

College of Engineering, Architecture, and Technology

Mission

The College of Engineering, Architecture, and Technology provides students with exceptional academic experiences, conducts scholarly research and other creative activities that advance fundamental knowledge and contributes to technology development, and disseminates knowledge to the people of Oklahoma and throughout the world.

Vision

The College of Engineering, Architecture, and Technology will have a priority on *excellence* as evidenced by:

- Responsive academic programs which are competitive with the best and accessible to students who reflect the diverse fabric of the State and Nation;
- Nationally-recognized research programs in areas of strategic importance to the State and the Nation;
- Distance and continuing education programs that meet the needs of practicing engineers, architects, and technologists throughout Oklahoma and the Nation; and
- Knowledge-based programs developed through active partnerships with industry and government that address the Nation's most pressing technological problems.

Core Values

Excellence - We seek excellence in all our endeavors, and are committed to continuous improvement.

Intellectual Freedom - We believe in ethical and scholarly questioning in an environment that respects the rights of all to freely pursue knowledge.

Integrity - We are committed to the principles of truth and honesty, and we will be equitable, ethical, and professional.

Service - We believe that serving others is a noble and worthy endeavor.

Diversity - We respect others and value diversity of opinion, freedom of expression, and other ethnic and cultural backgrounds.

Stewardship of Resources - We are dedicated to the efficient and effective use of resources. We accept the responsibility of the public's trust and are accountable for our actions.

Goals, Critical Success Factors, Objectives, and Strategies

Goal One. Academic Excellence in Instruction: Provide world-class programs in engineering, architecture and engineering technology that prepare graduates to serve and lead in a global community.

Critical Success Factors:

- All programs accredited by the appropriate agency.
- Two nationally ranked academic programs.
- Pass rates on the national Fundamentals of Engineering Exam, and performance of undergraduates on all major components (e.g., mathematics), exceed national averages.
- Graduate engineers, architects, and technologists who are competitive with the best as evidenced by the following:
 - Average starting salaries at or above those for graduates from peer institutions.
 - Designation as a “champion school” by 10 leading-edge industrial firms (“graduates of choice”).
 - Numbers of BS graduates receiving NSF Graduate Fellowships.
 - Satisfaction of graduates with their education determined from nationally-administered surveys; high percentage of graduates at “satisfied” or high rating.
 - High acceptance rate for our graduates into their postgraduate school of choice: 90% of qualified applicants accepted into first or second graduate school of choice.
 - The recruiter assessment of OSU engineering graduates increasing from 2.8 to 3.0.
 - The satisfaction of graduates with their education determined from nationally administered surveys exceed the average for doctoral granting institutions.
- Undergraduate student/faculty ratio reduced from 22 to 19.
- Reduce the percent of lower division courses taught with section sizes above 50 from 13 to 10.
- Graduate programs at OSU-Tulsa that attract qualified graduate students from institutions of recognized quality.
- Enhanced quality of graduate programs as indicated by the following:
 - The US News and World Report study of graduate programs improved from 71 to 65.
 - PhD graduates whom major technology-based organizations, national laboratories, and peer institutions increasingly seek.
 - Increase the number of PhD students per faculty member in engineering from 1.3 to 1.7.

Objectives

Objective 1-1: Provide excellence in undergraduate education.

Strategies:

- Increase faculty by net of 25 at OSU-Stillwater and net of 20 at OSU-Tulsa.
- Market CEAT programs and graduates to industrial firms and governmental organizations that are “employers of choice” for our graduates.
- Establish standing committees for accreditation in each degree program to ensure continuous quality improvement.
- Create a “How to Succeed on the Fundamentals of Engineering Exam” focus group to generate ideas for creating awareness by entering students of the relevance of the exam and a long-term strategy for success on the exam as well as help to prepare more senior students to take the examination.
- Create a database of survey information solicited from employers on the skills and attributes new hires need in order to be successful in the professional environment.
- Institute discussion sections or laboratory sections in sufficient large enrollment courses to meet the stated success factor.

Objective 1-2: Provide excellence in graduate education.

Strategies:

- Increase faculty by net of 25 at OSU-Stillwater and net of 20 at OSU-Tulsa.
- Develop a mentoring program for qualified students aimed at increasing the awareness of the values of graduate education and the options for pursuing it.
- Develop methods to inform Deans and other major faculty at other engineering colleges about the quality attributes of CEAT engineering programs and our graduates.
- Create a PhD student recruiting committee to plan a strategy to increase the enrollment of high quality PhD students at both Stillwater and Tulsa.

Goal Two. Academic Excellence in Research and Scholarly Activity: Conduct world-class research and other scholarly activities that advance and apply knowledge to the benefit of society.

Critical Success Factors

- External funding for research and technology development at OSU-Tulsa that exceeds \$3M in external research expenditures annually.
- A steady state of 3 Tulsa-based graduate students for every Tulsa-based faculty member with approximately equal distribution between MS and PhD candidates.
- Every CEAT faculty member engaged in at least one form of externally validated scholarship each year.
- External funding is the norm in the engineering schools to support scholarship in all areas.
- Research productivity at levels that exceed the average at peer institutions as measured by dollars per FTE, F&A generation, Ph.D. graduates, and peer-reviewed publications.
- Major federal funding in areas of national and state importance as evidenced by:
 - Funding for six years for the Oklahoma Transportation Center (OTC).
 - Funding for three years for the four-state consortium New Product Development Center (NPDC)
- Major federal funding for three additional priority programs of national and state importance. Current candidates are smart building technologies, bio-based technologies, and MEM's facilities.
- Two new National memberships (i.e., National Academy of Engineering), and national/international recognition awards (e.g., Alexander von Humboldt, national society awards) for faculty.

Objectives:

Objective 2-1: Achieve national and international recognition in current areas of excellence, including selected areas of manufacturing and materials processing; energy conversion, conservation, and storage; and optoelectronics and photonics.

Strategies:

- Recruit outstanding faculty in priority areas. Hire well, provide appropriate facilities and support systems, establish clear expectations and accountability processes.
- Utilize a systematic process for generating, prioritizing, and validating research initiatives and directions.
- Leverage support from the OSU Homeland Security Initiative to high impact areas with significant potential for complementary funding.
- Engage all faculty members in research and scholarship.
- Greater use of research professors and post-doctoral researchers.

Objective 2-2: Develop excellence and national prominence in selected areas of advanced materials; bio-based technologies; sensors, controls, and information systems; electronic systems for extreme environments; structures; and transportation systems.

Strategies:

- Recruit outstanding faculty in priority areas. Hire well, provide appropriate facilities and support systems, establish clear expectations and accountability processes.
- Utilize a systematic process for generating, prioritizing, and validating research initiatives and directions.
- Leverage support from the OSU Homeland Security Initiative to high impact areas with significant potential for complementary funding.

Goal Three. Engagement and Outreach – Enhance the quality of life in Oklahoma, the nation, and around the world by contributing to human, economic, and cultural development.

Critical Success Factors:

- Increase the number of people served by non-credit education programs from 20,000 to 22,500 within five years.
- Add new projects designed to develop new knowledge or techniques for improved program delivery and/or content at an average rate of 4 per year.
- Enhance student learning through the support of distance learning credit courses and internship or work experiences in new product development from 95 to 115 courses and internship opportunities within 5 years.
- Increase the number of faculty members involved in outreach programs including new product development by 30% within 5 years.
- Develop an average of 4 new partnerships between outreach units and industry, government, and other organizations each year.
- At least 90% of the student or client evaluations of the outreach activities will be “good” or better.

Objectives:

Objective 3.1: Provide high quality educational materials and programs to manufacturers, clients, partners, professionals, and degree seeking students.

Strategies:

- Develop and distribute high quality educational materials that positively impact private and public entities.
- Develop and distribute high quality on-line training programs.
- Seek new markets for educational programs supported by distance learning technologies.
- Provide student positions that enhance the student’s educational program.
- Use interdisciplinary approaches to develop comprehensive programs that address identified client needs.
- Achieve greater synergism among the CEAT outreach units and across the OSU System through cooperation, physical location of programs and people, and cross marketing to common audiences.

Objective 3.2: Develop fiscal stability to support expanded outreach programs.

Strategies:

- Seek both state and federal funding for both existing essential programs and new program development.

- Seek research funds from state, federal and private sources for programs in which OSU is or can be an important contributor.
- Focus on outreach services that are financially self supporting.

Objective 3.3: Promote excellence by ensuring that each staff and faculty member participates in a continuous professional development program.

Strategies:

- Provide financial support and release time for professional development activities that support the outreach unit's strategic goals.
- Develop internal professional development programs when effective and financially efficient.

Goal Four. Student Recruitment and Development: Create a collegial environment that attracts outstanding students and encourages academic excellence, career planning, personal growth, discovery of knowledge, and leadership achievement.

Critical Success Factors

- The best and brightest are attracted to CEAT programs as evidenced by:
 - Percentage of new freshmen who were in the top 10% of their high school class compared with peer institution norms.
 - Fifty percent of incoming students will have an ACT score of 29 or higher.
- Success rate of undergraduate students as evidenced by the following:
 - Graduation rates equal or exceed peer institution norms.
 - Freshman retention equal or exceed peer institution norms.
- At least 10% of BS graduates will have had a significant international experience.
- An average of two finalists per year for national awards (e.g., Goldwater, Udall, and Truman scholarships).
- A majority of eligible undergraduate students will receive and accept at least one internship assignment in industry, government, or other appropriate organization.
- An increasing number of undergraduate students participate on teams that are nationally competitive (e.g., concrete canoe, mini-Baja, Formula car, tractor pull, aircraft design, architectural design).
- Increased number of students who participate in CEAT enrichment programs (e.g., CEAT Research Scholars Program, New Product Development Center projects).
- Number of active partnerships with selected K-12 institutions that represent high potential for significant gains of students entering the “pipeline.”
- Defensible metrics for evaluating the effectiveness of partnerships with K-12 institutions.
- At least one active partnership with the College of Education and/or College of Arts and Sciences that impacts on OSU students preparing for careers in K-12 teaching or counseling.
- Annual levels of PhD production increased by 60%.
- Enhanced quality of graduate students and graduate programs as evidenced by the following:
 - Average score on GRE exam.
 - Number of qualified students who apply from peer institutions.
- Significant increase in number of international applicants and enrollees from prominent universities in the respective home countries (e.g., IIT’s in India, national universities in Korea and Taiwan).
- Fifteen new endowed graduate fellowships.
- One hundred percent of undergraduate students will participate in scholarly activity.

Objectives:

Objective 4-1: Develop an active partnership with selected K-12 institutions to substantially increase the numbers of students entering the “pipeline.”

Strategies:

- Participate and be recognized as an active supporter of such programs as U.S. First Robotics, OSSM, OSSM Satellite Schools, pre-engineering and pre-technology programs in selected high schools.
- Create a proactive recruiting plan for identifying and attracting outstanding high school juniors and seniors who have high aptitudes in mathematics and physical science, biological science, or life science.
- Focus on students/schools that have records of performance in generating students with strong mathematics and science skills. Develop partnerships with a selected number.
- Establish a “CEAT Week” – like period for selected high school students. Students nominated by counselors/teachers to attend. Include demonstrations by competition teams (e.g., concrete canoe, Baja, Formula one, aircraft design, etc.)

Objective 4-2: Enrich the undergraduate student experience and help students reach their full potential.

Strategies:

- Maintain a rich set of enrichment and leadership development programs and opportunities which add value to the undergraduate experience.
- Establish student enrichment programs as a priority for development opportunities.
- Develop a plan for engaging 10% or more of our students in meaningful study abroad/international experiences; consider curricular issues, cultural and language issues, and funding mechanisms.
- Develop a mentoring program which is aimed at creating awareness among qualified students of the values of international experience, and options for engaging in such experience.
- Provide tours/insight into the ATRC and other labs for undergraduates.
- Develop an early identification process to ensure that the best potential candidates enter the OSU Scholar Development “pipeline.”
- Involve CEAT students in recruiting and as ambassadors (our best recruiters and spokesmen).

Objective 4-3: Enhance the quality of the graduate student experience.

Strategies:

- Establish endowed graduate fellowships as a priority for development opportunities.
- Increase the average graduate stipends to levels comparable to those at peer institutions.

Objective 4-4: Enhance the quality of the graduate student body.

Strategies:

- Create a focus group with participation from each academic department and Student Services to generate ideas for enhancing CEAT contact with potential students.
- Create and implement a proactive plan for recruiting outstanding graduate students from recognized institutions and industry.

Goal Five. Economic Development: Contribute to the economic vitality and growth of Oklahoma through collaborative relationships with its public and private enterprises.

Critical Success Factors

- Twenty new product lines will be created over five years and licensed to Oklahoma based manufacturers.
- Three new technology-based enterprises will be created over 5 years.
- Significant increase in the number of BS, MS, and PhD graduates who take employment in the State of Oklahoma.

Objectives:

Objective 5-1: Be an active and effective contributor to the creation of jobs, increased wealth, and expanded tax base in Oklahoma.

Strategies:

- Evaluate opportunities for moving CEAT developed technologies to the marketplace using various enabling structures, e.g., intellectual property policies, Oklahoma EDGE, Oklahoma Technology and Research Park, OCAST.
- Utilize the New Products Development Center concept and spin offs from research and technology development programs to generate new product lines and enterprises in Oklahoma.
- Involve the private sector in idea development to speed the time from invention to commercialization.

Objective 5-2: Address the technical workforce needs in Oklahoma.

Strategies:

- Generate a 20% increase in undergraduate engineering enrollment over a five-year period.
- Promote at the state level a graduate-level equivalent of the OSRHE Scholars program, with incentives for Oklahoma industrial firms to employ MS and PhD engineering graduates.

Goal Six. Diversity: Achieve diversity and create an environment of respect for individuals.

Critical Success Factors

- The ethnic diversity of the Oklahoma residents in the undergraduate and graduate student bodies reflects the demographics of the State.
- The gender diversity of the undergraduate student body reflects the norms in peer institutions.
- Retention and graduation rates of members of underrepresented groups increase by 20%.
- Effective mentorship programs/resources available to underrepresented groups.
- The ethnic diversity of the U.S. citizens on CEAT faculty reflects the demographics of Oklahoma and/or peer institutions.
- The gender diversity of the CEAT faculty reflects the demographics of the undergraduate student body.
- Existence of self-organized teams of diverse individuals who come together to respond to professional opportunities.

Objectives:

Objective 6-1: Recruit increased numbers of quality students from underrepresented groups (i.e., women, Hispanic American, African American, and Native American).

Strategies:

- Increase funding for scholarships associated with diversity goals.

Objective 6-2: Enhance success rates of underrepresented students who begin study in a CEAT program.

Strategies:

- Increase the availability, access, and responsiveness of multi-cultural programs.

Objective 6-3: Increase employment and success rates of faculty and staff in underrepresented groups.

Strategies:

- Target recruiting efforts to attract underrepresented students, faculty, and staff.

Goal Seven. Human Resources: Attract, retain and develop faculty who are nationally recognized, or have the potential to be, and ensure the professional growth of faculty and staff by facilitating opportunity and performance.

Critical Success Factors

- Number of faculty who meet or exceed CEAT promotion and tenure criteria.
- Number of faculty who attract external funding to support scholarship, curriculum development, graduate education, and infrastructure development.
- Number of faculty who engage in scholarship that is validated nationally.
- 100% of faculty have personal professional development plans that are consistent with the unit, college, and university strategic plans.
- Number of faculty receiving major national awards and honors.
- Number of faculty holding national offices in technical and professional societies.
- Number of faculty engaged in advisory committees and review teams.
- Number of staff participating in meaningful professional development programs.
- Number of staff receiving university-level performance awards.

Objectives:

Objective 7-1: Provide professional growth opportunities, recognition, and rewards for faculty.

Strategies:

- Parity of faculty salaries and benefits with peer institutions.
- Establish endowments for professorships and chairs as a priority for development opportunities.
- Sabbatical leave participation doubled.
- Faculty participation in professional society meetings increased by 10%.
- Faculty awards expanded from current four outstanding faculty member awards to recognize extraordinary contributions to the undergraduate student experience, graduate advisement, research productivity, and technology development.
- Offer seminars for new and under-productive faculty in research development strategies.
- Engage faculty in statewide leadership and decision-making groups (e.g., EDGE-like teams, OCAST Board of Directors).

Objective 7-2: Provide professional growth opportunities, recognition, and rewards for professional and classified staff members.

Strategies:

- Average salaries for professional and classified staff equal or exceed those in other similar communities in the region.

- A majority of professional and classified staff members participate in at least one professional development program each year (e.g., Leadership Development, HR Star, etc.); a monetary award provided for successful completion of selected professional development programs.
- Number and visibility of staff recognition programs increased, including the number of categories/awards and award levels.

Goal Eight. Fiscal Resources and Infrastructure: Leverage and focus financial and physical resources to achieve national prominence in strategically targeted areas.

Critical Success Factors

- The Structures Research facility will be constructed, furnished and occupied.
- The third floor of the ATRC (now shelled in only) will be furnished and occupied.
- The OSU-Tulsa Advanced Technology Research Center building will be constructed, furnished and occupied.
- The current Architecture building will be renovated to comply with normal energy and comfort standards expected in university buildings.
- A new 50,000 sq. ft. Architecture building will be designed, constructed, furnished and occupied. The facility shall incorporate state-of-the-art classrooms, seminar rooms, and galleries, and serve as a key gateway between the academic sector and the stadium.
- Established and stabilized funding mechanisms for entrepreneurial programs such as the NPDC and the OTC.
- Invest a minimum of \$550,000 each year in instructional facilities/equipment.
- Establish undergraduate laboratory development as a priority for development opportunities.
- Add five technology equipped classrooms.

Objectives:

Objective 8-1: Increase the availability of quality research space

Strategies:

- Each capital project will have a focused initiative targeting appropriate private and federal funding sources.
- Create and implement a capital improvement plan that is rationalized with growth plans

Objective 8-2: Upgrade and expand the instructional spaces

Strategies:

- Each capital project will have a focused initiative targeting appropriate private and federal funding sources.
- Create and implement a capital improvement plan that is rationalized with growth plans

Objective 8-3: Provide high quality instructional facilities/equipment.

Strategies:

- Utilize the Master Lease program and student facility fees to significantly upgrade and modernize current laboratories and develop new laboratories to support new and expanded programs.

Goal Nine. Partnerships and Collaborations: Strengthen relationships with constituents and professional partners to improve mutually beneficial public and private support.

Critical Success Factors:

- Total annual private gifts from alumni and friends increased by 25%.
- Total number of donors increased by 25%.
- Five new endowed chairs/professorships.
- Fifteen new endowed graduate fellowships.
- Number of active CEAT Associates increased by 50%.
- Number of alliances/partnerships with industry, government, and academia increased by 25%.
- Active and effective industry advisory committees/boards in each curricular area, and for each major research center.

Objectives:

Objective 9-1: Enhanced interfaces/relationships with other peer education, research, and outreach institutions.

Strategies:

- Develop processes for collaboration with government, industry, and academia and educate faculty and administrators on the processes.
- Create a web page for industry strategic partners and prospects to navigate.

Objective 9-2: Enhanced interfaces/relationships with state and federal government agencies.

Strategies:

- Develop processes for collaboration with government, industry, and academia and educate faculty and administrators on the processes.
- Connect with economic development initiatives in Oklahoma, such as EDGE

Objective 9-3: Enhanced interfaces/relationships with industrial organizations.

Strategies:

- Expand CEAT Associates membership and have meaningful engagement with the Associates on key College topics.
- Develop processes for collaboration with government, industry, and academia and educate faculty and administrators on the processes.
- Host regional events focused on establishing new partnerships with alumni, corporations, foundations and friends.

Objective 9-4: Enhanced interfaces/relationships with donors and potential donors.

Strategies:

- Identify, cultivate, solicit and steward new potential donors from contacts with alumni, corporations, foundations and friends of the College.
- Host regional events focused on establishing new partnerships with alumni, corporations, foundations and friends.
- Increase direct mail pieces and publications that raise awareness of funding priorities and the various methods for contributing to them.
- Promote endowed chairs/professorships and graduate fellowships as campus priorities.

Goal Ten. Image Development: Communicate an image that reflects achievement and pride.

Critical Success Factors

- Print and video-based publicity for program innovation, and student and faculty achievements, increased significantly.
- The number of “hits” on the CEAT webpage each year increased 10 times.

Objectives:

Objective 10-1: Achieve recognition with all constituents as the college in Oklahoma with “*the programs of choice*,” whose graduates are “*the graduates of choice*” among those that employ our graduates.

Strategies:

- Establish a focus team to liaison with Enrollment Management and Marketing to discover and implement new avenues for image enhancement.
- Create a world-class homepage.
- Develop a formal mechanism for identifying newsworthy developments and disseminate to strategic internal and external audiences.

Objective 10-2: Achieve recognition as a college that has a measurable and substantial impact on the quality of life of the citizens of Oklahoma, and on the economic vitality of our state and region.

Strategies:

- Establish targets for the number of CEAT press releases per semester on innovative programs, student and faculty achievements.
- Create a world-class homepage.
- Work in concert with campus-wide marketing plan.
- Develop a formal mechanism for identifying newsworthy developments and disseminate to strategic internal and external audiences.