

College of Science Diversity Report – Sept 2010

The mission of the College of Science at Texas A&M is to 1) push back the frontiers of knowledge in our disciplines and in multiple disciplines across campus 2) to provide an extraordinary education to virtually every Texas Aggie (including our own undergraduate and graduate majors), and 3) use our expertise to engage the world at large, particularly in the public’s knowledge of science.

Diversity and equal access to opportunities is inherently woven into the fabric of everything we do in the College of Science. While much attention is often focused on the current numbers of students and faculty, we believe that in order to educate a diverse scientific workforce we need to think strategically, from our outreach efforts, through our undergraduate and graduate students, to our faculty. Our staff is also vitally important to achieving our mission.

Data on student enrollment, faculty and staff were extracted from the AAUDE database for the Vision 2020 Peer Institutions (V2P). Data on degrees completed were extracted from the IPEDS database. Data on all of these populations were requested directly from the V2P, with varying levels of success. Comparison of these various mechanisms for getting “peer” data allows a measure of the precision with which we can put the Texas A&M data in context. The raw data is in the spreadsheet. Here I will highlight some of the data and its meaning.

Faculty:

T/TT Faculty 2009	Dist. Prof.	Prof.	Assoc. Prof.	Asst. Prof.	Total
T/TT Faculty	23	149	59	49	280
Female	3	13	9	12	37
Black/Hispanic	0	6	1	5	12

Table 1 represents the presence data for the tenured and tenure-track faculty in the College of Science for 2009. While the College of Science has a number of very valuable, long term non-tenure-track faculty, the comparison of the number and diversity of these individuals to our peers is complicated by the lack of uniformity of these job titles and responsibilities, as well as the longevity of individuals in these positions, across various institutions. Therefore the concentration in the following discussion on T/TT faculty is not out of a lack of respect for the important role they play in our college, but just the practicality of comparison. Texas A&M had 13% female representation in the tenured/tenure-track ranks. Black and Hispanic faculty are less well represented at 4.3%.

In order to compare to our peer institutions, we looked at the data available from two data sources: V2P self reporting and the AAUDE data warehouse (AAUDE). Only 5 of the V2P provided us with the requested data. Therefore, we retrieved data from AAUDE.

Georgia did not provide faculty data to the AAUDE, but the other V2P are present in this data. In order to extract data from AAUDE we needed to match CIP codes. However, biology, broadly defined, is taught across many colleges here at TAMU. Hence, for biology we used more specific CIP codes that best matched the parts of biology that are in the College of Science. This results in a filter of the data that does not exactly match our college, but approximates it. In order to see the effect of this filter, we applied the same mechanism to extract Texas A&M data from AAUDE. This comparison is presented in table 2. What is presented for institutional data for Texas A&M in table 2 is a fall 2009 snapshot rather than the annualized data presented in figure 1, as this is most likely what the other institutions provided us.

	AAUDE				Institutional Data			
	Texas A&M		Vision 2020 (16)		Texas A&M		Vision 2020 (5)	
Total	250		2964		275		1,548	
By Gender:								
Men	215	86.0%	2504	84.5%	237	86.2%	1,297	83.8%
Women	35	14.0%	460	15.5%	36	13.1%	249	16.1%
Unknown					2	0.7%	2	0.1%
By Race:								
American Indian or Alaska Native	0	0.0%	1	0.0%	1	0.4%	9	0.6%
Asian/Native Hawaiian/Other Pacific Islander	8	3.2%	405	13.7%	33	12.0%	211	13.6%
Black or African American/Black non-Hispanic	2	0.8%	31	1.0%	2	0.7%	13	0.8%
Hispanic or Latino	6	2.4%	74	2.5%	10	3.6%	40	2.6%
White/White non-Hispanic	147	58.8%	2246	75.8%	209	76.0%	946	61.1%
Two or more races	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Race/ethnicity unknown	59	23.6%	87	2.9%	20	7.3%	90	5.8%
Nonresident alien	28	11.2%	120	4.0%	0	0.0%	4	0.3%

As can be seen from the above data, Texas A&M College of Science compares well with our peers in terms of Black and Hispanic faculty representation, but we are a little behind in terms of women. The other notable item is the small numbers of Black, Hispanic and

Native American faculty among all the peers. There is room for improvement at Texas A&M, but also among our peers. In a testament to our ability to recognize excellence in all faculty, regardless of identity, one of our minority faculty was recently promoted to Distinguished Professor, significantly enhancing the ethnic diversity of that prestigious group. Additionally, the percentage of women faculty from the College of Science who have been named Distinguished Professor is greater than the percentage of female Distinguished Professors from across campus.

As can be seen from the data on graduate students presented below, the availability of possible applicants for faculty positions from women or underrepresented minority groups is small. This is compounded by the fact that in the sciences individuals rarely go directly from a PhD into faculty positions, often spending multiple years in a postdoc or visiting position. This additional step in the academic pipeline is another place to lose women and members of underrepresented groups. However, we strive hard to ensure that each search committee seeks out and encourages a broad group of individuals to apply for positions in the College. The current model – which has been in place for 5 years – puts some check points in place to make sure efforts are being made to enhance the diversity of the faculty. The advertisements must be approved in advance to make sure they are inclusive. Whenever possible, we encourage departments to search broadly in scientific area. Before individuals are invited to interview, the short list is reviewed by the college. If there are no women or members of underrepresented groups on the short list, the search committee must justify why none of those that are in the pool are on the short list.

As a measure of what we are doing to help stop the leaks between attaining a PhD and a faculty position, the Department of Mathematics hired 2 Hispanic and 4 female Visiting Assistant Professors out of 19 in the last three years. This is important in keeping these people in the pipeline for faculty positions. During this same three-year period 9 women were included on shortlists for a tenure-track position. Three of them were invited to campus and two were made offers. Unfortunately, none decided to come to TAMU. Improving our ability to “close the deal” is clearly one of our goals.

In 2007/8 and 2008/9 physics was able to hire 2 Hispanic scientists and 1 female scientist into tenure-track positions. This brings physics to 5 TT women up from 1 only 5 years ago. It is important to note that EVERY one of these four recent hires has been part of a dual career opportunity. During the past 6 years when we were hiring multiple faculty in each department every year, every department in the college was able to attract top female faculty because we were able to capitalize on dual career opportunities with two TT positions. (Nine women were attracted into TT faculty positions whose partner was also hired into a TT faculty position in the college.) The ability to continue to attract women into faculty positions will be hindered if we do not have enough faculty lines to make dual hires. Additionally we have been able to attract some TT faculty by making dual career hires with non-tenure track positions (within departments, across departments and in partnership with other colleges). With the elimination of many NTT positions in

the college due to the current budget situation this will also negatively affect our ability to hire top-notch faculty.

Also important to us is to have diversity in visitors to the college. The senior visitors we bring in as speakers or in other capacities are possible recruits for faculty positions, but also are role models for our existing students. We have collected data on the gender and ethnicity of senior visitors from our departments. One item to note is that 22% of senior visitors to the Chemistry Department were female. Additionally, over half of the senior visitors to the Cyclotron Institute were from foreign institutions. This international diversity is beneficial both for the science and the students. Unfortunately, of the 20 cyclotron visitors only one was female.

Students:

Undergraduate students

Of the 15 peers in our IPEDS comparison, 6 have a greater percentage of bachelors degrees awarded women. One school has essentially the same percentage of women as TAMU. Eight of the schools have a smaller percentage of women graduates.

Eleven of the schools have a white, non-Hispanic percentage of undergraduate degree recipients that is lower than TAMU. However, every one of these schools has a larger Asian percentage than TAMU. On closer inspection, TAMU is actually doing as well as the peers in Black and Hispanic degree completion. For Hispanic students TAMU (13.7%) is surpassed only by UT-Austin (15.6%). In fact 9 of the remaining schools have percentages that are lower than ours by more than a factor of three. In terms of Black degree completion there are only 4 schools that exceed our percentage (3.4%).

In terms of undergraduate enrollment we compared TAMU enrollment data to that which was available for some of our peers through AAUDE. This required that we compare 2007 numbers. We have more recent numbers for all of our departments except Biology that was extracted from IPEDS. Biology presents a particular challenge because IPEDS enrollment data is only done for a 2 digit CIP code. Since biology, broadly defined, is taught across many colleges here at TAMU, the two digit CIP code was inadequate to parse out only the parts of biology that correspond to our Biology Department. Of the schools that reported enrollment data, TAMU had a higher percentage of women undergraduates and Hispanic undergraduates than any of the peers. For Black undergraduates we were somewhere in the middle - higher than about half of the peers.

Graduate Students

PhDs:

According to IPEDS there were only 39 Hispanic PhDs awarded by all of the Vision 2020 peers in fields that are taught in the College of Science. We graduated 4 Hispanic students with PhDs (5%). Percentagewise this is only surpassed by Florida at 6.5%.

There were only 21 total PhDs awarded to Black students in all the Vision 2020 schools. Unfortunately in 2007 there were 0 from TAMU. This is clearly a place where the numbers are so small that multi-year data would really provide a better measure.

Masters:

Among Masters Degree completions TAMU had significantly more women than peers (57%), with only one exception - Penn State (59%). Three UC system schools (Berkeley /Davis /UCLA) surpass TAMU on Masters Degrees awarded to Hispanic students, but we are above the remaining peers. Georgia and Purdue award more Masters Degrees to Black students than TAMU, but again we are doing better than the remaining peers.

For graduate enrollment our percent of women was below Purdue and Wisconsin, but above the rest of the peers. The percentage of Hispanic graduate students was below UCLA, but above the rest of the peers. The percentage of Black graduate students was below Purdue but above the rest of the peers.

While presence data is one measure of equity, we were interested in whether the current students were being afforded similar opportunities regardless of their identity. For undergraduate students we sought data on involvement in undergraduate research, departmentally controlled awards and scholarships as well as course performance. For graduate students we examined graduate admission data, departmentally controlled fellowships and awards, opportunities to present their research and degree completion. Detailed data is available; however, here we report a summary.

One important aspect of the undergraduate experience in the College of Science is inquiry-based learning. For many of our students, the ultimate opportunity in this area is to be involved in the ground-breaking research being led by our faculty. Studies have shown that students who are involved in undergraduate research are more likely to go on to graduate school. If we wish to prepare a diverse scientific workforce, it is important that we make the undergraduate research experience widely available.

In Biology 60% of the undergraduate enrollment is female, while 54% of the undergrads involved in research were female. Asian students make up 13% of the undergrad enrollment, but account for nearly 25% of those involved in research. There are no real differences in other ethnic categories. It would be nice to increase the involvement in undergrad research of all students to the high level that is exhibited by the Asian students.

In Chemistry women represent 53% of the undergraduate enrollment; while 40% of undergraduates involved in research are women. Ethnic minority students in the undergrad chemistry population (Hispanic, Black and Asian students) represent 27% of the enrollment, and 18% of the undergrad researchers.

Mathematics reports that approximately 50% of the undergraduates involved in research are women.

While 15% of the 2007 undergrad enrollment in Physics was female, over 95% of the students involved in undergraduate research from 2007 to 2009 were male. This is clearly a place where there is room for improvement. In terms of minority participation in undergraduate research, the one notable data point is that Asian students participated at only 60% of the rate of students of other ethnic backgrounds.

Scholarships, Fellowships and awards are also important litmus tests of possible inequities in a department or college. One must use a little caution here in that some of these awards have particular constraints on them so that all students may not be eligible for every award. In terms of gender equity in Chemistry, the women represent 53% of the undergraduate population and are awarded 52% of the scholarships and 57% of the awards. Hispanic, Black and Asian students who represent 27% of the undergrad chemistry enrollment, receive 25 % of departmentally controlled awards and 14% of scholarships. In Mathematics women receive the majority of awards and scholarships. In the past three years 24 minority students have also been recognized. So this may be an area where we do further study.

We have extracted course success data for our majors in the classes they take in the college, broken down by gender and ethnicity. This data has not been correlated by student entrance data, so the preparedness of students for these courses may be different. However, there are no obvious red flags in performance by the different subgroups. However this is an area where we can continue to evaluate and monitor the situation.

In order to increase the diversity of the degree recipients we need to understand more about the numbers that make up that process, in terms of applications received, offers of admission and then actual enrollment. The graduate admission process is very much a departmentally-controlled process. Diversity data has not always been captured and tracked prior to enrollment. So this is a zeroth order look at these data.

In 2007-8 17% of the graduate student applicant pool in Physics was female. This resulted in 17% of the admits and 14% of the entering class. The percent of the pool has steadily increased over the past few years to 31% in 09/10. The percent admits has increased as has the percent enrolled, but not as rapidly as the pool. We hope that we will be able to sustain the high level of interest by female students and translate this into greater enrollments. This will be constrained in the current budget situation. In 2007 there were offers made to 2 Hispanic students and 1 entered the program. In both 2008 and 2009 there were offers made to 6 Hispanic students and each year 4 of the 6 enrolled.

In Biology the applicant pool contained more females than males; however, the entering class has more male students. There were more departmentally controlled awards made to women than men. The percentage of Hispanic graduate students is larger in the entering class than in the applicant pool. One must, however, be careful because of the small numbers of students and the lack of a correlation with the quality of the applicants.

A significant number of graduate fellowships in mathematics have been awarded to both women and minority students over the past three years.

Mathematics Grad Fellowships 2007-10	2007-08: 18 Male, 16 female; 1Hisp
	2008-09: 32 male, 15 female; 1 Bl, 1 Hisp
	2009-10: 22 male, 19 female; 1 Bl, 3 Hisp. 3 Asian

Conference presentations are an important professional development activity for graduate students. We are looking at trends in participating in conferences as a function of identity group in the departments throughout the college.

Staff:

The data on the gender and ethnicity of the staff in the College of Science can be compared to TAMU wide data and the peer university data that has been extracted from the AAUDE data warehouse. However, the AAUDE data can only be captured university wide and not by college. While comparison of some staff positions against a university wide pool is relevant, some of the persons with specialized scientific or technical training have positions that probably do not exist throughout the university. In an attempt to see if opportunities were being made available to our staff, we asked the departments to collect data on professional development opportunities. Additionally, we investigated the longevity of the staff. Detailed data is available; a summary is presented.

The average longevity of staff in terms of total state service for staff currently employed in the College of Science is 12.6 years. While I do not have a comparison for the other colleges or the whole university, I do believe that this number speaks well for the climate in the College of Science. We could not possibly attract and keep staff working in the College if our climate was not supportive. While some of our staff have very specialized training, many of our staff have significant opportunities to move to other units in the University, but choose to stay in the College.

We have polled each of our departments about the professional development opportunities that staff have taken advantage of. The ability of a staff member to have career advancement is enhanced by professional development. There is significant participation by our staff in professional development. This investment in the staff represented by the commitment of time on the part of our departments, and the supportiveness of managers, is likely one of the reasons why we have a good climate and low turnover of staff. This is the first time we have collected this data and we will look further as to correlations.

Outreach:

The College of Science plays an important role in not only educating current Aggies, but also in fostering the scientific curiosity of future Aggies and the population at large. We engage in a multi-prong approach to this tremendous challenge, including outreach to K-

12 students and the public, teacher preparation and training, as well as activities aimed at current undergraduates to encourage them to continue their studies in science beyond the Bachelors degree. Many of these activities reach out to diverse audiences. These activities are based both in our departments and in the college.

Administered by the College of Science Dean's Office

- Women in Science and Engineering
 - Susan M. Arseven 'Make A Difference' Memorial Award
 - Ethel Ashworth-Tsutsui Memorial Lecture & Awards
 - Women in Science and Engineering Annual Conference
- Expanding Your Horizons
- Texas A&M Junior Science Bowl
- Texas A&M Regional Science Bowl
- Texas Junior Academy of Science
- Texas Junior Science & Humanities Symposium
- Texas Science Olympiad
- SSTEM grant – 2+2 with Palo Alto Junior College
- Summer Scholars – Research Experience for Undergraduates supplement program
- Advanced Placement Institutes in Biology, Chemistry, Mathematics, Physics and Statistics

Administered by Departments

- Chemistry Open House & Science Exploration Gallery
- Physics Extravaganza
- Saturday Morning Physics
- Chemistry Road show
- Physics shows (performed throughout the state of Texas for diverse groups including Society for Hispanic Professional Engineers, “Kids to College” program, South Texas Parents organization, Mexican American Engineers and Scientists as well as many others.)
- Research Experiences for Undergraduates Programs (Chemistry, Cyclotron, Math – all target minority students)
- High school math contest
- Science Café
- GK12 program
- Mini math fair
- Integral bee
- Physics camp for the Youth Adventure Program
- Summer Mathematics Research Training High School Camp
- Mentoring through Critical Transition Points program (for high school and first year college students)

- Summer Educational Enrichment in Math (for middle school students)
- Math Awareness Month (for K-12)
- Monthly Viewing Nights at the Physics Observatory
- Physics Exhibit in the Children Museum

Goals & Strategies:

Broadening participation is an important factor in faculty recruiting, the graduate program, and the undergraduate program. We seek to recruit and retain talented undergraduate and graduate students.

Overseen by the Department Heads in cooperation with the Faculty, there are individual plans for broadening participation throughout the College. In accordance with University policy, the College of Science is committed to equal opportunity. Above and beyond this assertion, the College makes every effort towards attractive and flexible practices that accommodate the needs of a diverse workforce.

Faculty recruiting: Faculty positions are announced nationally, and the departments seek to hire the best qualified applicants. In this process, we recognize the need for establishing diversity among our ranks. An important current focus is the number of female faculty members. We are constantly on the lookout for targets of opportunity, even if they are not part of a planned search.

Undergraduate program: We strive to attract and retain the best qualified students. While admission is administered by the University, our focus is in promoting retention of students from all population groups. To achieve this goal, we provide close individual contact with advisors, and have an all-inclusive open door policy. We also disburse scholarships to economically disadvantaged students who show academic excellence to encourage retention.

Graduate program: The goal is to admit students with the highest possible potential, and to encourage applications from schools serving underrepresented groups. We have developed strong ties to a number of minority serving institutions. Faculty regularly visit minority-serving institutions and attend national minority conferences (*e.g.* ABRCMS or Annual Biomedical Research Conference for Minority Students and SACNAS, a society that is dedicated to advancing Hispanics/Chicanos and Native Americans in Science). In addition, there are plans to establish a local NOBCCChE (National Organization of Black Chemists and Chemical Engineers) chapter. The college also partners with our Bridge to the Doctorate and LSAMP (Louis Stokes Alliance for Minority Participation) programs to help identify, recruit and retain outstanding students from underrepresented groups. Additionally, the office of the Dean of Graduate Studies at TAMU offers Diversity Fellowships to enhance our efforts in recruiting outstanding students from underrepresented groups.

Family related policies: The College strives to be a family friendly employer. In our faculty hiring, we accommodate partner placement issues whenever possible. Graduate students receive a paid leave period of six weeks after childbirth. Furthermore, the College is an active participant with the Dean of Faculties in developing family friendly programs, especially with respect to partner placement issues and broadening family related awareness.

Professional development: Employees are encouraged to attend training events. Our office and technical staff frequently make use of these opportunities.

Support Networks: Senior members of the College actively participate in mentoring in university- wide networks, e.g., the Women's Faculty Network. Within the College we have established the Success Circle program for mentoring junior faculty within our departments. Some departments have additional mentoring efforts.

The College has been a major player in the ADVANCE-IT proposal that we expect to be funded any day now.