



**BRADLEY** University

Department of Civil Engineering  
and Construction

**STRATEGIC PLAN**  
**For Excellence in Civil Engineering and**  
**Construction Education**  
**2016-2021**

**DEPARTMENT OF CIVIL ENGINEERING AND CONSTRUCTION**  
**STRATEGIC PLAN FOR EXCELLENCE IN CIVIL ENGINEERING AND CONSTRUCTION EDUCATION**

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# The Department of Civil Engineering and Construction Strategic Plan for Excellence 2016-2021

## 1 SUMMARY OF THE CEC 2016-2021 STRATEGIC PLAN

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The CEC Strategic Plan includes initiatives to allow the department to continue on its path of excellence in seven specific areas; namely:

1. Pursuit of excellence in teaching by ensuring the department continues to offer dynamic accredited programs that take advantage of the university's strategic initiative of convergence between engineering and business and stay ahead of the expectations of the industry.
2. Continuing and enhancing the unique programs that are the hallmark of CEC. At a minimum, these will include ICAT and other CETI programs, Bridge-Pal, the CEC Honors Banquet, and the Global Explorer Program.
3. Pursuit of excellence in research and scholarship by maintaining a conducive environment and support structure for faculty and students to continue to engage in creative production and in projects that help push the boundaries of knowledge in the areas of civil engineering and construction, with an emphasis on sustainability and the use of emerging technology.
4. Continuing the department's tradition of excellence in service to students, the university, and the community at the local, national, and global levels.
5. Developing and implementing a student recruiting strategy to guarantee a sustainable optimum civil engineering and construction enrollment at the undergraduate and graduate levels.
6. Developing and implementing strategies for continuous faculty development, especially in areas of emerging technology and for attracting and retaining quality faculty.
7. Developing and implementing strategies for the acquisition and use of the adequate space needed for the department to achieve its goals and objectives in teaching, scholarship, and service.

Specific strategies and measures of success for each of the categories listed above are provided in the next section.

## 2 STRATEGIC INITIATIVES

### 2.1 STRATEGIC INITIATIVES FOR THE PURSUIT OF EXCELLENCE IN TEACHING

The Department of Civil Engineering and Construction has identified some key objectives listed in the table below to build on the track record of excellence in teaching. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

Objective	Strategy	Measure of success
Microstation Integration	Continue the integration of Microstation in the undergraduate CADD course, the Civil Engineering Senior Design project Course, and other courses	Inclusion of Microstation in the CE224 and CE493/498 syllabi Faculty seeking Microstation training Requiring the use of Microstation for student projects in other courses
Software Integration	Revise the programs' curricula and course offerings to ensure a sustainable integration of up-to-date software. This can be done by integrating the use of the software into existing courses or creating special courses or both	Inclusion of the use of software into specific courses. Systematic integration of software in the Senior Project Courses. Development and offering of new courses that are dedicated to the instruction of the use of software in civil engineering and construction.
New Technology Integration	Revise existing courses such as Surveying and develop new courses to introduce students to current and emerging technology including GPS, GIS, BIM, Cloud Computing, and Simulation	Revision of CE 206 Surveying to expose students to emerging technologies.  Number of faculty members integrating new technologies into instruction.  Number of courses affected by new technology integration.

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Offering Online Courses	Adapt selected courses for online instruction	Number of online courses offered. Quality of instruction measured by student learning outcomes as compared to conventional teaching methods
Study Abroad	Revive Global Explorer Program to serve all students at Bradley University	Number of students impacted by GEP

## 2.2 STRATEGIC INITIATIVES FOR THE PURSUIT OF EXCELLENCE IN RESEARCH AND SCHOLARSHIP

The Department of Civil Engineering and Construction will aim at achieving the goals listed in the table below. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Increase number of peer-reviewed publications by faculty	Reward successful faculty through faculty evaluation process and guide faculty who need help in achieving excellence	Number of peer-reviewed journal publications, books/book chapters, conference publications produced by the department collectively
	Recognize and reward student-faculty collaboration	Number of student-faculty peer-reviewed publications
Increase faculty participation in large multi-institution grant proposals	Leverage existing relationships with industry, government, and other academic institutions to collaborate on multi-institution teams	Number of multi-institution proposals submitted
Increase amount of external funding to support students	Reward and recognize faculty for achieving external grants through the faculty evaluation process	Dollar amount of external grants secured collectively by the department (successful proposals)
		Number of faculty actively engaged in seeking external funding (unsuccessful proposals)

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Enhance graduate program	Take advantage of existing relationships with industry and government agencies to support faculty and student research	Record of continuous changes made to the graduate program
Create doctoral program	Use program strengths and department connections to create a unique doctoral program that will embrace the new Convergence facilities	Progress made towards creating an innovative doctoral program

### 2.3 STRATEGIC INITIATIVES FOR THE PURSUIT OF EXCELLENCE IN SERVICE

The Department of Civil Engineering and Construction will aim at achieving the goals listed in the table below. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Continue to offer Conferences and Executive Summits through CETI	Build on success of ICIC and ICAT Conferences	Caliber of speakers and participants at conferences, number of attendees,
Expand Bridge Pals program	Engage more schools and increase participation amongst minority/disadvantaged groups	Total number of teams  Number of participants from minority/disadvantaged groups
Promote faculty leadership in service	Reward faculty who engage in meaningful service activities through the faculty evaluation policy	Number of CEC faculty who engage in service activities
Promote student leadership in service	Use student organizations to get students to lead in building playgrounds or pocket parks, mentor high school students, engage in community service  Recognize incoming students with Leadership scholarship awards	Number of CEC students who are leaders in service  Number of students who have earned the CEC Leadership Scholarship

## 2.4 STRATEGIC INITIATIVES FOR STUDENT RECRUITING

The Department of Civil Engineering and Construction will aim at achieving the goals listed in the table below. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Recruit quality undergraduate students for healthy faculty-student balance in both undergraduate programs	Use unique CEC initiatives like ICAT, GEP, and ties with industries/agencies to show opportunities from a CEC education to high-quality prospective students	Number of students in each undergraduate program  Average ACT score of entering freshmen  Faculty to student ratio in CEC compared to Bradley University
Promote diversity in student body	Use unique initiatives like the CEC Leadership Scholarship and other special incentives to attract a diverse student body - both domestic and international	Proportion of students from diverse background to total student population
Strengthen partnerships with local community colleges to recruit transfer students	Reach out to counselors and visit community/junior colleges that are underserved by the university community	Number of transfer students expressing interest and number actually enrolling in the programs
Encourage faculty to engage in recruiting	Provide incentives to faculty to engage in recruiting	Number of faculty volunteering for recruiting
Continuously revise curricula to be current and competitive	Continuous improvement of program content and course offerings	Feedback from companies hiring our graduates about program relevancy
Maintain high quality CEC website	Require upper administration to be timely with implementing changes to CEC website	Currency of the CEC website

## 2.5 STRATEGIC INITIATIVES FOR FACULTY DEVELOPMENT

The Department of Civil Engineering and Construction will aim at achieving the goals listed in the table below. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Promote faculty development in teaching and scholarship	Develop faculty sabbatical rotation plan	New initiatives and partnerships that come from faculty sabbaticals
Promote faculty exchanges with other institutions around the world	Create and/or strengthen partnerships with other academic institutions through collaborative research and teaching	Number of faculty exchanges between CEC and other institutions
Encourage professional development activities	Support faculty who attend workshops and conferences to present papers	Number of faculty supported  Dollars invested in faculty development
Encourage faculty scholarship	Provide incentives, such as a reduced teaching load, to faculty so they can engage in scholarship	Number of faculty engaged in research

## 2.6 STRATEGIC INITIATIVES FOR SPACE DEVELOPMENT

The Department of Civil Engineering and Construction will aim at achieving the goals listed in the table below. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Ensure fairness at the college and university levels in terms of space allocation	Pursue the development of a fair and transparent space allocation policy at the college and university levels that takes into account departmental achievements and needs in addition to other metrics.	Availability of a fair space allocation policy  Availability of adequate space to conduct teaching in all CEC courses and adequate facilities for research for CEC faculty
Develop cutting edge laboratories in transportation, structural engineering, CAVE, BIM, etc.	Develop a plan with justification why these laboratories are essential to CEC and to Bradley University in maintaining high standards and retaining top faculty	Ability to secure space and resources for needed laboratories

## 2.7 SPECIAL STRATEGIC INITIATIVES

The Department of Civil Engineering and Construction will aim at achieving the goals listed in the table below. The Department may provide special incentives to faculty and adopt faculty hiring and evaluation policies to facilitate the achievement of the stated goals:

<b>Objective</b>	<b>Strategy</b>	<b>Measure of success</b>
Create new relationships and strengthen ties with industry partners	Reach out to potential partners through faculty and alumni contacts and engage industry partners with the CEC department through the CEC Advisory Board, CETI Conferences, and other avenues	Loyalty of industry partners in supporting CEC programs and initiatives
Revitalize the Global Explorer Program	Revive existing collaborations and build partnerships with institutions in other countries	Number of faculty and students engaged in the GEP
Strengthen and build on CEC Honors Banquet	Engage students, alumni, leaders and the community	Quality and attendance at the CEC Honors Banquet
Build leaders from within	Develop a clear and concise plan of rotating younger faculty into more serious service roles as they develop without losing focus of the principles that have helped the department strive for excellence	Young faculty taking on more responsibility and ownership of their department
New academic initiatives	Develop new programs in sustainability and other emerging areas	Visibility of the CEC programs at the national level

### 3 SUMMARY AND CONCLUSIONS

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Excellence is the creed in the CEC Department and not simply a slogan. The mission of the department and the objectives of the two undergraduate programs and the graduate program reflect this truth. The collective effort of a group of dedicated faculty and staff help deliver a high-quality academic experience for all our students.

Excellence is reflected in the success of our alumni. Over a third of our construction alumni have achieved a rank of Vice President or higher and nearly a fourth of the civil engineering alumni have reached this distinction. Our industry partnerships and the over \$1.7 million in endowed and annual scholarships, created through the leadership of Dr. Al-Khafaji over the years, reflect the confidence that the profession has placed in our CEC graduates and in our programs.

CEC faculty strive for excellence in teaching, scholarship, and service. The number of textbooks written (more than 30), the large number of major Bradley University awards won, recognition from peers outside Bradley University, external funding and students supported through these grants, and peer-reviewed papers produced by our faculty and students set us apart from our peers at similar institutions nationwide. The challenge for the department and its faculty is to continue to offer high-quality academic programs with a student-centric focus by continuing to collaborate and develop knowledge at the interface of two or more fields.

The unique and highly regarded Center for Emerging Technologies in Infrastructure (CETI) offers world-class conferences like ICIC and ICAT as well as Executive Summits to attract the best minds in academe, industry, and government to solve some infrastructure challenges facing the state and the nation. The international partnerships and collaborations provide a unique flavor to all activities in CEC. The Global Explorer Program set the standard for study abroad programs at Bradley University and has transformed the lives of students and faculty who were engaged.

Challenges and obstacles remain and are recognized. One of the pressing concerns is investment by the university to retain and attract quality faculty. Another concern is the inadequate number of faculty, particularly when one considers the scholarly output in addition to generally robust enrollments. In order to maintain program relevancy, develop new frontiers of knowledge, and equip our students with a cutting edge education, continuous investments are required in faculty, laboratories, and new technology.