A FRAMEWORK TO FOSTER DIVERSITY AT PENN STATE

THE COLLEGE OF EARTH AND MINERAL SCIENCES

1998 - 2003 Record of Progress

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Introduction

The disciplines within the College of Earth and Mineral Sciences are of compelling and enduring interest to society. It is difficult to imagine a future in which energy, resources, materials, and the environment will not be of critical importance. Clearly, if we are to serve these important societal needs, the College must be able to empower the next generation of scholars. To do so, we must reflect the diversity of our nation, and the College of Earth and Mineral Sciences must be committed to fostering diversity and equity.

The challenge is substantial given the notoriously low participation by women and by underrepresented groups in the disciplines within Earth and Mineral Sciences. For example, a recent survey of PhDs announced by the American Geophysical Union placed the broad arena of geosciences as dead last in the generation of minority-population degrees of all sciences. A search of the CIC database on degree awardees in Earth, Atmospheric and Marine Sciences yields not a single minority PhD for the year 2002/2003. According to a report released by the American Association of Engineering Societies, in the fall of 2002, less than 1.1% of all the undergraduate Mining Engineering students in the country were African American, 1.6 % of all Environmental Engineering students were African American, 2.1 % of all Petroleum and Natural Gas Engineering, 2.2% Metallurgy, 2.0% Ceramic Engineers. At the graduate level, there was not a single African-American. Although these statistics could provide an excuse for poor levels of accomplishment in the College of Earth and Mineral Sciences, instead they have been utilized as a renewed call for action. The College has moved to dramatically strengthen our efforts, based on a mid-term assessment of the College's progress in developing a framework to foster diversity that indicated minimal progress.

In 2002, the College created a Task Force on Diversity to provide a stronger action plan for the College. Early in 2003, the Task Force recommendations were utilized to revise the College's Strategic Plan. This revised Strategic Plan recognized the importance of this challenge by outlining the actions *To Develop a Diversity and a Climate that will Empower Future Generations of Scholars* as one of the College's three over-riding strategic objectives.

EMS efforts are now guided by four actions developed by a College-wide task force on diversity (http://www.ems.psu.edu/news/deanfiles/archive/112202.html), fully endorsed by the faculty, and outlined as one of three key strategic objectives for the College. This strategic objective serves as a foundation for College efforts to promote diversity and equity (see Appendix A) and is intended as an enduring commitment to *A Framework to Foster Diversity at Penn State.*

CAMPUS CLIMATE AND INTERGROUP RELATIONS

Challenge 1: Developing a Shared and Inclusive Understanding of Diversity

A) Defining Diversity

In the fall of 2002, the EMS Environment Committee was augmented and detailed temporarily as a College Task Force on Diversity. Among many other recommendations, this task force developed a formal definition of diversity that was presented to the faculty and adopted at its Spring 2003 faculty meeting. The College definition is written as a goal:

Our ultimate goal is an environment that welcomes, supports and allows all individuals to achieve, regardless of differences with respect to age, class, ethnicity, gender, physical ability, race, sexual orientation, spiritual practice or other human differences.

B) Distribution of Information and Discussion of Initiatives

The College of Earth and Mineral Sciences is employing multiple mechanisms for communication and discussion of initiatives.

The report of the Task Force on Diversity and the Strategic Plan for the College were presented electronically to the entire faculty and staff for comment and then both were presented and discussed at College-wide faculty meetings. The formal documents were then included in a message from the Dean ("Dean Files"). New versions of Dean Files are announced by email. Access to the Dean Files is through the College web page, which also includes archival copies, thus providing a permanent record.

Task force reports, strategic planning elements, and action items related to diversity are frequently discussed by the EMS Executive Council. Department Heads and Institute Directors are then tasked to execute action items and to bring information to the faculty, as well as to promote discussion.

In 2003, the College established a Diversity Council, co-chaired by the Dean and the Multicultural Coordinator, with a representative from every Department and Institute within the College. The members of the Council provide voice and insight, serve as additional conduits for the flow of information, and they act as agents of change by keeping diversity as an agenda item within the department or institute and by promoting a more conducive climate in the College.

C) Diversity Committee Roles, Functions and Composition

The EMS Diversity Council is a network of faculty and staff engaged in all aspects of organizational change required to meet our diversity objectives. The Diversity Council plays a critical role. Many of our faculty from underrepresented groups have believed that the responsibility for continually raising issues and concerns related to diversity or serving on committees to promote diversity has been theirs alone, and many other faculty have become accustomed to this role. One unfortunate result of this distinction in faculty roles is "diversity fatigue" among faculty from underrepresented groups. These faculty have believed that they have a responsibility which is not shared among the whole. They also sense that this responsibility is "defining" their roles as faculty members. The formation of the Diversity Council was predicated on the fact that promoting diversity and an enabling climate is the responsibility of all faculty and all units, not just a responsibility (or burden) for those from underrepresented groups. The EMS Diversity Council represents every unit in the College. The Council is co-chaired by the Dean and the Director for the Office of Diversity Enhancement Programs (our multicultural coordinator). The members of the Council serve as conduits for information and they act to promote diversity and to promote a more conducive climate in the College. With the Dean as co-chair, the importance of this task is elevated, and the Office of Diversity Enhancement Programs is also more clearly identified with the Office of the Dean.

The EMS Diversity Council, the Office of the Dean, the Office of Diversity Enhancement Programs, and the College's Executive Council have also developed procedures and actions to enable active and vigorous participation in a wide variety of enhancement activities, such as McNair, GUTS, WISE, CURO, and SROP. The Council works to personally connect faculty, staff and students and to promote participation in enhancement activities and to be active voices in recruiting and retaining a diverse faculty, staff and student body. These important activities are no longer the sole responsibility of the Director of the Office of Diversity Enhancement Programs and faculty from underrepresented groups – they are coordinated College activities.

D) Role of the Multicultural Coordinator

The Multicultural Coordinator is the College's Director of Diversity Enhancement Programs. The Director serves in a number of roles including the recruitment and retention of underrepresented student groups at the undergraduate and graduate level, seeking external support for diversity programs and student scholarships, and organizing educational programs for historically underrepresented groups in science and engineering. By operating within the EMS student Center, the Director also encourages integration and the recognition of the importance of diversity for all students. She coordinates efforts to monitor the academic progress of and mentor students in order to positively impact the academic progress of students from underrepresented groups.

The Director of Diversity Enhancement Programs, through her development, implementation and coordination of on-campus programs, represents the College for

middle school and high school students and at the community level for underrepresented groups in consultation with Minority Affairs Community Affairs.

The Director also works with faculty designing research or educational experiences for diverse groups in externally funded research projects. EMS is represented on various college and university committees by our Director of DEP, developing and maintaining working relationships with various organizations internal and external to the University community.

As co-chair of the EMS Diversity Council, the College is taking the first steps to make the Director of Diversity Enhancement Programs a part of the College leadership team and to make the Director responsible for the overall management of programs designed to recruit, retain and support outstanding and diverse pools of undergraduate and graduate students in the College of Earth and Mineral Sciences.

E) Best Practices

The College of Earth and Mineral Sciences has identified the following best practices:

- Involvement of all levels of College leadership in identifying the importance of diversity objectives
- Development of an action-based plan created through intense faculty involvement (EMS Task Force on Diversity)
- Utilization of multiple avenues for communication and discussion
- Creation of a Diversity Council predicated on the fact that promoting diversity and an enabling climate is the responsibility of all faculty and all units
- Creation of stronger linkages between the Director of Diversity Enhancement Programs and the College leadership and promotion of active management of recruiting, retention and support.

F) Measures of Success

The most significant signs of success within the College of Earth and Mineral Sciences are:

- Active engagement of units in promoting diversity
- An action plan which is fully endorsed by the faculty and the College leadership
- An active Diversity Council which is ensuring that diversity activities are no longer the sole responsibility of the Director of the Office of Diversity Enhancement Programs and faculty from underrepresented groups – they are coordinated College activities

Challenge 2: Creating a Welcoming Campus Climate

A) Demonstrated Commitment of Unit Leaders

The strongest sign of commitment is the active participation and leadership at the highest level of administration in the College. The Dean serves as co-chair of the Diversity Council and now takes an active role at all levels of recruitment, retention and support. The Dean, the Department Heads and the Institute Directors developed the EMS Task Force on Diversity and incorporated its recommendations into a revised College Strategic Plan. This revised Strategic Plan recognizes the importance of diversity by outlining the actions *To Develop a Diversity and a Climate that will Empower Future Generations of Scholars* as one of the College's three over-riding strategic objectives. The Dean also has begun the process of reporting to the faculty on our progress in accomplishing the actions and objectives of the Strategic Plan, including its focus on diversity. The success of the College leadership is therefore tied directly to success in accomplishing College objectives related to diversity enhancement and equity.

Commitment is further demonstrated by a commitment of resources. As detailed later in this report, the College has added substantial resources in the office of the Multicultural Coordinator, including additional staff, added resources for travel and other expenses, and has added substantial resources to promote recruitment and retention of faculty from underrepresented groups.

B) Identification and Monitoring of Climate Issues

The identification and monitoring of climate issues is a significant challenge for the College of Earth and Mineral Sciences. Unfortunately, our populations of underrepresented groups are small enough that traditional surveys and assessments do not guarantee that the advice and evaluations of our faculty, staff and students will be anonymous and, therefore, sufficiently direct. Instead, the College has made the assumption that we can do much more to improve the climate. We have sought modes of communication to promote constructive suggestions that will enable us to provide a more welcoming environment. Our objective is to promote modes of communication that demonstrate that the College wants to listen and that the College is highly responsive to constructive suggestions on ways to promote a more welcoming climate. For example, the Dean has engaged students in a series of focus groups – actively seeking advice on how to improve the climate for students. The comments gathered, and the resulting action items, were incorporated directly into the College Strategic Plan. The Multicultural Coordinator for the College takes a great deal of pride in her level of personal involvement and interest in our students, staff and faculty. She sends strong signals that she is willing to listen to issues and to help address them. The EMS Diversity Council has representatives from every unit and they take the responsibility of promoting a welcoming climate seriously. Each individual is designated as an ally for the faculty, staff and students of each unit. Each individual recognizes that the College is very interested in learning about any climate issues and is committed to having a climate which is conducive to the success of all.

C) Response to Climate Issues

The College of Earth and Mineral Sciences is committed to having a climate which is conducive to the success of all. When issues arise, it is most critical to have clear, publicized pathways for resolution of any issues related to climate. College pathways are based on the Office of Diversity Enhancement Programs, department and institute diversity coordinators, student organizations, and the College human resources officer. Systemic issues prompt action by the Dean and the College Executive Council.

The College has also committed itself to a taking a proactive stance in ensuring a climate that is conducive to the success of all and that all policies and resources are both visible and accessible. This includes:

- Policy information sheets on issues such as maternity leave, promotion and tenure related to childbirth, and family related services as proactive rather than reactive elements in recruiting and retaining female faculty
- Information materials and strong collaborative recruiting and retention links with campus groups, activities, and off-campus groups that promote a sense of community, as a proactive rather than reactive element in recruiting and retaining African-American and Hispanic faculty, staff and students
- Active support of and participation in community building activities for women and underrepresented populations.

D) Best Practices

The College believes that four elements are critical:

- Active involvement of the College leadership
- Multiple lines of communication, with responsive listeners that welcome advice and comment, followed by action
- Clear pathways to address issues
- A proactive stance in creating a welcoming climate.

E) Measures of Success

There is a growing sense that the College is both open to advice and responsive to issues. However, the evidence that we are impacting the climate within the College is largely anecdotal. Without a history of assessment, the impact of new policies put into place over the last two years is unclear.

REPRESENTATION (ACCESS AND SUCCESS)

Challenge 3: Recruiting and Retaining a Diverse Student Body

The College of Earth and Mineral Sciences is committed to becoming the most student-centered college in Penn State history. This objective, one of the three major strategic planning priorities of the College, cannot be achieved without greater attention and focus on inclusiveness across the student body of our College. Deliberate efforts must be made to increase the diversity of our undergraduate and graduate population to achieve the promise of the College. The College has made strides towards this goal and there is a new energy and spirit in facing the critical challenges of diversifying the College.

This challenge can only be addressed by:

- Exposing potential students to the disciplines of EMS and resulting career paths
- Increasing access into our programs at the undergraduate and graduate levels
- Providing engaging supportive out-of-classroom experiences.

A) Strategies to Recruit and Retain Undergraduate and Graduate Students from Underrepresented Groups

The College of Earth and Mineral Sciences is employing multiple strategies to recruit and retain students:

- Each department head or institute director identified the issue of recruitment of undergraduates and graduate students as critical for both the department and the College. Efforts in the departments vary; however, each department is actively engaged in recruitment activities independently or through the participation in Office of Diversity Enhancement Programs. Recruitment efforts are underway at the undergraduate level as well as the graduate level. Outreach activities in the undergraduate area include Geosciences' "Shake, Rattle and Rock," which brings 5^{th} and 6^{th} graders onto campus to explore Geosciences through hands-on experiential learning, Geography's program with middle school girls and GIS Day, Meteorology's Weather Camp, and Materials Science and Engineering on-going workshop development for WISE Week (Women in Science and Engineering). Across the College, participation by faculty, staff and graduate students in SEEMS (Summer Experience in EMS) demonstrated a powerful commitment of time, energy and resources. The Department of Energy and Geo-Environmental Engineering hosted 6 out of the 11 SEEMS experiences.
- The College's new institute, the Alliance for Earth Sciences, Engineering and Development in Africa (AESEDA), is building partnerships with Historically Black Colleges and Universities (HBCUs). Through the identification of matching research areas and faculty sponsors, student and faculty exchanges are beginning.

- A spring 2004 visit by a team of EMS faculty to Howard University, as part of an agreement with the Office of Graduate Educational Equity and Howard University, is planned to promote exchange of faculty and graduate students and to foster closer collaboration between faculty and graduate students at both institutions. This program will create a win-win partnership and will help create a supportive environment for our minority graduate students.
- The College's efforts to recruit graduate students have multiple facets to ensure success. Through the Office of Graduate Educational Equity, annual graduate recruitment trips are made to the University of New Mexico, New Mexico State University and the University of Texas at El Paso. The College focuses resources at large national venues including SACNAS (Society for the Advancement of Chicanos and Native Americans in Science), AISES (American Indian Science and Engineering Society), SHPE (Society of Professional Hispanic Engineers) , and NSBE (National Society of Black Engineers) in order to reach students with undergraduate studies in our disciplines or in majors that could lead into our disciplines.
- The Department of Geosciences is working to build a CIDESS (Center to Improve Diversity in Earth System Sciences) with the City University of New York, which will target K-12 as well undergraduates. The goal is to increase representation at the undergraduate and graduate levels.
- The College has made a plan for targeted recruitment through participation in graduate school fairs at Hispanic Serving Institutions (HSIs) and at HBCUs. Reacent efforts have included The University of New Mexico, New Mexico State University and the University of Texas at El Paso, University of Puerto Rico, as well as Tuskegee University, North Carolina A&T University, Cheyney University, and Lincoln University. These visits have been coordinated with the visits of the Office of Graduate Educational Equity and the College of Agricultural Sciences.
- Through the Office of Diversity Enhancement Programs and BRIE, the College participates in graduate school fairs at The University of New Mexico, New Mexico State University and University of Texas at El Paso as well as University of Puerto Rico, all Hispanic-serving institutions.
- The Director of Diversity Enhancement Programs annually attends and exhibits at the AISES (American Indian Science and Engineering Society) National Convention. The College advertises in the *Winds of Change Magazine* in the College issue.
- The College of Earth and Mineral Sciences is a voting member of the GEMS Consortium (Graduate Degrees for Minorities in Engineering and Science, Inc.). EMS is represented at NACME (National Action Council for Minorities in Engineering), NAMEPA (National Association of Minority Engineering Program Administrators) and WEPAN (Women in Engineering Program Advocates Network) annual meetings and forums.
- Nittany Science Camp for Girls and Girls Utilizing Technology and Science, are summer day camp programs designed to keep girls in grades 6-10 engaged in science. Since inception, more than 175 girls have participated in the program, which provides hands-on learning and exposure to women scientists and

engineers. A follow-up plan is in place, which invites past participants to college events and encourages them to follow an educational path of science and engineering.

B) Specific Initiatives Intended to Reduce Intergroup Disparities in Enrollment, Retention, and Graduation Rates

- The budget for Diversity Enhancement Programs has been doubled. A staff position has also been added to assist in recruiting and retention.
- Outreach efforts to under-represented populations in Pittsburgh and Philadelphia as well as Sharon, PA, New York City and the Washington, D.C. area have been undertaken and will be intensified. Many of our disciplines are poorly known and a variety of surveys suggest a national trend of students shying away from the physical science. Our focus is on increased exposure, experience and enticement.
- The College of Earth and Mineral Sciences, through a joint effort of AESEDA (Alliance for Earth Sciences, Engineering and Development in Africa) and the Office of Diversity Enhancement Programs is building a relationship with Martin Luther King High School in Philadelphia. Foundations, Inc. is now operating the high school, which has been sub-divided into four "Houses" with one house focused on science and mathematics (a pre-engineering high school program, "Project Lead the Way"). The College of Earth and Mineral Sciences and AESEDA are partners in this program.
- AESEDA will support the participation of three Martin Luther King High School 9th grade students in the UBMS program ($15,000) in the summer of 2004. With three years of participation in the UBMS program, 100% of these students finish high school, apply and are accepted into college. Additionally, 80% of UBMS students graduate within 5 years, with 60% of them in science and math fields.
- We continue to utilize the services, resources and advice of the Minority Affairs Community Affairs (MACA) Offices to coordinate participation in activities and events to increase identification of potential students. Additionally, through repeated interactions with the MACA Centers, we exchange knowledge about EMS majors and resources of MACA.
- We are working effectively with the federally funded Trio programs which are having a positive impact on recruitment. SEEMS, Summer Experiences in EMS, provides a 30-hour research experience to participants in the Upward Bound Math and Science (UMBS) summer residential program. Working in research teams, the UBMS students, under the direction of EMS faculty, staff and graduate students, research topics over the course of 5 weeks resulting in formal, juried research presentations.
- EMS participates in academic enrichment programs to aid historically underrepresented students in their adjustment to the University through academic, social and cultural support. The Director of Diversity Enhancement Programs is an instructor for African-American American Studies 003, "Scholarship and the Community," a first year seminar that all Bunton-Waller Fellows complete. The College also participates in PREF (Pre-First Year Program).

- A number of retention and development activities are undertaken by the Diversity Enhancement Program: individual development sessions for time management, academic planning and transition issues are a requirement for Bunton-Waller Fellows, First Year Students, and Change of Assignment students. Additionally, each underrepresented student is invited and encouraged to meet with the director. Regular meetings are encouraged to gauge progress, highlight upcoming opportunities and access needs. Networking opportunities are created for current undergraduate and graduate students for role modeling, norming and to allow a better understanding of the range of possibilities for the student's future. Encouragement of undergraduate research is an important objective of the College. We support many programs, including CAUSE (Center for Advanced Undergraduate Study and Experience), SROP (Summer Research Opportunities Program), BRIE (Biogeochemical Research Initiative for Education), WISER, MURE as well as additional experiences in internships, co-ops, and external research programs to enhance their classroom experience.
- EMS provides tutors to promote the success of all of our students. Tutoring is available in technology, writing, mathematics and chemistry.
- EMS works with the SROP program and the McNair Scholars as well as NACME (National Action Council for Minorities in Engineering) and GEMS (Graduate Degrees for Minorities in Engineering and Science) to support the success of potential graduate students. A coordinated program of follow up with SROP and McNair participants is in place to encourage graduate application and enrollment.
- EMS created and provided a Best Practices in Graduate Recruitment document to all graduate officers in the College.
- Email listserves are maintained for underrepresented undergraduate and graduate students to keep them advised of opportunities, deadlines and to keep in touch.

C) Mechanisms for Collaboration

- EMS, in common practice, is a participant in existing University efforts designed to increase access. Efforts with Talent Search, Upward Bound Traditional, Upward Bound Math and Science, and McNair scholars plus outreach and education events with CAMP, CSP, and SSS resulted in a "Friends of Academic Advancement Programs" award in 2002 for the College. In 2002, in collaboration with the Upward Bound Math and Science Program, the College of Earth and Minerals Sciences has developed the SEEMS program (Summer Experience in Earth and Mineral Sciences). In the summer of 2003, twelve 27-hour research experiences were offered and completed over an intensive 5-week program. By all accounts, the program was successful. In November, the SEEMS program was presented at an annual meeting of Trio programs, PAEOPP (Pennsylvania Equal Opportunity Programs), as a best practice in "Integrating a Research Experience into Upward Bound and Talent Search Program Curriculum." Additionally, the ripple effect we hoped for has begun to materialize. UBMS students who attend William Penn High School in Philadelphia are working with the Science Coordinator at their school to turn their SEEMS experience into science fair projects for the George Washington Carver Science Fair. The Upward Bound

Math and Science Program's students are primarily from Harrisburg, Reading, Philadelphia and Pittsburgh. Although students who participate state wide in all Trio programs and any eligible resident of Pennsylvania are welcome to apply to the Upward Bound Math and Science Program, 94% of the served students are underrepresented group members. The UBMS teachers worked in the classroom to support the demands of the research experience and participated as well. This program will be in place again for the summer of 2004, with additional financial support made possible through the Office of Dean to support graduate students' time. Ten experiences will be offered across the College totaling 30 hours over the course of the 6-week residential experience.

- AESEDA hosts a variety of high-profile events on the Penn State campus. The most recent event was the Inaugural Symposium in October 2003, which brought together not only the local African and African-American community but also the largest known contingent of African visitors to the University. An international workshop on technology supporting sustainable livelihoods in Africa is planned for May 2004.
- EMS is a co-sponsor of VIEW (Visit in Engineering Week), working with the Minority Engineering Program (MEP); the College has presented workshops, hosted tours of facilities and identified program participants. Working with the Black Mountain Coal Company, a travel grant for a 10th grade Navajo high school student from Gallup was secured, which allowed his participation in the program. He will return for the weeklong program this summer.
- Each summer, EMS is a participating College with the College of Engineering, MEP, in the PREF program, Pre-First Year in Engineering and Science Summer Program. Each summer, 20 first year students have the opportunity to get a jump-start on their education through 6 credits of intensive focus on math, chemistry, physics and communications. Current funding has allowed 3 EMS students to participate each summer.
- EMS has been able to benefit from the skills, services and resources of many professionals through full participation in Admission's Minority Affairs Community Affairs at University Park as well as Philadelphia, Pittsburgh, Harrisburg and New York City. Our involvement with MACA has opened new venues for student recruitment while receiving guidance and insight.
- While Chair of the Council of Directors of Multicultural Programs, the Director of Diversity Enhancement Programs spearheaded an effort on the part of the directors to coordinate recruitment events at large national venues to increase exposure, identification of potential graduate students and make exhibiting more economical. This team approach is now used at SACNAS, AISES, NSBE, and SHPE as well as other such meetings.
- Collaboration with the Office of Graduate Educational Equity is essential to our diversity efforts in EMS. We are at the forefront of development and support of the initiatives of this office. OGEE is a partner and advisor in our efforts to identify, recruit and retain historically underrepresented graduate students. Our history of increased participation in the SROP program, involvement of faculty, staff and students in the Northeast Alliance, participation of staff, students and

financial support in the Chaka Fattah Conference as well as extending our time and services to maximize Penn State's visibility at graduate school fairs.

D) Best Practices

The College believes that recruitment and retention of a diverse student body requires:

- Direct, personal interaction with individuals and their families
- Active participation in a wide variety of programs and events
- Direct involvement of faculty and departments and institutes in events and recruiting opportunities

E) Measures of Success

There are a number of signs of success within the College:

- The number of undergraduate students entering EMS is small and recruitment is a priority – with diversity as an integral part of this objective. EMS is a discovery college. We gain students through participation in our general education courses. When we look more specifically at entering women, African-American students, Hispanic American students and American Indian students, those numbers are even smaller. Since 2000 the College has steadily attracted more African American and Hispanic American students. We have not earned bragging rights, but we have a noteworthy increase in historically underrepresented students: an increase of 25% for African Americans and Hispanic Americans; and an increase of 28% for women since fall 2000.
- In the summer of 2000, the College had only one funded Summer Research Opportunities Program participant; in 2001 that number was doubled. In 2002 and 2003, the College has supported eight SROP students.
- Of our SROP participants: Three are currently enrolled in EMS graduate programs, while two are applying for Fall 2004. Three are in graduate programs elsewhere. Three are still undergraduates. Four did not ultimately participate in the program and the remaining four sought full-time employment upon receipt of their undergraduate degree.
- Currently, at least 7 of our historically underrepresented students are in Masters or PhD programs at institutions other than Penn State. Howard University, Colorado State University, Texas Tech, University of Southern Mississippi and Michigan Tech are the graduate homes for some of our American Indian, African American and Hispanic American alumni.
- Through the care and nurturing of faculty with the support of the College and industry, we are making some progress. 2004 will bring the graduation of an African American female PhD in Fuel Science. We have two Sloan Fellows among our PhD candidates. Our graduates are highly sought after by industry, government and other universities. We are not currently producing enough mining engineers, petroleum and natural gas engineers, environmental systems engineers, industrial health and safety professionals, geoscientists, earth scientists, geographers and materials scientists and engineers to meet the needs of an increasingly diverse and global workplace.

Undergraduate Enrollment University Park					
Year	**Fall 1999**	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Total	825	739	754	719	696

Graduate Enrollment University Park					
Year	**Fall 1999**	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Total	382	381	405	432	437

Total Enrollment University Park					
Year	**Fall 1999**	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Total	1,207	1,120	1,159	1,151	1,133

Adult Professional Enrollment, Certificate and Degree Programs World Campus					
Year	**Fall 1999**	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Total	130	168	284	352	410

Undergraduate Enrollment by Gender University Park					
	Fall 1999	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Female	214	198	220	221	218
Male	611	541	534	498	478
Total	825	739	754	719	696

Graduate Enrollment by Gender University Park					
	Fall 1999	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Female	99	85	114	116	139
Male	283	296	291	316	298
Total	382	381	405	432	437

Total Enrollment by Gender University Park					
	Fall 1999	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Female	313	283	334	337	357
Male	894	837	825	814	776
Total	1,207	1,120	1,159	1,151	1,133

Total Enrollment by Gender World Campus UP					
	Fall 1999	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
Female	33	51	97	119	122
Male	97	117	187	233	288
Total	130	168	284	352	410

Undergraduate Enrollment by Ethnicity University Park					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
African American	17	14	16	17	23
Asian American	18	14	11	12	14
Hispanic American	16	18	14	8	11
Native American	3	3	4	3	1
Total Minority	54	49	45	40	49
International	10	9	19	20	22
White	761	667	677	645	625
Total	825	725	741	705	696

Graduate Enrollment by Ethnicity University Park					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
African American	4	3	4	6	5
Asian American	4	3	2	5	6
Hispanic American	0	3	2	2	5
Native American	0	0	0	0	1
Total Minority	8	9	8	13	17
International	171	166	187	190	193
White	191	192	197	217	227
Total	370	367	392	420	437

Total Enrollment by Ethnicity University Park					
	Fall 1999	**Fall 2000**	**Fall 2001**	**Fall 2002**	**Fall 2003**
African American	21	17	20	23	28
Asian American	22	17	13	17	20
Hispanic American	16	21	16	10	16
Native American	3	3	4	3	2
Total Minority	54	58	53	53	66
International	181	175	206	210	215
White	952	859	874	862	852
Total	1,189	1,092	1,133	1,125	1,133

Challenge 4: Recruiting and Retaining a Diverse Workforce

A) Locating and Recruiting Faculty and/or Staff from Underrepresented Groups

The challenge for the College of Earth and Mineral Sciences in locating and recruiting faculty and staff from underrepresented groups is enormous. For example, of more than 19,000 PhD degrees granted in Earth, Atmospheric and Marine Sciences since 1988, less than 150 were awarded to African-Americans. A search of the CIC database on degrees awarded yields not a single minority PhD for the year 2002/2003 in these disciplines. At a time in which the number of college-bound women is growing, participation in many EMS disciplines is stagnant or even declining. EMS disciplines rank at or near the bottom in terms of the diversity of the PhD populations in science and engineering, and in turn, science and engineering rank at the bottom in terms of all university disciplines. The statistics are sobering. More importantly, the implications for our ability to empower future generations of scholars are unacceptable. EMS is committed to focusing our energy to alter these trends.

In 2003, the College of Earth and Mineral Sciences adopted a deliberate strategy designed to recruit and retain a diverse workforce. This strategy has five major elements:

- The EMS faculty adopted three major strategic objectives for the College, one of which is "to develop a diversity and climate that will empower future generations of scholars." Locating and recruiting faculty and/or staff from underrepresented groups is now a priority for the College.
- The College has developed a pool of "opportunity funds," as a direct match to the opportunity funds provided by the Provost. As a matter of policy, the College will now fully match any funds provided by a department prior to seeking support from the Provost's opportunity funds.
- The College and its departments have adopted a policy of creating the broadest possible advertisements for new positions in order to ensure the broadest possible applicant pool. Past practice tended to focus on specific specialties, which resulted in small and therefore less diverse applicant pools. Some retirements in critical areas still, by necessity, prompt specific ads but there is clear recognition that the historical tendency to write narrowly focused, discipline-targeted ads has limited our pool of candidates. Broad advertisements (see box 1) in the College are dramatically increasing the size and the diversity of the applicant pool.

Box 1. An example of breadth of EMS faculty advertisements.

"The Department of Meteorology seeks applications for a tenure-track faculty position. Applications with a strong interest in both undergraduate and graduate teaching as well as excellence in atmospheric and/or oceanic sciences are encouraged to apply. The position may be filled at any rank, as appropriate. Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce. Women and minorities are particularly encouraged to apply. "

- In initiating a search, search committees and faculty at-large are deliberately identifying, nominating, and contacting potential candidates from underrepresented groups that fulfill the criteria of the search. Recruitment is becoming an active part of College practice.
- The College is now acting strategically to expand areas of natural strength and interest that also attract scholars from underrepresented groups. AESEDA (despite its infancy) is already sending a strong signal which has enabled the College to recruit African-American faculty. The College has also identified funds to recruit new faculty (Box 2), in any discipline within the College, as long as they have a compelling and enduring interest in Africa. In addition, the College is increasing its focus in the life sciences, an area that has high proportions of female PhDs. We believe that successful recruitment efforts in these disciplines will eventually enable successful recruitment efforts in all of our disciplines.

Box 2. Advertisement for a new faculty position for AESEDA.

"The **Alliance for Earth Sciences, Engineering and Development in Africa** (AESEDA), in the College of Earth and Mineral Sciences at Penn State, invites applications for a tenure-track position with a research and teaching focus on **Georesources and Sustainable Development in Africa**. The Alliance seeks to integrate physical sciences, engineering, and social sciences to develop human and physical capital, while promoting the stewardship of georesources (water, energy, and minerals) in sub-Saharan Africa. The successful candidate will have a tenure home in any one of the Departments of the College (Energy and GeoEnvironmental Engineering, Geography, Geosciences, Materials Science and Engineering, Meteorology). Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce. Women and minorities are particularly encouraged to apply. Further information on the position and the application procedure can be found at (www.africaalliance.psu.edu)."

AESEDA is developing a novel "3-2" BS/MS program in partnership with several HBCUs to encourage graduate enrollment by African-Americans, thereby increasing our pool for recruitment.

In summary, the EMS efforts can be viewed as a simple yet powerful combination of strategies: make recruitment a priority, identify funds that enable recruitment, ensure that

we have the broadest possible applicant pool, and use natural strengths as a stepping stone to a diverse workforce.

B) Strategies for Identification and Assessment of Credentials for Purposes of Hiring and Promotion

The College has moved into an active stance of identifying individuals at the start of a search process through requests for vitae, personal discussions at national society meetings, and discussions with colleagues. In many cases, this effort is prompting invitations for individuals to visit campus as part of strategic thinking about future hires to promote recruitment and diversity in our seminars.

The Alliance for Earth Science, Engineering and Development in Africa (AESEDA), which is currently broadly advertising for new faculty, offers the potential for identifying a host of new faculty that may not have recognized the intersection of their disciplines to the College. EMS believes that the Alliance will enable us to identify a broader pool of applicants and to enable recruitment and retention in the College.

The College prides itself on its promotion procedures and on the comprehensive collection of data about our faculty. Even in annual evaluations, we have developed broad assessments and definitions of scholarship in teaching, research and service that fully credit our faculty for their successes and value the breadth of their contributions.

C) Retention Strategies Implemented to Retain and Promote the Success of Faculty and Staff from Underrepresented Groups

The College of Earth and Mineral Sciences believes that we must successfully address every Challenge in the *Framework to Foster Diversity* if we are to attract, retain and promote the success of faculty and staff from underrepresented groups. Some specific actions as a part of College activities are particularly supportive of retention and promotion efforts. These include:

- The creation of a network of faculty that are engaged in diversity enhancement - this network, The EMS Diversity Council, is predicated on the fact that promoting diversity and an enabling climate is the responsibility of all faculty and all units, not just a responsibility (or burden) for those from under-represented groups.
- The development of rank-balance as a criterion for serving on important committees and functions in the College – the majority of women faculty and faculty from under-represented groups in the College are relatively young and have not yet achieved the rank of Professor. By including rank-balance as a criterion, the College is promoting more diverse decision-making and representative bodies within EMS. This enhances the access of faculty to College leadership and creates a portfolio of service for the faculty member that promotes success. Similarly, EMS units now recognize that we must ensure that young

faculty should not be placed on a myriad of activities and committees in the name of diversity if this precludes, because of time, the ability of these faculty to serve in more important capacities that enhance their national and international stature. In short, our objective is to promote the success of the faculty member.

- The promotion of opportunities and events that provide insight and training, particularly for administrators – the College has begun to identify, promote and fund opportunities of this nature. In the fall of 2003, the College spearheaded the visit of Virginia Valian (author of "Why So Slow? The Advancement of Women") in collaboration with the College of Science, College of Engineering, College of Health and Human Development, and the Commission for Women. A key component of Dr. Valian's visit was an administrator's workshop that provided insights on writing and reading recommendation letters, unseen barriers in promoting faculty success, and a host of information on gender schemas and their implications.
- The creation of mentoring awards in the College – the College now recognizes, at the College annual banquet, those who support actions that promote the retention of faculty, staff and students from underrepresented groups.
- The development of policies and activities that are proactive rather than reactive in recruiting and retention – the College is working to create highly visible family-friendly policies relative to maternity leave, nursing mothers, and travel to professional meetings. We are working to develop clearer pathways for resolution of issues related to climate and to develop links with campus groups, activities and off-campus groups that promote a sense of community.

D) Best Practices in Recruitment and Retention

The combined strategies of making recruitment a priority, identifying funds that enable recruitment, ensuring that we have the broadest possible applicant pool, and using natural strengths as a stepping stone to a diverse workforce, provide the strongest tools for recruitment and retention. In addition, active and sustained effort is required. Promotion of leadership opportunities, diversity training opportunities, and recognition of faculty efforts in mentoring are highly valuable.

E. Measures of Success in Recruiting and Retaining a Diverse Workforce

The new policies put into place are just beginning to show signs of success. The tables which follow are based on workforce numbers as of September 2003. They do not reflect two additional hires -- a senior faculty hire in Meteorology and a joint appointment between the Department of Geography and African and African American Studies in the College of the Liberal Arts.

College of Earth and Mineral Sciences Professors					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	60	61	56	54	62
African American	2	2	2	2	2
Asian American	5	5	4	6	7
Hispanic American					
Native American					
Male	64	65	59	57	66
Female	3	3	3	5	5

College of Earth and Mineral Sciences Associate Professors					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	26	30	30	24	23
African American	1	1	1	2	3
Asian American	5	5	5	4	4
Hispanic American					
Native American					
Male	27	30	28	26	24
Female	5	6	7	4	6

College of Earth and Mineral Sciences Assistant Professors					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	15	16	19	24	23
African American	1	1	1		
Asian American	4	4	3	3	2
Hispanic American					
Native American					
Male	17	17	18	21	20
Female	3	4	5	6	5

College of Earth and Mineral Sciences Total Standing Academic					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	110	116	115	112	116
African American	4	4	4	4	5
Asian American	14	14	11	13	13
Hispanic American					
Native American					
Male	117	121	115	114	118
Female	11	13	15	15	16

College of Earth and Mineral Sciences FTM/FT1					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	26	30	30	24	23
African American	1	1	1	2	3
Asian American	5	5	5	4	4
Hispanic American					
Native American					
Male	27	30	28	26	24
Female	5	6	7	4	6

College of Earth and Mineral Sciences Standing Staff					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	72	71	71	69	68
African American					
Asian American	2	1			
Hispanic American					
Native American	1	1	1	1	1
Male	17	18	11	10	10
Female	58	55	61	60	59

College of Earth and Mineral Sciences Staff (non-standing)					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
White	14	16	15	20	19
African American					
Asian American					
Hispanic American					
Native American					
Male	10	7	7	7	7
Female	5	9	9	13	12

EDUCATION AND SCHOLARSHIP

Challenge 5: Developing a Curriculum that Fosters Intercultural and International Competencies

A) Supporting Multicultural Curriculum Efforts

Many of the curricular efforts described below have been undertaken by faculty as part of their regular activities, either because diversity issues are an integral part of the subject matter, or because of the importance placed on diversity by both the College administration and the Department faculty. The College, through its Center for Advanced Undergraduate Studies and Experience (CAUSE) also supports innovative curricula development. While this is open to any programmatic area, preference is given to those projects that promote multicultural and international education. Particular emphasis is placed on efforts that include student travel abroad. Examples include the CAUSE undergraduate research seminars, Professor Lucky Yapa's Philadelphia project, and a collaborative teaching project with universities in South Africa. These are all described in the relevant sections below.

B) Research and Teaching that Advances the University's Diversity Agenda

Research, teaching, and service activities that advance the University's and College's diversity agendas take a wide variety of forms. These include funded research projects, integrated teaching, research, and service activities, graduate and undergraduate courses that focus on diversity issues, and topical courses that integrate multi-cultural and international issues in the course content. Some recent examples include:

- Faculty from Meteorology and Geosciences have initiated a new NSF Integrated Graduate Education and Research Traineeship (IGERT) that involves overseas study for participants. The project puts significant emphasis on diversity in recruiting project participants and will also be supported by the World University Network and Penn State's International Studies Program.
- In Geography, faculty are researching new measures of spatial segregation of populations by race and ethnicity; the distribution of public policy impacts across socioeconomic groups; corporate citizenship, human rights, and violence against women along the Mexican-US border; gender and nationalism; sexism, racism, and fair employment as human rights issues; and urban poverty in the US.
- The interdisciplinary EMS Earth and Environmental Systems Institute has an NSF and NOAA sponsored Human-Environment Regional Observatory project – a multi-institutional program centered at Penn State. One of the major components of the project is a Research Experience for Undergraduates (RUE) program that engages students in collaborative laboratory, field, and library research. Thirty five students have participated in the first three years of the program, including 25 women—four of whom were minority students.

- The Department of Energy and Geo-Environmental Engineering (EGEE) has a U.S. Department of Education FIPSE award to develop an international and interdisciplinary curriculum on energy and the environment. The program has collaborators at three U.S. and four European universities. Student exchange programs and web-based course offerings will follow the initial curriculum development in this initiative. The Department is currently seeking partners for a similar U.S. – Brazil curriculum.
- A faculty member from EGEE taught a short course at Chulalongkorn University in Thailand in fall 2003 and three more will be teaching there in summer 2004. One of the objectives is to develop research collaborations and to produce material that can be used in courses back at Penn State.
- A faculty member in Geography is teaching courses in collaboration with colleagues at the University of the Witwatersrand and University of Durban. The classes are run simultaneously at Penn State and the African institution with video links between the classrooms.
- Several research and teaching projects have a strong service component, the most well known being Professor Lucky Yapa's Philadelphia Field Project – a one year (three semester) course that studies social theories of poverty, class, race, and place. The summer semester is spent in West Philadelphia where students engage in research, community projects, and volunteer work. For this project, Professor Yapa was awarded the Penn State Outreach Award in 2000 and the 2002 Program Award from the National Association of Multicultural Education. Professor Glasmeier's "onenation.psu.edu" website has data, tools, and analyses that allow the general public as well as students to study economic and social variations between different communities. The Ford Foundation has requested demonstrations of these tools for predominantly minority communities seeking to diversify their economic base. A project is also being developed between EGEE and the Chinese University of Mining Technology to provide education and training in mine safety.
- AESEDA is currently developing a new graduate program in Georesources Engineering Management (GEM) with an emphasis on interdisciplinarity and a focus on Africa that promises to have broad appeal, particularly among African-Americans. The program focuses on teamwork and problem solving in a multicultural environment. It will be project based and built around complex problems that offer new ways to examine natural resource development from an environmentally and socially responsible perspective.

C) Integration of Diversity into the Curriculum

Integration of diversity into the curriculum begins with the EMS First Year Seminar. The seminar content is academic, focusing on topics central to the College and with an emphasis on environmental issues. Multiculturalism is not a specific part of the curriculum. However, most instructors use the opportunity to focus on the international and multicultural implications in discussions of, for example, environmental impacts, natural hazards, and global energy supplies, or to emphasize the contributions of women scientists to Earth sciences or ocean exploration.

Students then take General Education courses that emphasize international and intercultural competencies (GI courses), and the College contributes to these offerings with four GI courses in Geography, one in Geosciences, and one in Earth Science:

GEOG 040: World Regional Geography
GEOG 103: Geography of the Developing World
GEOG 128: Geography of International Affairs
GEOG 415W: Gender and Geography (cross-listed with Women's Studies)
EARTH 105: Environments of Africa: Geology and Climate Change (cross-listed with AAAS)
GEOSC 402W: Natural Disasters

An additional GI course proposal from EGEE is currently being circulated for consultation within the University before being submitted to the Faculty Senate:

EGEE 120: Oil: International Evolution

The degree to which diversity is further integrated into the junior and senior curriculum varies across the College. Geography focuses on the social, cultural, economic, and political forces that shape the past and present human landscape, and on the interaction between human and physical processes. The nature of the discipline ensures that diversity is fully integrated into the Geography curriculum, which has over a dozen core and elective courses that focus directly on race, ethnicity and gender, or emphasize diversity issues with respect to other areas of human and environmental geography. For example:

GEOG 100 is a course on globalization and the global south, and provides both cultural and international credit for students.
GEOG 102 The American Scene treats race and ethnicity in the formation of the American landscape.
A new course is being proposed titled "politics of identity" that will address culture, race, class, gender and sexuality in the framework of spatial politics.
In GEOG 401W, students write papers that focus on ethnic identity as expressed in the U.S. census returns between 1870 and 1930.
GEOG 419 is an international course on cities, and students write papers on non-North American urban places in GEOG 418.
In GEOG 470, Geography of the Global Economy, meets the international requirements for the international business major in Smeal College of Business.
A host of GEOG 497 courses has also integrated or directly addressed diversity issues.

And, in a sequence of physical and human-environment courses, students are also exposed to the multi-cultural and international implications of human-environmental issues.

In addition, many courses have a strong international content. These begin with a General Education (GI) course on World Regional Geography, which is then followed by several 400 level courses on Mexico, Europe, and Africa. The Department is working to expand these with additional African courses.

Diversity has not yet been fully integrated into the other programs in the College. However, the Earth program requires an interdisciplinary minor and many students choose the College's Global Business Studies minor. This focuses on the minerals and energy industries and has a strong international content. This minor is also becoming popular with Meteorology students and Meteorology is also expanding its interest in commercial applications of weather information, which again has a strong international theme. A new degree program in Global Finance and Energy is currently before the Faculty Senate. This new program expands upon the existing minor and will again have a strong international focus.

The engineering programs in the College focus on designed and engineered materials, energy resources, minerals extraction, and industrial health and safety. While they do not include courses that focus explicitly on international or multicultural issues, they all deal with society's use of materials or natural resources and these all have a regional and international component that illustrate cultural differences. Geosciences focuses explicitly on the physical landscape and Earth history. While, how humans interact with this landscape is predominantly the realm of Geography. Even so, discussions of Earth history provide opportunities for examining different cultural or religious views of Earth's creation, the origins of life, and evolution – and these discussions take place in several Geosciencescourses. In addition, the natural environment has a direct impact on human populations through a variety of natural hazards such as volcanic eruptions, earthquakes, floods, and severe storms. These are the focus of GEOSC 402W, which examines the way in which the consequences of these hazards for society are distributed around the globe and how they vary across cultures and socio-economic groups.

At the College level diversity again becomes a major theme of the College's annual CAUSE project. These projects are interdisciplinary and vary from year-to-year. While some have taken place in the U.S., most include an international field trip. Recent examples include:

> CAUSE 2001 where students examined the influence of geology on past civilizations and the effect of geologic processes on the preservation of artifacts and archeological sites in Greece and Egypt.
> CAUSE 2002 (together with the Schreyer Honors College) helped subsidize a Geography course that took undergraduate students to the United Nations World Summit on Sustainable Development in Johannesburg.
> CAUSE 2003a examined the societal impacts of natural hazards in New Zealand. This very successful course was funded once by CAUSE in 1995/96 and the second time by a combination of CAUSE funding and funding from the Schreyer Honors College.

CAUSE 2003b focused on coral reefs on San Salvador in the Bahamas, but also took the opportunity to experience local communities, and to discuss human threats to the reef and the importance of reefs to the economic future of small island nations

CAUSE 2003c examined society's needs for energy and the societal benefits and costs of alternative energy development in Iceland and the United Kingdom.

D) Successful Strategies

The most successful strategies appear to be those that involve multiple faculty members in projects that integrate diversity with large-scale research and teaching projects. Projects such as IGERT focus directly on graduate education and (in EMS) have a strong diversity focus in recruiting participants and in emphasizing international experiences. Other large research projects, however, also have significant outreach components. Many funding agencies are requiring this as one of the project outcomes. In the College we are combining resources from several projects and focusing these activities on programs such as SEEMS and SROP. While these are seen primarily as recruiting activities, they do expose the existing faculty, graduate, and undergraduate students to a more diverse population. At the same time, several of the student research projects focus directly on areas related to diversity issues or approach more traditional topics from somewhat different perspective. Although it is difficult to measure, it is likely that this exposure to new student populations, new perspectives, and the resulting shift in research topics will also lead to an inclusion of these materials and these different perspectives in the regular curriculum.

The Department of Geography, with College support, used its weekly seminar series in fall 2003 to focus on diversity, both through the selection of speakers and their topics. As well as the regular attendance by faculty and graduate students, the Department was successful in encouraging significant attendance by undergraduates. The reinforcement of the messaged expressed in the regular curriculum by a wide range of outside speakers is very valuable to the departmental efforts to promote inclusion.

While we have many examples of individual faculty efforts to promote international or multicultural issues and competencies in individual courses, and while the College will continue to support these activities, we are likely to see more rapid and widespread success with targeted programs. The College is strongly international at the faculty and graduate student level (approximately one third of our faculty were born outside of the U.S. and 45% of our graduate students are from overseas). However, we have few international undergraduates (although the number increased from 9 in fall 2000 to 22 in fall 2003), and very few of our undergraduates have any international experience, either in formal study abroad for a semester or in shorter-term programs. This will become a primary focus for College efforts over the next few years, and is discussed further in Section F. One strategy, exemplified by the EGEE FIPSE project is to establish and nurture cooperation with universities overseas and to seek external funding to support curriculum development efforts, and to use ANGEL to offer web-based courses in collaboration with those universities.

While Challenge 5 focuses on diversity in the curriculum, there is also some indication that the curriculum may have some impact on diversity in the classroom. While we have not collected any data to support the assertion, observations suggest that our general education science courses have a larger proportion of minority students than may be expected given the University's population. This may suggest that these applied science courses already appeal to a more diverse population, and that they could be further developed to take advantage of this possibility.

E) Measures of Success

Several possible measures of success could be suggested:

- The number of students in Study Abroad programs. EMS had five students enrolled in Education Abroad in 2002-03. We would expect to see that number increase in the future.
- The number of cooperative educational and exchange programs in the College. At present we have formal exchange programs in Geosciences with the University of Leeds in the U.K. and a new program with McGill in Canada. Again we expect to see this number increase (see (F) below).
- The number of externally funded projects that explicitly include the development of international or multicultural curriculum content as one of its outcomes.
- The number of GI courses offered by the College has increased from three in 1999 to six at present, with one more in the proposal process.

We have not determined the number of courses in the College that have a significant degree of international or diversity-related content. We plan to conduct faculty surveys to establish the current base line and assess future increases. However, while knowing the number of such courses and their enrollment may give some indication of student exposure to these issues, it is much harder to assess the degree to which students are influenced by that exposure. One approach is to examine whether student perspectives on other cultures and their ability to work within those cultures has been changed or enhanced by the experience. This may be possible through the use of student portfolios, which is discussed further below.

INSTITUTIONAL VIABILITY AND VITALITY

Challenge 6: Diversifying University Leadership and Management

A) Involvement of Unit Leaders in Diversity Efforts.

The College of Earth and Mineral Sciences expects all its administrators to actively promote our strategic goals with respect to diversity. The College's strategic plan, including the Strategic Objective, *To Develop a Diversity and a Climate that will Empower Future Generations of Scholars*, was formulated and endorsed by all Department Heads, Institute Directors and the Chair of the Faculty Advisory Committee. These leaders are also the authors of the College's Framework for Fostering Diversity. Unit leaders play a key role in accomplishing the College's diversity goals. For example, departments provide the initial funds required to utilize College and University opportunity funds for hiring faculty and staff. They are responsible for naming the members of the EMS Diversity Council and for promoting Council objectives within each institute and department. Unit leaders have developed key fund-raising objectives related to diversity. They are also actively working to improve our capabilities to recruit and retain students from under-represented groups. Our strategic goals, and the actions required to achieve them, are topics of frequent discussion at EMS executive council meetings. In the last year, EMS leaders have become active participants in our diversity efforts.

B) The Diversity Profile of the College Administrative and Executive Levels.

The College of Earth and Mineral Sciences has a relatively small executive team which has historically been dominated by males, with little diversity. More recently, opportunities to hire institute directors, who join the ranks of the EMS executive council, have presented the opportunity to develop a more diverse leadership team.

College of Earth and Mineral Sciences Executive Council					
	Fall 1999	**Fall** 2000	**Fall** 2001	**Fall** 2002	**Fall** 2003
Deans and Department Heads					
White	9	9	10	10	8
African American					
Asian American					
Hispanic American					
Native American					
Male	9	9	10	10	8
Female					
Institute Directors					
White	2	2	2	2	3
African American					1
Asian American					
Hispanic American					
Native American					
Male	2	2	2	2	3
Female					1
Chair, Faculty Advisory Committee					
White					1
African American					
Asian American	1	1	1	1	
Hispanic American					
Native American					
Male	1	1	1	1	
Female					1

C) Procedures to Develop Diverse Applicant Pools and Search Committees for Administrative Searches. Communication of Management of Diversity Expectations for Potential Candidates.

EMS has an experienced leadership team. For example, our five department heads have been in their jobs for a combined 25 years. Basically, a new department head search occurs about once every five years. As a consequence, EMS has few opportunities to develop diverse applicant pools for administrative searches. However, in each case in which an administrative search was undertaken, the College has worked to develop a diverse applicant pool, through nominations and through active recruitment of potential candidates. As a consequence of this effort, the EMS leadership team is more diverse than at any other time in the College's history. With each new opportunity, the College will continue to promote a diverse applicant pool.

The College Strategic Plan, including the objective *To Develop a Diversity and a Climate that will Empower Future Generations of Scholars* provides a key mechanism to communicate EMS expectations to potential administrators. Support for these objectives is a key criterion for success in seeking new members of the EMS administrative team.

D) Identification and Support of Staff and Faculty from Underrepresented Groups who have Administrative Aspirations or Potential.

The College of Earth and Mineral Sciences is eager to identify and support staff and faculty from underrepresented groups who have administrative aspirations or potential. The College is highly supportive of faculty who are interested in participating in the Administrative Fellows program or CIC leadership programs. In addition, the College takes care in providing opportunities to chair significant committees and task forces.

The development of rank-balance as a criterion for serving on important committees and functions in the College – the majority of women faculty and faculty from under-represented groups in the College are relatively young and have not yet achieved the rank of Professor. By including rank-balance as a criterion, the College is promoting more diverse decision-making and representative bodies within EMS. This enhances the access of faculty to College leadership and leadership roles, and creates a portfolio of service for the faculty member that promotes success.

E) Best Practices for Diversification of College Leadership.

It is essential to develop diverse applicant pools for every position within the College including leadership positions and to provide opportunities for individuals to hold the position of committee chair or to serve on key committees within the College.

F) Measures of Success.

For the first time in the College's history, with the exception of service by one acting chair for a department, important leadership roles and memberships in the College Executive Council are held by women (Institute Director and Chair, Faculty Advisory Committee) and by an African-American (Institute Director).

Challenge 7: Coordinating Organizational Change to Support Our Diversity Goals

A) Reflection of the Importance of College Goals and Objectives in the EMS Strategic Plan

Diversity is now one of the three major College-wide strategic objectives. This objective, "To Develop a Diversity and a Climate that will Empower Future Generations of Scholars," and its full set of actions, is provided in Appendix A. In addition, diversity initiatives and programs are now a required part of the individual unit strategic plans of every department and institute within the College.

B) Organizational realignments, systems of accountability, resource mobilization and allocations, and long-term planning strategies.

The College has taken several actions to coordinate organizational change. These include:

- Creation of the EMS Diversity Council, representing every unit in the College, co-chaired by the Dean and the Director for the Office of Diversity Enhancement Programs. The members of the Council serve as conduits for information and they act to promote diversity and to promote a more conducive climate in the College. With the Dean as co-chair, the importance of this task is elevated and the Office of Diversity Enhancement Programs is more clearly identified with the Office of the Dean.
- The EMS Diversity Council, the Office of the Dean, the Office of Diversity Enhancement Programs, and the College's Executive Council have developed procedures and actions to enable active and vigorous participation in a wide variety of enhancement activities, such as McNair, GUTS, WISE, CURO, and SROP. We work to personally connect faculty, staff and students. These important activities are no longer the sole responsibility of the Director of the Office of Diversity Enhancement Programs – they are coordinated College activities.
- The College has promoted a more integrated approach to use of College and departmental resources to recruit undergraduates and graduate students purposefully to enable recruitment of under-represented students.

- Actions and activities that support diversity enhancement are now a regular element of every Faculty Activity Summary, ensuring that such activities are a factor in annual salary increases, thus further emphasizing the importance of these activities to the College.
- The establishment of "rank-balance" criteria in developing membership on important College and Departmental committees and advisory boards is altering the composition of governing bodies in the College. The use of rank-balance takes advantage of the fact that much of the diversity in faculty ranks is in faculty that are pre rank of Professor.
- The development of AESEDA (the Alliance for Earth Science, Engineering, and Development in Africa) as a permanent part of the College administrative and budgetary structure is a major organizational realignment that should considerably support the College's efforts to promote diversity.

C) Budget and Development approaches to ensure the financial stability of Diversity Priorities.

The College of Earth and Mineral Sciences has instituted several budgetary changes and development priorities in order to support our diversity priorities:

- The discretionary budget of the Office of Diversity Enhancement Programs has been doubled and a new staff line has been added to support the activities of the Office.
- The College has mobilized considerable resources to create Opportunity Funds for faculty hires that match departmental contributions prior to a request for Opportunity Funds from the Provost.
- The development of AESEDA with core support from the College (for a Director, support staff, travel, new faculty positions, etc) is a major resource allocation that should considerably support the College's efforts to promote diversity.
- AESEDA has become a major target for College development activities. The EMS Executive Council unanimously endorsed AESEDA as the subject of the College's proposal for a "transforming gift" in our development efforts and this focus has been adopted by the Provost and President as a major focus for a large gift to the University.
- The College of Earth and Mineral Sciences has a commitment to provide as much financial support as possible to our students. The Matthew Wilson Loan is available to all full-time undergraduate and graduate students in the College.
- EMS has actively sought development opportunities that support a diverse community of scholars. ChevronTexaco created the ChevronTexaco Annual Scholarship in Industrial Health and Safety, an annual scholarship of $2,500 designed to recruit students into the IHS Program. A preference will be given to students from underrepresented groups. EMS alumnus Isaac Berry made a $500 gift to support the EMS Weather Camp, which seeks to introduce underrepresented 8th-10th graders to the field of meteorology. Lockheed Martin donated $20,000 to support Nittany Science Camp for Girls and Girls Utilizing Technology and Science. EMS alumnus William Ostrander has signed a

statement of intent to establish the William J. Ostrander Minority Scholarship which will support undergraduate and graduate students in EMS with a preference given to minority students, especially Native Americans. Mr. Ostrander has begun making annual gifts of $1,000 to early activate this endowment. We received $50,000 from the estate of Helen Chelius to activate the Chelius Enhancement Programs Fund. The purpose of this endowment is to provide financial assistance in support of programs involving students enrolled or planning to enroll in the College of Earth and Mineral Sciences whose ethnic, cultural, and/or national background contribute to the diversity of the student body. The General Motors Grant Fund provides $5,000 annually to be split between the Colleges of Engineering and EMS to provide financial assistance to minority students who have a need for additional funds to meet their college expenses. The Sophia Elizabeth Kumpf Scholarship for Women in EMS provides scholarships for full-time female undergraduates who have a financial need to cover their college expenses. EMS alumnus Fred Kumpf established this fund in honor of his mother. The Joseph W. and Margaret Nesbit Hunt Scholarship in Mineral Engineering provides recognition and financial support to female undergraduate and graduate students enrolled in mineral engineering. EMS alumnus Warren Washington and his wife Mary established the Warren M. and Mary C. Washington Scholarship in Meteorology with first preference given to African American, Latino and Native American students pursuing undergraduate or graduate degrees in meteorology. Elizabeth Vogely, widow of former mineral economics professor William Vogely, together with EMS alumna Dr. Linda Trocki, has established the William F. Vogely Fund in the College of Earth and Mineral Sciences ($20,000). The purpose of this endowment is to provide financial assistance to undergraduate and graduate students enrolled in EMS who have achieved outstanding academic achievement and who are disabled as defined under the provisions of Section 504, 1973 Rehabilitation Act, as amended.

Appendix A. EMS Strategic Objective: To Develop a Diversity and a Climate that will Empower Future Generations of Scholars

1. Elevate the status, increase resources, and enhance coordination available for recruiting and retaining students, staff and faculty from traditionally under-represented populations
2. Include participation in diversity-enhancing activities as a part of the College reward and recognition system for faculty and staff
3. Take a proactive stance in ensuring a climate that is conducive to the success of all, that all our hiring processes are broad and open, and that all policies and resources are both visible and accessible
4. Create avenues of scholarship that both attract faculty and students from under-represented groups and enhance the research and teaching strengths and opportunities within EMS

Action Item 1: Elevate the status, increase resources and enhance coordination for recruiting and retaining students, staff and faculty from under-represented populations

EMS is committed to significant organizational changes to promote our ability to recruit and retain students, staff and faculty from under-represented populations. We propose to:

- clearly identify our Office of Diversity Enhancement Programs with the Office of the Dean and substantially increase the budget for recruiting activities
- include diversity initiatives as a part of every department and institute strategic plan
- create a network of faculty that are engaged in diversity enhancement, including a designated coordinator from each unit that will make up an EMS Diversity Council that is co-chaired by the Dean and the Director of the Office of Diversity Enhancement Programs
- foster a vigorous and active departmental and College participation in enhancement activities such as McNair, GUTS, WISE, CURO, and SROP and personally connect current faculty and staff with prospective students
- create departmental and College "opportunity" funds, that parallel current funds from the Office of the Provost to enable the recruitment of faculty from underrepresented populations
- provide and encourage opportunities, particularly for all administrators, for diversity training

Action Item 2: Include participation in diversity-enhancing activities as a part of the College reward and recognition system for faculty and staff

Diversity enhancement is an investment in the future and an investment in the scholars of the future. EMS intends to recognize and reward faculty and staff actions and activities that support diversity enhancement. We propose to:

- include diversity-enhancing activities as a part of the EMS annual Faculty Activity Summary that is utilized as a basis for determining salary raises

- create a Mentoring Award to be given at the EMS Wilson Awards banquet that includes criteria that support actions that promote the retention of faculty, staff and students from under-represented groups

Action Item 3: Take a proactive stance in ensuring a climate that is conducive to the success of all, that our hiring processes are broad and open, and that all policies and resources are both visible and accessible

EMS is committed to a proactive stance to promote a diversity and climate that will empower future generations of scholars. Our ultimate goal is an environment that welcomes, supports and allows all individuals to achieve, regardless of differences with respect to age, class, ethnicity, gender, physical ability, race, sexual orientation, spiritual practice or other human differences. We propose to:

- ensure that an EMS statement on diversity, which is comprehensive and inclusive, is highly visible
- create and publicize clear pathways for resolution of any issues related to climate, based on the Office of Diversity Enhancement Programs, department and institute diversity coordinators, student organizations, and the College human resources officer
- develop policy information sheets on issues such as maternity leave, promotion and tenure related to childbirth, and family related services as proactive rather than reactive elements in recruiting female faculty
- develop information materials and strong collaborative recruiting and retention links with campus groups, activities, and off-campus groups that promote a sense of community, as a proactive rather than reactive element in recruiting and retaining African-American and Hispanic faculty, staff and students
- use "rank-balance" as an important factor in developing all leadership committees and councils within departments and the College to help ensure broader participation in the leadership of the College
- increasingly produce broadly defined advertisements for new faculty hires in order to increase the potential of a diverse pool of candidates
- focus on junior hires in the search for new faculty to increase the potential of attracting a diverse pool of candidates

Action Item 4: Create avenues of scholarship that both attract faculty and students from underrepresented groups and enhance the research and teaching strengths and opportunities within EMS

The strength of EMS research in Earth, environment, energy, natural resources, materials and the connections between humans and their environment should be a natural foundation for enabling and empowering future generations of scholars. National statistics and College experience demonstrates that many avenues of scholarship create a stronger attraction for faculty and students. EMS has considerable potential to use and enhance its current strengths to attract faculty and students from under-represented groups.

EMS intends to focus on three areas:

- A college-wide focus on Earth Sciences, Engineering and Development in Africa
- A growing focus in Geography and Geosciences in the life sciences
- Strong potential for collaboration between EMS, Eberly College of Science, and the University of Puerto Rico in the areas of chemistry, environment, and materials

An Institute for Earth Sciences, Engineering, and Development in Africa. An analysis of faculty interest and activities within EMS reveals more than twenty faculty members with a focus or interest in science and engineering on the African continent. EMS proposes to develop a new Institute that will take advantage of this College strength. The new Institute will encompass new undergraduate minors, new avenues of graduate education, as well as interdisciplinary research involving Earth sciences, engineering and human-environment interactions. The College proposes to seek an Institute director, and to hire new faculty with strong active research programs related to Africa. These advertisements will be very broad, as the new hires could be a member of any department in the College. The proposed Institute will: (1) Stimulate systematic collaborations within EMS and the wider Penn State community in developing interdisciplinary initiatives on Earth sciences, engineering, and development issues in Africa. (2) Focus efforts on exploring and developing solutions to earth resources utilization and the associated environmental problems inhibiting African economic development. (3) Enhance the research and educational capacity of participating HBCUs and select African Universities. (4) Foster multidimensional collaborations among Penn State's earth resource scientists, engineers, and social scientists, and with our counterparts from HBCUs and African institutions. (5) Expand the pool of potential graduate students at participating institutions, including Penn State. (6) Provide the larger Penn State community with educational resources on science, engineering, and development issues in Africa that are currently not available.

The proposed Institute will stimulate greater institutional focus on and collaboration with HCBUs, and African institutions and people. A natural outcome of the Institute's activities is closer cross-cultural interactions needed to create an environment of trust, understanding and mutual respect among collaborators of diverse ethnic and cultural backgrounds. A key benefit of the Institute is to expand the pool of role models for minority students that could motivate their participation in fields that have traditionally experienced extremely low participation of minority scholars. The Institute will foster a nurturing environment for diversity in our disciplines as well as strengthen a major research and teaching interest in the College.