

*Graduation
Improvement Plan*
College of Engineering

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This document prepared by Kristi Meyer of the UTSA Graduation Initiative in collaboration with the UTSA College of Engineering.



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Introduction

The university and the College of Engineering strategic plans are comprised of five strategic initiatives that will drive the future of the COE for the next decade. Therefore, it is appropriate for the college Graduation Improvement Plan to be aligned with the COE strategic plan so that the two may work in concert to achieve the goals set forth. With that in mind, this document strives to represent the relationship between the COE strategic initiatives and the Graduation Initiative's recommendations for improvement of COE graduation rates. The focus here will be on Strategic Initiative I: Enriching Education Experiences to Enable Student Success and Strategic Initiative III: Promoting Access and Affordability, since they are so closely aligned to undergraduate student persistence and graduation.

The strategic initiatives, goals, key indicators and action items are from the College of Engineering, Strategic Plan 2007-2016. The affordances for success, barriers and recommendations are from the Graduation Initiative, COE Analysis and Recommendations.

COE Strategic Advantages:

- Location in San Antonio – a city with fast industry growth
- Large minority population
- Located in metropolitan area with good connectivity (travel)
- Proximity to Mexico and South America
- Presence of large companies such as Valero, AT&T and Toyota
- Presence of large biomedical community including medical school
- Presence of defense agencies
- Presence of Southwest Research Institute
- Increasing enrollment showing increasing demand for engineering

Current Affordances for Success

- Dedicated leadership
- Faculty approachability
- Successful grant writing and financial support for undergraduate student success programs
- Student engagement outside of the classroom

Future Affordances for Success

- Pre-Engineering majors
- Just in Time Math
- Jump Start
- Residential Learning Community
- Tutoring, Supplemental Instruction and other academic support
- Early intervention for students who display significant drop in GPA

COE Strategic Challenges:

- Small college compared to overall size of UTSA
- High student to faculty ratio
- Large number of student applicants with poor preparation for college
- Cultural change from primarily teaching to research orientation

Barriers to Success

Barrier 1: Students who lack math skills

Barrier 2: Students with misplaced priorities, working too many hours, and lacking college success strategies

Barrier 3: Unmet program requirements

Barrier 4: Issues related to faculty and faculty advising

Barrier 5: Lack of communication and philosophical differences between the Colleges' Freshman Advising Center and the COE

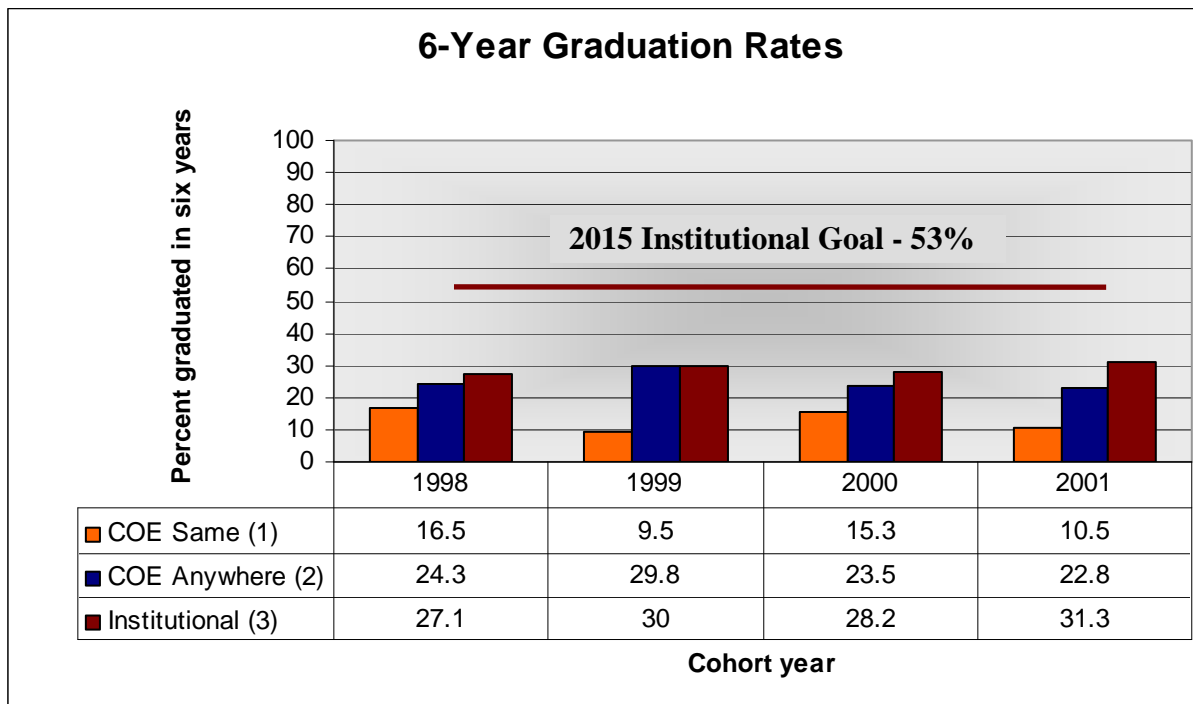
Barrier 6: Inadequate labs and lack of student space

Strategic Initiatives, Goals, Action Items and Metrics:

Improving graduation rates is a critical step in achieving the goals and initiatives set forth in the COE Strategic Plan. The primary focus, in terms of graduation rates, is the undergraduate graduation rate reported to the Texas Higher Education Coordinating Board (THECB). In calculating this rate, UTSA uses a cohort of students representing a subset of all students who achieve a baccalaureate degree within six years. This cohort consists of individuals who enter the institution as full time students during the fall semester and who have not previously attended another college or university. Additionally, these are students who intend to pursue a degree offered by UTSA. The calculation of graduation rates does not include the following students: (1) those entering in the spring semester (some

summer entering students may be included), (2) part-time students, (3) students transferring from other institutions, such as community colleges, and (4) students intending to pursue a degree from another institution, such as those participating in UT-Austin's Coordinated Admission Program (CAP). This last may soon be included in our state reported graduation rate.

As reported by the Office of Institutional Research (OIR), UTSA's most recent six-year graduation rate for freshmen entering the institution in the 2001 fall semester was 31.3 percent. President Ricardo Romo has committed to raising UTSA's six-year graduation rate to 40 percent by the year 2010 and to 53 percent by the year 2015. Applying the same methodology for calculating the institutional graduation rates, the OIR calculated six-year graduation rates for individual colleges within the institution. The most recent 6-year graduation rate for the COE was 22.8%. The most recent COE 4-year graduation rate, for student entering in the 2003 fall semester was 7.2%. As a component of UTSA, the College of Engineering can be viewed as having both its own graduation rate, as well as contributing to the overall institutional rate. Therefore, we look at two distinct graduation rates for the college: (1) those students who started with and remained with the College of Engineering and (2) those students who started with the College of Engineering and graduated from anywhere within the university. These rates, *COE Same* and *COE Anywhere* respectively, are illustrated in Figure 1, along with the UTSA *Institutional* rate for comparison.



Improving graduation rates involves many variables in a multi-faceted and complex environment. Through various data collection techniques, policies, practices, or qualities have been identified that can negatively impact on a student's progress towards graduation. With that in mind, this document aims first to address a number of those variables, barriers that, if overcome, will allow more students to reach their goal of an undergraduate degree. Secondly, this document aims to place the barriers and recommendations for improvement in the context of the strategic initiatives. For each Strategic Initiative, associated barriers to graduation are listed, followed by a bulleted list of recommendations for easing or eliminating the barrier and anticipated outcomes. Strategic Initiatives, Action Items, and metrics are those identified in the College of Engineering's Strategic Plan. End state measures and final outcome measures directly related to the barriers identified by the Graduation Initiative will be monitored by the Graduation Initiative. Implementation of the action items and recommendations will take place within the College of Engineering, with training and consulting assistance available from the Graduation Initiative.

COE Strategic Initiative I: Enriching Educational Experiences to Enable Student Success

The COE's goal is to produce profession-ready graduates through quality and practice-oriented education. The demand for well qualified engineers continues to increase but so does the competition in the job market due to globalization in the business world. This makes it critical that COE graduates are profession-ready and require minimal on-the-job training. This can be achieved by attracting high quality students, using a curriculum that is continuously monitored and updated in consultation with employers, and by emphasizing the importance of innovative thinking, internships, practical training and teamwork (COE Strategic Plan, 2007).

Goal 1

Attract and retain top quality students while maintaining cultural diversity

Action Items

- Establish partnerships and programs with high schools to reach students
- Increase the number and amount of scholarships available for students
- Establish outreach programs for minority and female students
- Change math course sequences to provide students an earlier exposure to engineering courses to increase retention
- Develop a recruitment plan and materials with specific annual activities
- Develop marketing tools and branding strategy

Barriers and Recommendations associated with Strategic Initiative I, Goal 1

Barrier: Students who lack math skills

Recommendations:

- Implement Just in Time Math
- Implement Jump Start
- Expand opportunities for tutoring and Supplemental Instruction (SI)

Barrier: Students with misplaced priorities and who lack college success strategies

Recommendations:

- Create and maintain high quality Residential Learning Communities
- Enhance and expand traditional Learning Communities

- Provide dedicated space in either the BSE or EB for tutoring and seminar classes
- Encourage early enrollment in developmental courses

Barrier: Issues related to faculty and faculty advising

Recommendations:

- Use senior faculty strategically with undergraduate, especially lower-division students
- Encourage and provide incentives for tenured/tenure-track faculty to interact with students, parents, teachers, and administrators at top feeder high schools
- Provide enhanced professional development for all faculty
- Provide incentives for participation in pedagogical training

Anticipated Outcomes

- A greater percentage of students participating in the pilot Jump Start program will begin their math sequence at a higher level than non-Jump Start participants and than historical rates as measured by initial math course taken at UTSA.
- Students participating in the Just in Time Math pilot will progress through their math and engineering courses more quickly than non-Just in Time Math participants as measured by time to graduation.
- Final outcome measure: Increased year-to-year retention rates
- Final outcome measure: Decreased time to graduation

COE Strategic Plan Metrics

- Test scores
- Class rankings
- Year-to-year retention
- Graduation rates
- Distribution of ethnic background and gender

Goal 2

Provide an infrastructure that enhances student success in graduation rates through supplemental education, advisement and mentoring

Action Items

- Establish a preparatory engineering program to improve student preparation in mathematics and physics
- Develop supplemental courses to assist those without adequate preparation
- Establish advisement protocols for students with different levels of preparation
- Establish general tutoring services to assist students
- Create mentoring programs run by students
- Establish study areas for students in engineering-related buildings
- Lower student-to-faculty ratios to the range of 22-25

Barriers and Recommendations associated with Strategic Initiative I, Goal 2

Barrier: Students who lack math skills

Recommendations:

- Implement Just in Time Math
- Implement Jump Start
- Expand opportunities for tutoring and Supplemental Instruction (SI)

Barrier: Students with misplaced priorities and who lack college success strategies

Recommendations:

- Create and maintain high quality Residential Learning Communities
- Enhance and expand traditional Learning Communities
- Provide dedicated space in either the BSE or EB for tutoring and seminar classes
- Encourage early enrollment in developmental courses

Barrier: Issues related to faculty and faculty advising

Recommendations:

- Hire more tenured/tenure-track faculty and require that they teach undergraduate courses
- Use senior faculty strategically with undergraduate, especially lower-division students
- Encourage and provide incentives for tenured/tenure-track faculty to interact with undergraduate students
- Maintain regular and accessible office hours for faculty advisors
- Provide training for faculty advisors
- Maintain reasonable faculty advising caseloads

- Create and utilize a dispute resolution process to handle misadvising

Barrier: Lack of communication and philosophical differences between the Colleges' Freshman Advising Center and the COE

Recommendations:

- Conduct regular meetings between faculty, administrators, COE Advising Center and CFAC Staff
- Enhance and expand training for COE freshman advisors

Barrier: Inadequate labs and lack of student space

Recommendations:

- Update and improve engineering labs
- Make the plotter printer available to students
- Extend the hours when labs and the BSE building are open

Anticipated Outcomes

- Students enrolled in traditional and residential learning communities will have increased college success strategies compared to non-LC students, and compared to historical trends.
- Students in Just in Time Math will have increased grades in engineering courses compared to historical trends.
- Expanded tutoring, supplemental instruction, learning communities, and better advising will lead to decreases in course repeats compared to historical trends
- Increased and streamlined communication between COE Advising Center, CFAC, and faculty advisors resulting in fewer advising errors and fewer student complaints
- Increased professional development and training opportunities for COE faculty advisors will increase the interaction and rapport between undergraduate students and faculty.
- Increased student and faculty satisfaction in freshman and faculty advising compared to historical trends
- Final outcome measure: Increased year-to-year retention rates
- Final outcome measure: Decreased time to graduation

Metrics

- Graduation rates
- Retention rates
- Student to faculty ratio
- GPA in engineering courses relative to past grades

Goal 3

Provide curricula that serve the needs of our constituents

Action Items

- Establish up to two new undergraduate programs by 2016
- Increase number of graduate programs offered
- Include more elements of innovation and team work in all courses
- Establish periodic review of curriculum
- Obtain curriculum input from advisory boards and potential employers
- Increase number of honors courses offered

Barriers and Recommendations associated with Strategic Initiative I, Goal 3

Barrier: Unmet program requirements

Recommendations:

- Offer required courses more frequently
- Offer more summer and evening courses
- Explore the use of more online and hybrid courses
- Produce a 2-year calendar of course offerings

Anticipated Outcomes

- Increase of overall course offerings to better meet the needs of students
- Increase total number of student served, commensurate with COE enrollment goals
- Part-time and evening students will be better served by more frequently offered courses
- Long term scheduling will enable more accurate semester by semester plans on file for students
- Better informed faculty, advisors, and students so that course registration can be more optimally planned
- Increased student satisfaction compared to historical trends as measured by student surveys
- Final outcome measure: Average time to graduation decreased

Metrics

- Number of honors courses offered
- Exit surveys
- Employer and student surveys
- Advisory council feedback
- Number of student obtaining jobs in the profession after graduation

Goal 4

Facilitate meaningful internships and co-op programs that enhance the value of classroom education

Action Items

- Improve network with industry to increase internships available
- Improve communication with students to advertise internships/co-op opportunities
- Increase student credit for internships
- Continuously review quality of internship/co-op programs

Metrics

- Number of students in internships/co-op
- Feedback from employers

Goal 5

Expose students to research as a means of enriching their learning, experience and promoting graduate education

Action Items

- Pursue REU grants to fund summer research programs
- Develop mentoring systems between graduate students and seniors
- Provide incentives to undergraduate students for attending graduate seminars

Metrics

- Student feedback
- Number of students continuing to graduate school

Goal 6

Promote excellence in both teaching and administrative support

Action Items

- Establish excellence awards for faculty and staff
- Provide quality improvement workshops
- Reduce student-to-faculty ratio

Barriers and Recommendations associated with Strategic Initiative I, Goal 6

Barrier: Unmet program requirements

Recommendations:

- Offer required courses more frequently
- Offer more summer and evening courses
- Explore the use of more online and hybrid courses

Barrier: Issues related to faculty and faculty advising

Recommendations:

- Hire more tenured/tenure-track faculty and require that they teach undergraduate courses
- Use senior faculty strategically with undergraduate, especially lower-division students
- Maintain regular and accessible office hours for faculty, especially faculty advisors
- Provide enhanced professional development for all faculty
- Provide incentives for participation in pedagogical training

Anticipated Outcomes

- Increase total number of students served, commensurate with goals for growth in enrollment
- Increased student satisfaction in course availability, modes of delivery, and advising compared to historical trends
- Reduced student to faculty ratio allowing more interaction between tenured/tenure-track faculty and undergraduate students
- Increased faculty satisfaction in undergraduate teaching and curricula

- Final outcome measure: Increased year to year retention
- Final outcome measure: Average time to graduation decreased

Metrics

- Student feedback through IDEA and exit surveys
- Faculty and administrative staff feedback
- Student to staff ratio
- Teaching support funding

COE Strategic Initiative III: Promoting Access and Affordability

Incoming students entering the COE have varied backgrounds and different levels of academic preparation and financial means. It is imperative that ALL students are given a chance to maximize their potential to succeed in engineering. This strategy will involve supplemental instruction, and frequent evaluations of students' capabilities, progress and degree path.

Goal 1

Create an academic structure that maximizes the potential for success for each incoming student

Action Items

- Establish a pre-engineering program to assist those students not fully prepared for engineering curriculum
- Establish special math courses to enable students to tackle engineering courses earlier in their curriculum
- Provide special tutoring for those in need
- Increase number and amount of financial support packages

Barriers and Recommendations associated with Strategic Initiative III, Goal 1

Barrier: Student who lack math skills

Recommendations:

- Implement Pre-engineering major
- Implement Just in Time Math
- Implement Jump Start
- Expand opportunities for tutoring and Supplemental Instruction
- Encourage early enrollment in developmental courses

Barrier: Students with misplaced priorities, such as off campus work, and who lack college success strategies

Recommendations:

- Ensure students understand the Pre-engineering major requirements upon admission and during initial advising experience at orientation. Students should be individually advised about their status in the COE.
- Create and maintain high quality Residential Learning Communities
- Enhance and expand the traditional Learning Communities
- Provide dedicated space in either the BSE or EB for tutoring and seminar classes
- Make more grants and scholarships available to students

- Raise pay rates for work-study positions
- Continue to expand research opportunities for undergraduate students

Barrier: Unmet program requirements

Recommendations:

- Offer required courses more frequently
- Offer more summer and evening courses
- Explore the use of more online and hybrid courses

Barrier: Issues related to faculty and faculty advising

Recommendations:

- Provide enhanced professional development for all faculty
- Provide incentives for participation in pedagogical training

Barrier: Lack of communication and philosophical differences between the Colleges' Freshman Advising Center and the COE

Recommendations:

- Conduct regular meetings between faculty, administrators, COE Advising Center and CFAC Staff
- Enhance and expand training for COE freshman advisors
- Ensure that students are notified of Pre-engineering major privately and humanely

Anticipated Outcomes

- Increase total number of students served as a result of expanded course availability
- Part-time and evening students will be have access to required courses in a more timely manner
- Increased student satisfaction in the registration process and advising within the CFAC and COE
- Increased interaction between tenured/tenure-track faculty and undergraduate, especially lower-division students
- Increased financial support for students decreasing the need for off campus work
- Final outcome measure: Increased year to year retention
- Final outcome measure: Average time to graduation decreased

Metrics

- Growth in enrollment
- Retention rate
- Number of student scholarships

Goal 2

Enhance student success through supplemental education, advisement and mentoring
See Strategic Initiative I, Goal 2.

COE Key Indicators:

The following metrics will serve as indicators of COE's overall progress in achieving the COE vision and meeting strategic goals. Particularly for Strategic Initiatives I and III, improvement in retention and graduation rates will be a key indicator of success. Each indicator will have associated targets and will be benchmarked against past performance as well as peer institution performance as applicable.

Strategic Initiative I: Enriching Educational Experiences to Enable Student Success

- Graduation rates
- Retention rates
- Average time to graduation

Strategic Initiative II: Serving Society through Creativity, Expanded Research, and Innovations

- Number of publications/grants
- Research expenditures
- Number of patents and licenses
- Number of graduate students and graduate programs

Strategic Initiative III: Ensuring Access and Affordability

- Student enrollment
- Student retention
- Graduation rates (6 years)
- Number of supplemental education programs

Strategic Initiative IV: Serving the Public through Community Engagement

- Number of collaborations with high schools, universities (US and international), research labs/institutes and corporations
- Number of continuing education programs

Strategic Initiative V: Expanding Research and Infrastructure

- Number of core facilities
- Number of successful research centers/institutes

- Staff to student ratio
- Square foot of research space available

Environment for Change:

“We have to improve graduation rates.” Everyone in higher education has heard this repeatedly. We know the rates are important, that they affect the prestige of the university and the public perception of our performance as an institution. We know the benefits our students receive from achieving a baccalaureate degree include such things as an improved quality of life, greater earnings potential, and better health. We may not, however, have considered the current political forces that drive the need for improving graduation rates. In Texas, the impetus is economic necessity.

Texas needs skilled, well-educated citizens to sustain itself economically. If we cannot produce more college graduates, the poverty rate will increase and average household income will drop. This cycle places an increasing burden on public support services, while at the same time reducing the tax base used to support such services (Murdock, 2002).

In 2000, the Texas Higher Education Coordinating Board (THECB) launched *Closing the Gaps: The Texas Higher Education Plan* aimed at closing educational gaps within Texas, as well as between Texas and other states. The plan outlined four primary goals: participation, success, excellence, and research. All institutions of higher education in Texas were required to set targets for these goals and report annually on their progress. Further, the THECB recommended that the state, “fund colleges and universities to reward increases in retention and graduation while sustaining quality programs” (THECB, 2000).

Recognizing the importance of improving graduation rates, several recent legislative acts and executive orders have established higher education reporting and performance expectations. In 2003, the legislature passed HB 3015, essentially deregulating tuition for state institutions of higher education. In addition to allowing institutions to set their own tuition amounts, they were charged with improving their graduation rates and other measures of performance (HB 3015, 2003).

The following year, Governor Rick Perry reinforced the focus on graduation rates by issuing an executive order requiring comprehensive accountability reporting for public institutions of higher education. The order links this accountability, which includes graduation and persistence rates, to state funding, stating that “systems and institutions of higher education must be able to clearly define the need for additional state-funding in a manner which will justify the public’s continued investment of resources” (Executive Order No. RP31, 2004).

These governmental efforts put pressure on universities to improve graduation rates with the clear implication that not doing so could result in reductions of state funding. Related legislative efforts have applied pressure to students as well. Two recent bills have focused on timely graduation. In addition to its requirements for increased academic counseling, implementing online

degree progress systems, and changes to TEXAS grant program funding, HB 1172, effective in 2005, places a cap on the number of courses a student can take in excess of those required to attain a degree. At 30-credit hours beyond that required for the student's degree, state funding for classes cease (HB 1172, 2005). At UTSA, the net result is that students wind up having to pay an additional \$121 per semester credit hour for every class taken beyond the 30-credit hour cap. In a related effort to encourage timely graduation, SB 1231 limits to six the number of courses a student may drop during the student's entire undergraduate higher education career (SB 1231, 2007).

Each of these changes in the laws governing higher education places additional reporting requirements on universities. As a result, documentation of compliance with the laws comprise required sections in such documents as, *The University of Texas System Graduation Rates Initiative Progress Report*, *University of Texas System Board of Regents Accountability and Performance Report*, university compacts with the UT System, and institutional strategic plans. It is within this environment of increased governmental scrutiny of graduation rates that we find ourselves. The action items in this plan are aimed at overcoming barriers to graduation and in helping students reach their goal of an undergraduate degree.

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