

College/Division Name:College of Science and Engineering
2-year Review of 2012-2017 Plan

College/Division Mission:

The College of Science and Engineering has a triple mission:

Preparing students for careers in science, engineering, mathematics and technology, providing future K-12 teachers with the scientific and mathematical knowledge that they will need in the classroom, and giving all students core knowledge in science and mathematics.

Providing an environment in which faculty can perform research consistent with Texas State's emerging-research-university status.

Serving our community, region, and state with research that is linked to commercialization and economic development.

College/Division Goals:

1. For 2017, we envision a college with additional programs in engineering and computer science.
2. A new building housing our engineering programs will likely be in place.
3. New faculty will have been hired for new programs, program maintenance, and enrollment growth. Our research productivity and external funding will continue to grow.

Top Five 2012-2017 Strategic Priorities for Remainder of Planning Cycle:

1. MS in Engineering [University Initiatives 2.1, 2.2; also 1.6, 1.9, 3.9]: This program is of critical importance to the Ingram School of Engineering and to local and regional industry. It will emphasize engineering practice and include long-term, targeted technical projects related to real-world engineering applications. Implementation of this program will be a high priority during the remainder of this planning cycle. (Ongoing)

2. BS in Civil and Environmental Engineering/Civil Engineering Technology [University Initiatives 2.1, 2.2; also 1.6, 1.9, 3.9]: There is substantial synergy between these two programs, so they appear as a single priority. The success of the Concrete Industry Management and Construction Science and Management programs has identified a strong need for additional civil engineering programs in Central Texas. Environmental engineering is

commonly associated with civil engineering programs; this aspect of civil engineering fits well with Texas State's water-related activities (River Systems Institute, Edwards Aquifer Research Center). We would like to prepare requests for preliminary authority to offer these programs for submission to the Coordinating Board in 2016. (Ongoing)

3. PhD in Computer Science [University Initiatives 1.5,1.6,1.9,2.1,2.2]: This program will be structured to serve the region's working professionals who currently have no access to a PhD program in computer science. The PhD programs in the region (UT Austin, UTSA) are structured to serve traditional full-time students. The regional demand for computer software and hardware focuses on Internet, E-commerce, smart devices, social media and gaming. The Department of Computer Science has research expertise in networking and cyber-security, data mining and service computing, high performance computing, and human computer interaction. The quality of faculty research is high, as demonstrated by external research support (NSF CAREER award, IBM Faculty Award), proposal development, and publications. A PhD program is critically needed to meet local needs. At the same time, it will fulfill the department's vision and help attract and retain outstanding faculty and students. A request to offer this program will be submitted to the Coordinating Board in 2016. (Ongoing)

4. Development of COSE programmatic and research areas [University Initiatives 1.2, 1.5, 1.9, 2.1, 2.2, 3.9]: Additional tenure-track faculty members are needed to grow and strengthen areas critical to College programs and research specialties. These include (a) software engineering (existing M.S. program; critical to local industry, as expressed in recent *Austin-Statesman* article), (b) biomaterials/biosensors (one Biology faculty member already hired into MSEC program; more needed to create research focus; critical to local industry, especially in San Antonio), (c) computer engineering (to strengthen existing concentrations in CS and Engineering; critical to Austin industry), (d) hire "professional faculty" in Concrete Industry Management, Construction Science and Management, and Manufacturing/Mechanical ET. This will require creating a "professional faculty" track analogous to clinical faculty; such faculty will greatly strengthen these programs' linked to industry, and will make their graduates far more employable by local industry. (Ongoing)

5. STEM Education [University Initiatives 1.2, 2.2, 3.5, 3.9, 4.3]: The College has significant expertise (and a Ph.D. program) in mathematics education. It has begun to acquire similar expertise in science and engineering education. We would like to continue to build on this foundation during the planning period in the following ways: (a) hire additional faculty with discipline-specific expertise in STEM education, (b) support Mathworks in its endowment and curriculum development efforts, (c) improve learning in core-curriculum STEM courses at Texas State, (d) work with the College of Education to develop better paths to certification for K-12 science teachers, and (e) consider the establishment of a Department of Science and Mathematics Education. (Ongoing)