

COSE Priorities

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 a long-term, targeted technical project related to real-world engineering applications. The request for preliminary authority has already been completed. We hope to submit it to the Board of Regents and the Coordinating Board later this year.
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).
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 other PhD programs in the region (UT Austin, UTSA) are structured to serve traditional full-time students. The regional demand for computer science PhDs is driven by the leadership needs of rapidly growing small and large companies producing computer software and hardware (Internet, E-commerce, smart devices, social media, 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 it attract and retain outstanding faculty and students.
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 American-Statesman* article), (b) biomaterials/biosensors (one Biology faculty member already hired into MCSE 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’ link to industry, and will make their graduates far more employable in local industry.

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 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.