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COLLEGE OF SCIENCES

STRATEGIC PLAN 2007-2016

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1. Introduction:

The College of Sciences (COS) is composed of six departments: biology, chemistry, computer science, geological sciences, mathematics, and physics and astronomy. The College was established in 2000 when the College of Sciences and Engineering was split into two separate colleges. The COS has 132 tenured and tenure-track and 97 full or part-time non-tenure track faculty members. In addition to the students majoring in a particular discipline within the COS, the College provides instruction to a large number of students in the first year sequences and upper division support courses for academic disciplines outside of the COS. For example, the combined enrollment in the first-year chemistry lecture course was over 2400 in Fall 2007.

The education of future scientists and the growth of a scientifically literate populace are of ultimate importance to society. Student achievement is a central goal of the College and all educational programs aim to maximize student learning and success. The College has also been commended for its efforts in the education of Hispanics, with both biology and mathematics ranking second out of all US colleges and universities in the number of undergraduate degrees awarded to Hispanics (2007 report of Hispanic Outlook in Higher Education).

Graduate education and nationally and internationally-recognized research programs are important aspects of the COS. The first graduate program in the College was an M.S. degree program in biology that was initiated in 1973. This was followed quickly by M.S. degree programs in geology, computer science, mathematics, chemistry, and environmental sciences, with physics being the most recent addition. Currently, there are five Ph.D. programs in the College, with the first being that of biology with an emphasis in neurobiology in 1992. Subsequently, Ph.D. programs in computer sciences, biology (emphasis in cell and molecular biology), chemistry and physics were established as part of the increased emphasis on research at UTSA. A Ph.D. program in environmental science and engineering rotates between the COS and the College of Engineering every three years. The COS has been quite successful at procuring external funding for research: In 2006 it stood at 19 million dollars, a full 75% of the University's total.)

The continued growth and increased effectiveness of both the educational and research components of the COS is vital to the overall development of UTSA and indeed indispensable if UTSA is to achieve the goal of a Tier 1 research institution.

2. College of Sciences Mission, Vision and Core Values:

The **College of Sciences'** mission, vision, and core values statements reflect the purpose of our College (Mission), what we aspire to be (Vision), and the guiding principles that we will use to reach our goals (Core Values).

Mission Statement

The College of Sciences aims to:

- Advance scientific literacy through excellence in education and community outreach.
- Conduct cutting-edge research to expand the frontiers of science and mathematics.
- Establish broad partnerships to enhance scientific competence at all levels.
- Provide leadership in the education of underrepresented and disadvantaged groups.

Vision Statement

The College of Sciences envisions itself a leading institution of higher learning in sciences and mathematics, with local and global impact.

Core Values

- Integrity
- Intellectual Freedom
- Commitment to the Public Good
- Collegiality
- Inclusiveness
- Scientific Method

3. College of Sciences Strategic Advantages:

- Significant external funding and research accomplishments
- Collaborations in the biomedical and other scientific arenas
- Strong regional research development and collaborations at the national and international level
- Leader in the education of a diverse student body
- Leader in community education and community outreach
- Scientific breadth of faculty that are highly committed to teaching and research

4. College of Sciences Strategic Challenges:

- Increase efficiency for utilization of facilities
- Increase efficiency of processes and procedures
- Increase interaction with other colleges
- Increase the number of tenure-track faculty
- Increase facilities for research and teaching
- Increase resources for teaching, staff, advising and infrastructure

- Improve faculty to student ratio
- Increase graduation rates and work with the community on student preparedness for students entering college

5. Strategic Initiatives, Goals, Action Items and Metrics

To realize its vision and fulfill its mission, the **College of Sciences** is committed to pursuing **5** strategic initiatives, encompassing more than **20** goals. Our initiatives reflect support for UTSA's strategic plan as well as the three foundational themes and five areas for collaborative excellence described in the matrix found in Appendix II.

College of Sciences Strategic Initiative I: Enriching Educational Experiences to Enable Student Success

Goal 1: Enhance undergraduate programs to produce quality graduates in a timely manner.

Action Items:

- Perform periodic critical review of all courses and degree programs
- Offer courses in a predictable way to allow students to complete their degrees in a timely manner
- Decrease student to faculty ratios to enhance student learning
- Increase the number of courses offered during the summer
- Expand supplemental instruction programs and develop recitation courses for large class sizes that will enable students to meet in smaller groups
- Require all UTSA students to take a laboratory-based course for a degree, regardless of major, to introduce every student to evidence-based learning

Metrics:

- The number of course and curriculum assessments performed by active Curriculum Committees
- The number of courses and programs developed and offered
- Student to faculty ratios in the classroom and teaching laboratories
- The number of courses offered during the summer
- The number of students on academic probation at the end of their first semester
- Fraction of students taking laboratory courses

Goal 2: Enhance graduate studies in the College to ensure student success.

Action Items:

- Increase the number of incoming domestic graduate students who are supported by training grants, fellowships, and research assistantships
- Increase recognition of graduate students through awards (e.g., Best Thesis Award) and travel/research grants
- Foster a greater intellectual community that includes graduate students

- Create opportunities for students to find sources of funding through fellowships and scholarships

Metrics:

- The number of graduate students engaged in research
- The number of publications by graduate students
- The number of new awards and dollars provided annually for travel and research to graduate students
- The number of graduate seminars with active faculty participation
- The number of graduate students receiving fellowships and scholarships

Goal 3: Enhance the overall teaching effectiveness of faculty to promote student success.

Action Items:

- Develop a teaching tenure track to increase the number of courses offered and a concomitant decrease in class size
- Create a teaching academy to support critical assessments of teaching and learning
- Provide training and development for non-tenure track (NTT) faculty and graduate teaching assistants (TA)
- Establish departmental mentoring programs for new tenured track faculty and provide additional tenure and tenure track (T/TT) faculty lines in areas in need of improved instructional focus
- Provide support for faculty for professional development, in particular in the formulation of new strategies and technologies for the classroom
- Provide a College Faculty Award for faculty who exemplify excellence in research and teaching

Metrics:

- The number of course offerings and students in each course
- The quality of assessments by the teaching academy
- The number of training courses for new NTT faculty and TAs
- The number of mentoring programs for T/TT faculty
- The number of Web-based courses
- The number of course innovations that involve the use of computer technology

Goal 4: Improve student advising and mentoring by faculty.

Action Items:

- Support advising centers to ensure that every student, including freshman prospective COS majors, receives individualized and well-informed attention
- Increase the number of student advisors
- Continue the learning communities program and expand the freshman seminar and freshman initiative programs

- Enhance tutoring services available for students

Metrics:

- The number of meetings between departmental/program faculty and the Tomás Rivera Center and College of Sciences Advising Center
- Student to advisors ratio
- The number of faculty who mentor undergraduate students
- The number of learning communities and freshman programs
- The number and quality of tutoring services available

Goal 5: Enhance college life activities for students to ensure a well-rounded education.

Action Items:

- Integrate the various student organizations within the COS
- Increase faculty involvement in the student organizations
- Facilitate communication between students and the healthcare communities in San Antonio and its vicinities

Metrics:

- The number of joint organization meetings
- The number of faculty involved in student organization meetings
- The number of opportunities available for students in the healthcare communities

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

Goal 1. Attract top quality research-oriented students.

Action Items:

- Provide an enriching environment for research to students at all levels
- Increase the number and amount of scholarships available for students conducting research under faculty supervision
- Establish outreach programs to identify and encourage research-oriented students, including minority and female students
- Increase support for Ph.D. students through institutional funds or fellowship support
- Increase the number of graduate programs available

Metrics:

- The number of publications with Ph.D. students as co-authors
- The number of Ph.D. degrees awarded
- The number of Ph.D. students that are minority and/or female
- The number of Ph.D. students with 1 full year of support

- The number of newly established graduate programs

Goal 2. Recruit and retain highly visible and productive faculty.

Action Items:

- Recruit and retain high potential junior faculty and senior faculty with leadership abilities
- Increase the number of endowed faculty positions
- Provide highly competitive start-up packages for new faculty
- Proactively address the salary compression issue to retain successful faculty

Metrics:

- The number of faculty who are fellows of their respective professional societies
- The aggregate rate of publications in top-tier journals and peer-reviewed top-tier conferences
- The number of faculty serving on grant review panels and on editorial boards of journals
- The number and effectiveness of start-up packages offered to new faculty
- The number of research intensive faculty retained

Goal 3. Increase the level of research support to faculty.

Action Items:

- Recruit motivated staff with experience in proposal preparation and administration of sponsored research projects
- Increase staff interest in the mission and vision of the COS through “brown bag lunch” program
- Increase funding to support research
- Mentor, train and support junior faculty in writing grant proposals and managing funded projects
- Increase infrastructure support for research
- Increase interdisciplinary research

Metrics:

- The number of proposals benefited by the sponsored research support staff
- The number of staff attending “brown bag lunch” program
- The number and amount of research grants and contracts submitted and funded
- The number of support staff, amount of research space, and number of research facilities
- The number of joint grant submissions between departments

Goal 4. Increase research collaborations within and beyond the campus.

Action Items:

- Collaborate with well-known researchers to establish areas of excellence
- Provide seminars and colloquia with high-profile researchers
- Strengthen laboratory infrastructure in targeted areas so that faculty are better positioned to collaborate with other faculty at Tier 1 research universities
- Promote collaborative excellence in various disciplines

Metrics:

- The number of collaborative publications
- The amount of extramural funding supporting the collaborations
- The number of large multi-university and multi-institutional grants

Goal 5. Increase development, protection and commercialization of intellectual property generated by faculty and students.

Action Items:

- Train and encourage faculty to seek commercialization of their work
- Give weight to relevant patents when evaluating faculty performance
- Promote technology licenses and spin-off companies
- Provide seed funds for novel exploratory research projects
- Assist in SBIR and STTR applications from faculty

Metrics:

- The number of patents generated
- The number of technologies licensed
- The number of start-up companies based on the COS intellectual property
- The number of SBIR and STTR applications awarded

College of Sciences Strategic Initiative III: Promoting Access and Affordability

Goal 1. Provide high standards of educational opportunities to all students through active recruitment.

Action Items:

- Establish a rigorous recruitment program, especially at the Ph.D. level, and eventually extending to undergraduate levels, with proactive faculty involvement
- Provide a strong staff support for recruitment activities, including outreach to community colleges, sponsored visits by prospective students to the College, and scholarship awards
- Increase diversity of student body

Metrics:

- Quality of student admissions
- GRE Scores

- GPA
- DFW rate in basic science and mathematic classes
- The number of students with diverse backgrounds

Goal 2. Encourage associations with K-12 schools, community colleges, and the local community that promote an environment of research, teaching and service.

Action Items:

- Continue and enhance outreach efforts to schools
- Provide sponsorship of Science Fairs for interaction with K-12 students and teachers

Metrics:

- The number of institutions and organizations with ties to the College
- Feedback from partners on the quality of interaction

Goal 3. Promote programs that assist all students, especially women and underrepresented minority students, in receiving a quality education filled with opportunities for learning and research.

Action Items:

- Increase donated funds/endowments for scholarships
- Recruit applicants for scholarships
- Continue to support federal program grants that fund education and research for women and underrepresented minorities in science

Metrics:

- The amount of donated funds/endowments
- The number of applicants for scholarships
- The number of minority program grants funded

College of Sciences Strategic Initiative IV: Serving the Public through Community Engagement

Goal 1. Promote interactions with K-12 schools and community colleges to provide a pipeline of mathematics and science students.

Action Items:

- Increase interactions with local schools, including both K-12 and community colleges
- Increase the number of faculty participating in outreach programs by rewarding them
- Increase funding through grants to support outreach programs
- Increase the number as well as competence of K-12 science and mathematics teachers participating in summer programs

Metrics:

- The number of major meetings a year of K-12 science teachers and community college science teachers at UTSA
- The number of faculty participating in outreach programs
- The funding of outreach grants
- The number of future science and mathematics teachers attending summer programs

Goal 2. Provide students with opportunities to explore careers in industry within the scientific community.

Action Items:

- Establish annual conference of science intensive companies
- Establish internship programs for undergraduate and Master's students with local science and technology firms

Metrics:

- The number of attendees and companies represented at the annual conference
- The number of students participating in internships

Goal 3. Increase visibility of UTSA in the local scientific community and general public by demonstrating how the college responds to community needs.

Action Items:

- Advertise in newspapers and on billboards
- Work with local newspapers and other media to generate more news items
- Establish a local radio show highlighting UTSA's accomplishments
- Highlight community service provided by the COS faculty
- Increase visibility of UTSA at the annual State Science Fair and other science and mathematics competitions

Metrics:

- The number of news items about UTSA's science and mathematics accomplishments
- The amount of public awareness of UTSA as measured by local polls
- The number of applications from Science Fair participants

Goal 4: Enhance the local community's role in global issues by serving as a place of interaction with the rest of the World.

Action Items:

- Form partnerships with foreign universities
- Establish faculty and student exchange programs
- Promote international collaborations

Metrics:

- The number of partnerships
- The number of students and faculty participating in exchange programs
- The number of international collaborations

College of Sciences Strategic Initiative V: Expanding Resources and Infrastructure

Goal 1: Develop efficient interactions between faculty and administrators within the COS.

Action Items:

- Automate or semi-automate all administrative processes where possible
- Provide efficient streamlining of administrative tasks to faculty through smart process design
- Increase open communication between faculty and the COS administrators
- Facilitate the ability of faculty to pursue external funding
- Maximize the effectiveness of faculty involvement in administrative meetings

Metrics:

- Happiness of faculty with administrative processes as measured by surveys
- The number of person-hours spent on administrative tasks
- The number of research grants submitted by faculty
- The number of person-hours spent in committee meetings

Goal 2: Increase information technology support to facilitate faculty research and teaching.

Action Items:

- Provide software support for all operating systems
- Provide enhanced website support
- Consolidate software licensing into College-wide or University-wide site licenses

Metrics:

- The number of machines supported by faculty versus system administrators
- The number of students recruited via website information
- The number of external references and hits on the COS and Departmental websites
- The cost of software licenses versus time

Goal 3: Increase non-traditional classrooms and reorganize classroom and teaching laboratory space.

Action Items:

- Work with classroom scheduling personnel to incorporate more space into classroom availability
- Restructure laboratories in order to maximize current space
- Redistribute laboratory space to accommodate more laboratory courses
-

Metrics:

- Increased space utilization and greater class offering with current resources
- The number of laboratory courses offered during a semester
- The number of students taking laboratory courses within 4 years

Goal 4: Promote easier access to resources for faculty and students.**Action Items:**

- Generate a College-wide database of equipment
- Develop a clear, efficient system to request access to equipment and laboratory instruments in different departments

Metrics:

- The number of laboratory instruments used outside of resident departments
- The percent utilization of major equipment

6. College of Sciences Key Indicators:

The following metrics will serve as indicators of the **College of Sciences'** overall progress in achieving its vision and meeting its strategic goals. Each indicator will have associated targets and will be benchmarked against past performance, as well as peer institution performance as applicable.

College of Sciences Strategic Initiative I: Enriching Educational Experiences to Enable Student Success

- Graduation rates
- The number of research publications co-authored by students
- The number of students attending graduate and professional schools and having successful careers enriching our community

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

- The number of collaborations
- The number of publications in high profile journals

College of Sciences Strategic Initiative III: Ensuring Access and Affordability

- The number of student scholarships
- The number of student internships
- The number of students supported on research grants

College of Sciences Strategic Initiative IV: Serving the Public through Community Engagement

- The number of collaborations with community colleges
- The number of symposia, lecture series, science fairs, and other venues available to the community

College of Sciences Strategic Initiative V: Expanding Resources and Infrastructure

- The amount of teaching laboratory space
- The amount of research funding
- The amount of research laboratory space

7. Call to Action and Accountability

Accountability:

In order for the plan to work, the **College of Sciences** must ensure that an effective system involving both communication and assessment is established and maintained.

Communication:

The **College of Sciences** must develop a communication system to inform our personnel of our fidelity to our mission and progress toward its initiatives, goals and action items. Routine reporting of metrics on our goals will be a standard part of our meeting schedules. Every month there will be a report on one of the initiatives. The report will include progress (metric review) and issues. Twice a year, progress on all initiatives will be incorporated into a report reviewed by the CMO, Team 2016 and the Executive Leadership Council. UTSA's President will present an annual public "State of UTSA" address that reflects overall progress toward University initiatives and goals to which the **College of Sciences** contributes.

As a result of our internal system and the public Website, the university community will be able to assess our progress, and senior leaders will have regular opportunities to discuss and adjust our initiatives as needed.

Marketing UTSA:

The **College of Sciences** will contribute information to the CMO and Team 2016 to help UTSA tell its story and share our 2016 Vision, both of which are essential to attract top students, faculty, research sponsors, and resource contributors, and to gain optimal buy-in from all UTSA's community and state stakeholders. Stories demonstrating UTSA's values-in-action work to positively reinforce integrity, excellence, inclusiveness, respect, collaboration, and innovation. The UTSA image, branding, reputation, and prestige will reflect all the inspirational goals outlined in this plan and inform key audiences about progress, constantly recognizing and celebrating accomplishments along this journey

Assessment:

The **College of Sciences** will develop an assessment system to determine our fidelity to our announced mission and progress toward our vision. Progress will be tracked toward the stated Key Indicators that are critical to the success of our Strategic Plan. Progress will be tracked for 3, 6, and 10 years.

There will be clear lines of responsibility for managing and reporting the components of our Strategic Plan, to include collecting metric data, reporting progress, and resolving issues.

8. Appendices:

- I. **College of Sciences** Strategic Planning Process
- II. **College of Sciences** Matrix of University Foundational Themes and Areas of Excellence

APPENDIX I:
College of Sciences STRATEGIC PLANNING PROCESS

An initial Strategic Planning Committee was formed in December 2006, and then Department Chairs, Associate Deans, Faculty, and the Director of Advancement joined the committee to form the Executive Strategic Planning Committee for the College of Sciences (COS). This committee served to develop the COS mission, vision, core values, strategic advantages, and strategic challenges. At the COS faculty retreat in May 2007, sub-committees were formed to address the five initiatives of the strategic plan. Faculty volunteered to serve on different sub-committees to develop the goals, action statements, and metrics for each initiative. These sub-committees met periodically for several months and submitted their initiative plans to the Executive Committee for revision and subsequent approval in December.

APPENDIX II.
College of Sciences MATRIX OF FOUNDATIONAL THEMES AND
AREAS OF EXCELLENCE

The University Foundational Themes and Areas of Collaborative Excellence

	Foundational Themes			Areas of Collaborative Excellence				
	Globalization	Diversity	Transformative Leadership	Health	Security	Energy & Environment	Human Development	Sustainability
College of Sciences	Partnerships with Latin American universities and institutes to develop joint research and educational programs	Graduate and undergraduate programs that are at minimum among the top 10 of all programs for Hispanics in the U.S.	Leadership in scientific education; Increasing Scientific literacy for Hispanics; Undergraduate leadership in scientific research with understanding the importance of science in solving the major problems facing the world; Providing training for scientific leaders based on collaborations with future employers	Infectious disease, neurobiology of aging and disease, computational sciences, stem cell research, medicinal chemistry, nanomedicine	Information and biological agent assurance; Global positioning	Water resources, nanosciences; Bioremediation, sensors and monitoring; Green chemistry; Space physics	Science, Technology, Engineering and Mathematics (STEM) Center; Mathematics education; Leadership in science education of Hispanics	STEM Center; Ecological preservation