

COLLEGE OF ENGINEERING, ARCHITECTURE & TECHNOLOGY

CIVIL & ENVIRONMENTAL ENGINEERING

STRATEGIC PLAN 2014-2018



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CIVIL AND ENVIRONMENTAL ENGINEERING AT OKLAHOMA STATE

UNIVERSITY started in 1906. Civil and environmental engineers spend their careers dealing with infrastructure. As part of a Land-Grant institution, it is our job to provide education and public benefit to address state and national needs through education, research and outreach. Our products include trained engineers necessary for the design and maintenance of the state and nation's infrastructure, research into ways to maximize our current infrastructure and develop new infrastructure, and outreach activities to share our knowledge and training with the public to enhance their ability to contribute to the economy, environment and quality of life in our state and nation.

Today, the program is ranked 72nd out of 144 by U.S. News and World Report, and we believe there is a significant potential for CIVE to be ranked higher in the next quartile in the near future.

MISSION

The School of Civil and Environmental Engineering educates civil and environmental engineers with knowledge and skills for life-long careers and leadership; creates knowledge and technical breakthroughs that impact Oklahoma, the region and the world through innovative and creative research and scholarly activities; and shares knowledge through outreach activities.

VISION

The School of Civil and Environmental Engineering is recognized for its positive, meaningful and enduring impacts on humanity through its academic, research and outreach programs and for its respectful focus on students.



ACADEMIC GOAL I: Increase the number of B.S. degrees conferred by CIVE by 40% over current levels to an average of 50 per year by 2018.

In order to meet the needs for new and retiring civil and environmental engineers in Oklahoma and the region, CIVE needs to grow the number of program graduates above our current yearly average of 35 BS degrees. This will help to sustain growth in the number of faculty members and contribute to the research and outreach focus in CIVE.

ACTIONS FOR ACADEMIC GOAL I

To reach this goal CIVE needs to hire two new faculty members per year over the next five years. In addition to the numerous recruitment activities faculty already perform, recruiting could be increased by establishing a Summer Bridge Program with a civil engineering focus. This will help with retention of incoming at risk students (and perhaps other students as well) and also give them information about CIVE. One month of salary will need to be supplied to the faculty member or members leading the program. Also, the Dean will need to facilitate interactions between the school of CIVE and all freshman and sophomore engineering students. This will give CIVE an opportunity to show these students details about CIVE, give them hands on learning experiences, and show them the exciting career possibilities of CIVE.

ACADEMIC GOAL II: Increase the retention rate of undergraduates at OSU through increased engagement.

Improving retention is an important goal at OSU and one that CIVE wants to focus, CIVE has investigated the retention within the school and has found they have a 95% retention rate after students enter their junior year or professional school classes. This means that the majority of the loss of students occurs during the freshman and sophomore years. This needs to be a focus area for future efforts.

ACTIONS FOR ACADEMIC GOAL II

Increased engagement of students at the freshman and sophomore levels is critical. One way to engage students is to provide them funded undergraduate research activities within research labs. This gives the students meaningful research experiences that can help them appreciate how their education can be applied and it also helps the faculty in their research endeavors. Another benefit for undergraduates would be to have several CIVE-led field trips for freshman and sophomore students to visit large civil projects. These trips could be open to anyone interested and would provide first hand experiences. Both of these efforts could be arranged by the faculty but should not be expected to be funded by CIVE alone. Resources would be necessary to pay for large busses and drivers. Both of these programs would be an outstanding usage of funds given to the University to increase the number of engineering undergraduate degrees from OSU.

FACULTY GOAL: Promote faculty efforts to improve teaching quality.

Teaching is our fundamental mission at OSU. It is important to not lose sight of this and hence, we must create an atmosphere where high quality teaching is encouraged and supported.

ACTIONS FOR FACULTY GOAL

Several actions can be taken to further promote teaching quality within the School. A more structured mentoring program for young faculty with more experienced teachers should be created. Financial assistance and time should be provided to encourage faculty to attend the ASCE ExCEEEd teaching workshop or other educational development activities (e.g. ASEE). Financial support for improved classroom technology will be necessary, and as classroom technology improves, training opportunities to help faculty take full advantage of them should be found and financial support should be provided.

TEACHING GOAL: Continue our evaluation and refinement of the B.S. curriculum, laboratories, and educational experiences.

Changes in the profession require that curriculum change must be an ongoing process. The faculty will work towards modernization of our course offerings (laboratory experiences, computer experiences, co-op/intern experiences, and interdisciplinary/international experiences) while continuing to offer the strong fundamentals as advised by our Board of Visitors. CIVE currently has the highest pass rate on the Fundamentals of Engineering exam within CEAT and has an average pass rate well above the national average, as reported by NCEES. We plan to maintain this strength and continue to improve the educational experiences of our students, ensuring that they are well prepared to begin their careers.

ACTIONS FOR TEACHING GOAL

There is a plan to use any surplus of money available to refurbish teaching labs and provide educational technology to classrooms. There has been much discussion about internal competitions held within CEAT to obtain the funding necessary to refurbish teaching facilities. There should also be some additional money available to refurbish existing labs. Faculty will also focus on preparing proposals for external funding.



GRADUATE STUDENTS GOAL: Increase the number of MS and Ph.D. degrees conferred by CIVE to an average of 30 and 6 per year, respectively, by 2018.

CIVE needs to grow from the current average of 22 M.S. and 3 Ph.D. degrees conferred. Obtaining high quality Ph.D. students will improve the productivity of the faculty and help improve the impact and standing of CIVE.

ACTION FOR GRADUATE STUDENTS GOAL

One way to get high quality Ph.D.s is to pay them. A number of schools pay \$40K per year on top of their current stipend to get the best Ph.D.s. The faculty would like to have a set amount of money to provide very high level fellowships to high quality students. The School will seek at least \$250K per year for graduate stipends to keep more of the best students at OSU and to recruit high quality students from other schools. This money would be used on top of the current stipends paid by our research. This will help us obtain better graduate students and will help us improve the total number of graduate students as well.

OUTREACH GOAL: Enhance the School's dissemination of knowledge and research, by working with groups already existing at OSU, such as the Center for Local Government Technology (CLGT), to disseminate knowledge and research.

Implementation and dissemination of OSU research is critical to CIVE, CEAT, and the Land-Grant mission of OSU. There are a number of groups on campus that are better prepared to share this knowledge with the public and provide continuing education to professionals. current industry needs.

ACTION FOR OUTREACH GOAL

A series of meetings will be held between the CIVE faculty and CLGT (and other potential collaborators) to better understand how these groups can work together. An emphasis will be placed on finding simple methods of collaboration that will benefit both groups while not taking away from each other's missions or goals.

RESEARCH GOAL I: Enhance CIVE's reputation as a leader in CIVE research.

Recognition by peers as a leader in research has numerous benefits. CIVE faculty members and students will have a better chance of winning national awards, securing national research funding, occupying leadership positions in our professional societies as editors of journals, conference chairs, board members, etc.

ACTION FOR RESEARCH GOAL I

By increasing the number of PhD degrees, papers published in peer reviewed journals, and research expenditures, this will help raise the ranking of OSU in the eyes of peer institutions. If the other aspirational goals are accomplished then this goal will be met as well.

RESEARCH GOAL II: Increase annual research expenditures from competitive research grants by 20% to \$3 million by 2018 and remain the top school in CEAT on an expenditure/faculty basis while maintaining high quality education for our students.

Research expenditures from competitive research grants help to: develop CIVE faculty and provide summer salary support, recruit top doctoral and masters students, provide financial support and mentoring support so they can produce strong dissertations and theses, provide support for publishing high-quality articles published in peer-reviewed journals and conference proceedings, allow graduates to be placed in high-level academics civil and environmental positions to bring visibility to our graduate program, and fulfill our mission to provide public benefits in the area of infrastructure.

Despite small faculty numbers, CIVE has produced three or four of the top five funded researchers in CEAT for the last two years. By setting targets in faculty Professional Development Plans, coordinating research activities among faculty members in the School and other faculty at this university and others, CIVE will strive to increase our research expenditure, as a school, by 20% over the next five years. This will lead to a research expenditure level of \$3 million.

ACTION FOR RESEARCH GOAL II

Reaching \$3 million will require the school to recruit and retain several additional faculty members, with the objective of increasing the CIVE faculty numbers by a minimum of two faculty per year over the next five years. It is important that hires are made each year as a number of faculty members will be retiring in the next five years and the School does not want to be forced to add a number of faculty members quickly to a small department. This will also help us plan for our upcoming retirements. It is also important that equipment matching plans and continued renewal and updating of our research facilities continue.

As CIVE identifies strategic hiring needs within the School, it will work with associated Schools on campus such as Architecture, Biosystems, Chemical Engineering, Materials Science, Construction Management Technology, and Chemistry (all areas where we have past or ongoing collaborations) to determine the most appropriate strategic hires to support our six civil disciplines of construction engineering and project management, environmental, geotechnical, structural, transportation, and water resources.

