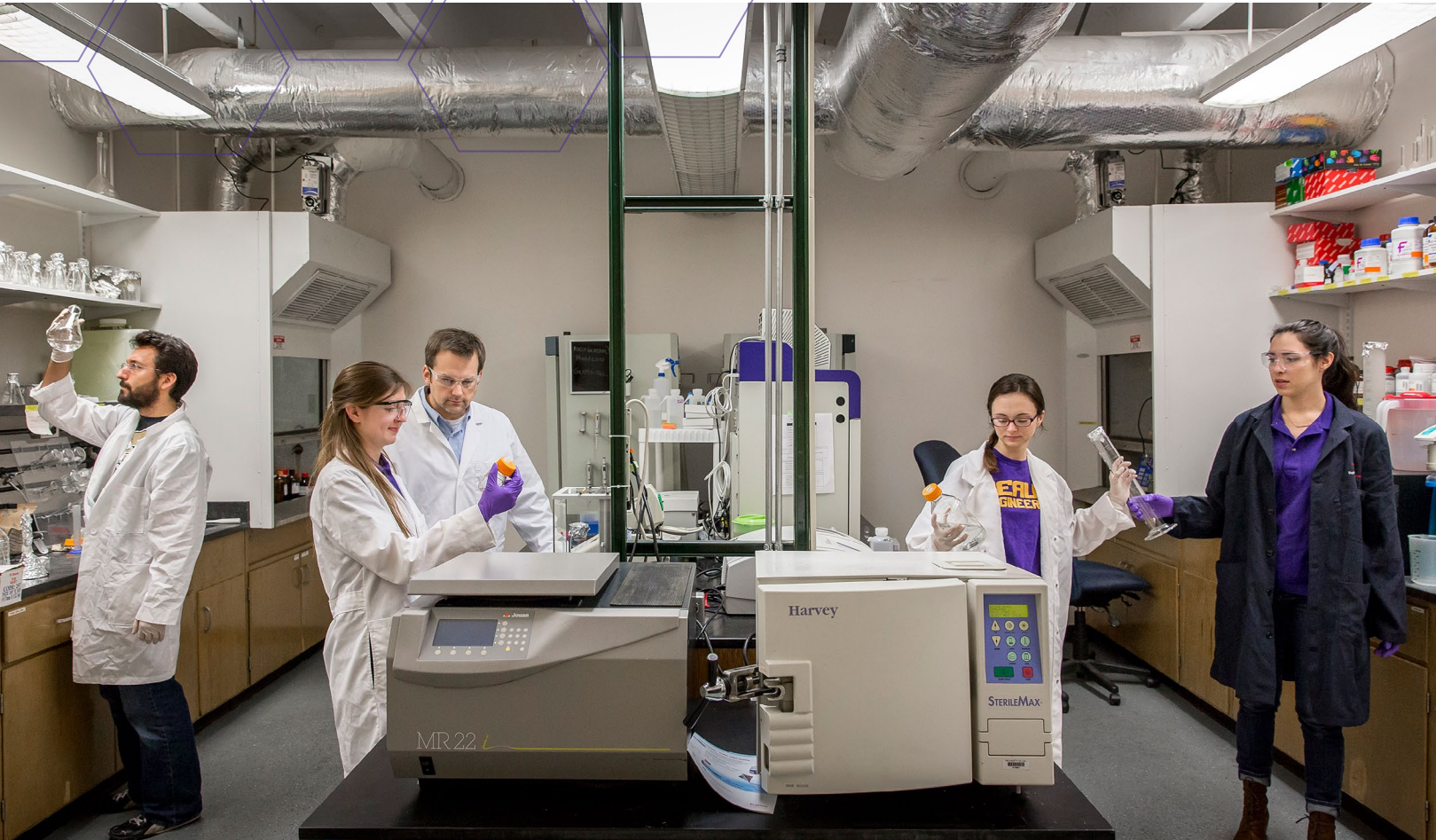
## Did You Know?



*To date, NASA and the State of Louisiana have infused more than \$62 million into the National Center for Advanced Manufacturing, which has more than 100,000-square feet of high-bay manufacturing space with large-scale, multi-axis robotic equipment and other tools available for use by our faculty and students.*

Educate the workforce of

# Tomorrow



*We will address the shortage of engineers, construction managers and computer scientists by creating and implementing fresh approaches to undergraduate and graduate education. In doing so, we will educate diverse, contemporary leaders with a passion for innovation and create a knowledge-based state economy.*

- Educate diverse and contemporary leaders
- Foster global awareness
- Promote safety and sustainability
- Serve our community
- Mentor future academics

*Associate professor of chemical engineering Michael Benton and students work in lab.*

*We live in a dynamic, rapidly changing world. We need to train people to not only proactively meet society's current needs, but to also provide solutions for problems that have yet to manifest. In fulfilling our mission, we will educate academically talented and diverse students to become tomorrow's leaders.*

### Goal

Promote an undergraduate and graduate environment that develops and encourages a diverse set of management and leadership skills.

### Objectives

- Identify curricular and co-curricular activities in which leadership skills can be integrated and utilized.
- Promote students' engagement in leadership development activities.
- Introduce students to experienced leaders from industry and academia.

*Two words define the true character of the LSU Engineer: safety and sustainability. They are also what differentiate our students from others. Our curriculum will make safety and sustainability top priorities in the classroom, in the lab and in the field.*

### Goal

Emphasize concepts of safety and sustainability among graduates.

### Objectives

- Introduce key safety modules into the undergraduate curriculum.
- Raise awareness of safety issues in real world environments.
- Integrate the concept of sustainability in design courses.

*In today's global economy, companies seek graduates who appreciate and understand cultural and geographical differences. As educators, we will prepare our students to positively contribute to an increasingly pluralistic and interdependent world.*

### Goal

Enhance global awareness and an international education experience among our students.

### Objectives

- Promote understanding of the global challenges in today's society.
- Provide international education opportunities to students through partnerships with foreign universities.
- Develop a peer advising program for the study abroad program.
- Increase cultural exposure by creating on-campus education and internship opportunities for exchange students.

*Community service and engagement play a sizable role in any engineering profession. If we are to change the world, we must know the world we wish to change, and therefore, we expect our students to actively volunteer in our community to better appreciate and understand the challenges we are working to solve.*

### Goal

Impart a strong sense of appreciation of and commitment to local and global community.

### Objectives

- Develop activities that promote commitment to community service.
- Integrate service learning in core curriculum.
- Build case studies to solve critical local community problems in capstone design projects.
- Encourage students to participate in community service activities.



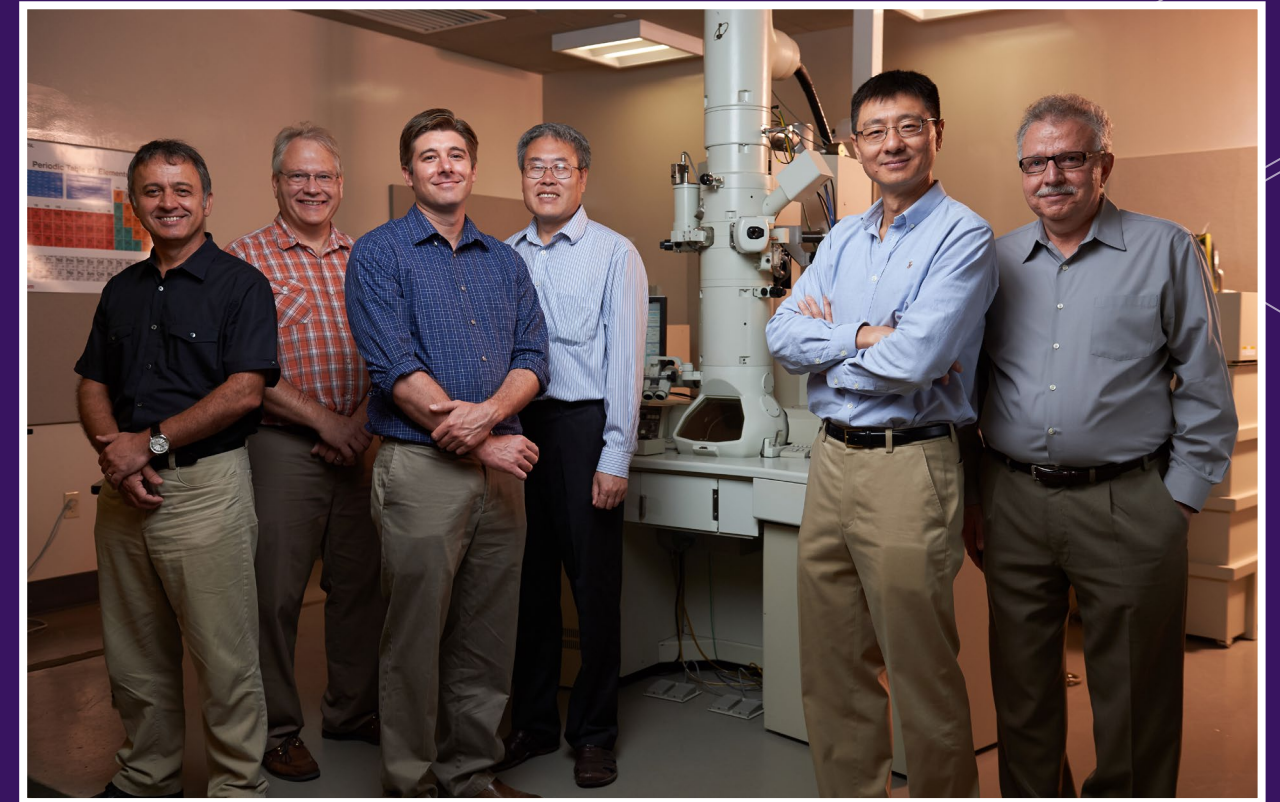
*We will implement a faculty development program that trains the next generation of academics, promotes discovery of new teaching initiatives and emphasizes best practices.*

### Goal

Train our graduates for academic careers.

### Objectives

- Assess the strengths of graduate programs and opportunities for expansion.
- Develop a recruitment program to attract top quality graduate students from US and international universities.
- Promote professional development of graduate students in teaching and research for academic careers.
- Provide continual professional development and mentorship to junior faculty.



In 2015, faculty from the College spearheaded efforts through the Louisiana Board of Regents to win a \$20 million grant from the National Science Foundation to create a national consortium supporting advanced manufacturing research. It is one of the largest grants awarded in the state's history.

### Did You Know?

*The College added 16 new faculty members during the 2015-16 academic year and plans to double this number over a three-year span.*

Redefine our social

# Network



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*We will harness the individual connections to our College and expand our reach to create a network of people that reiterate and promote the College's value to the world, and in turn, build a better public understanding of and support for its mission.*

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- Cultivate collaborations
- Create coalitions
- Promote public discourse
- Enroll tomorrow's leaders

*William A. Brookshire and some of the 2015 S&B Brookshire Scholarship recipients.*

*The intrinsic value of LSU lies within our ability to provide meaningful return on investment to the citizens of Louisiana. We will do so by partnering with industry, federal, state and local agencies to better meet the economic development needs of our state and nation.*

**Goal**

Foster trust and loyalty among our corporate partners by providing superior customer service and access to talented graduates.

**Objectives**

- Expand, cultivate and strengthen key industry relationships that result in increased opportunities for our graduates.
- Hone and refine our students’ professional development.
- Embrace the importance of experiential education.
- Enhance and expand faculty and staff’s understanding of employer relations.

**Goal**

Nurture partnerships created with industry and local, state and federal agencies to fundamentally advance our state.

**Objectives**

- Partner with the Louisiana’s economic development team and others to grow and diversify the state’s economic base.
- Promote cooperative partnerships with our industry stakeholders that assist the needs of our students and faculty along with those of the partnering entity.
- Promote the College’s faculty as noted experts in their fields.

*The College’s success is best reflected through the pride and accomplishments of our alumni. As such, we will mobilize our alumni to create a reciprocal relationship of service, advocacy and philanthropy.*

**Goal**

Develop mutually beneficial relationships with our alumni to ensure lifelong devotion to the College.

**Objectives**

- Strengthen alumni relationships by creating communities through networking and volunteer groups.
- Close the engagement gap from recent graduates to mid-career alumni by creating programming that engages and recognizes young alumni.
- Celebrate alumni achievements through programming and communications.
- Integrate alumni into the undergraduate experience by encouraging participation within student organizations and student-led events.
- Develop shared engagement strategies that align with the College, unit, and the LSU Foundation.

**Goal**

Build perpetual support from our donors by providing timely acknowledgment of their gifts and implementing creative stewardship.

**Objectives**

- Create transparency between donors and the College for all financial contributions to the College.
- Build trust among our donors by communicating relevant information about the expenditures of their gift(s) annually.
- Go the extra mile when it comes to donor philanthropy.

*One's reputation shadows every interaction and transaction, either positively or negatively. Through cohesive branding and strategic communications, we will positively influence people's perception of the College.*

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### Goal

Solidify a cohesive brand for the College that is recognized by all major constituent groups.

### Objectives

- Create an official brand platform through research, testing, and analysis.
- Articulate the importance of brand awareness amongst the College's internal and external audiences.
- Stay abreast of contemporary technologies by embracing predominately digital communication platforms.
- Serve as a resource for faculty and staff, with improved awareness of the communications office.

### Goal

Maintain a strong relationship with the local media, while creating and fostering connections on the national level, to shape a positive public opinion.

### Objectives

- Build and foster lasting, trustful relationships with the regional and national reporters.
- Engage with local and national media through innovative social media strategies.
- Leverage existing technologies to better meet journalist and end user needs.
- Educate our faculty on how to interact with the media.
- Globalize our content through language translation.
- Innovate our storytelling formats.

### Goal

Propel sharing and engagement of earned media through paid promotion and advertising.

### Objectives

- Position the College nationally amongst its peer institutions.
- Elevate the level of discourse on topics relevant to LSU Engineering.

*Our future lies in the hands of the next generation of LSU College of Engineering graduates. Through innovative recruiting strategies, we will build a diverse, academically talented pipeline of engineering, construction management and computer science graduates for our nation.*

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### Goal

Increase the quality of LSU's annual entering freshman class.

### Objectives

- Expand our market penetration in underserved territories.
- Offer specialized attention to those students who personify the attributes of the LSU Engineer.
- Articulate our value proposition through cohesive communications collateral and targeted marketing campaigns.
- Refine the focus and experience of on-campus recruiting initiatives.

Reinvent how we do

# Business



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*We will strive to improve the quality of service to those we serve by reinventing how we do business.*

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- Create lean College operations
- Enhance quality of service
- Accelerate employee development

*Student Services counselor Lisa Fontenot offers academic counseling to student.*

*We must optimize our internal processes to eliminate waste and redundancies. As fiduciary stewards of taxpayer and donor dollars, we will continue to foster an internal culture that values the principles of lean processes.*

*Quality and service are the differentiators between success and failure. If we are to be successful, we will make superior service to the students and faculty our first priority.*

### Goal

Maintain a system of thinking where creativity, innovation and automation converge to maximize every dollar spent.

### Objectives

- Develop and initiate lean training for faculty, staff and students.
- Establish annual events to showcase lean initiatives led by faculty, staff and students.

### Goal

Foster an environment where communication is kind and timely.

### Objectives

- Enhance and expand focus on the importance of service to all.

## Accelerate employee development

*Professional development is a win-win for the College and its employees. We will foster a work environment that rewards and cultivates talent and professional growth.*

### Goal

Provide faculty, staff and students with the tools needed to maintain positive energy balance among work and life.

### Objectives

- Encourage individual goal setting.
- Establish and enhance the focus on personal development.
- Empower all to achieve the energy necessary to live a fulfilled life.

## HOW WE WILL MEASURE OUR SUCCESS

*Each strategic task and goal will be monitored based on performance metrics established by teams selected by the Dean. Comprised of faculty, staff, students, alumni and friends of the College, these teams will periodically assess the progress of the various goals and objectives. This feedback will provide the Dean with ongoing information and allow the opportunity to modify the steps, increase or decrease certain efforts and fine-tune specific strategies to optimize the outcome.*



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