

**A COMMITMENT TO FOSTERING  
DIVERSITY**

**THE COLLEGE OF EARTH AND MINERAL  
SCIENCES**

**2004 - 2009 Strategic Plan**

**August 12, 2004**

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## Introduction

The College of Earth and Mineral Sciences is committed to fostering diversity and equity. In 2003, a revision of the College's Strategic Plan was completed that recognizes the importance of this challenge by outlining the actions required to achieve three interrelated strategic objectives that are critical for the continuing excellence of the College of Earth and Mineral Sciences:

- To Create the Most Student-Centered College in Penn State History
- To Develop a Diversity and Climate that will Empower Future Generations of Scholars
- To advance the Capabilities and Reputations of the College's Departments and Institutes.

The challenge of developing a diversity and climate that will empower future generations of scholars is both substantial and compelling.

The disciplines within the College of Earth and Mineral Sciences are of critical and enduring interest to society. Yet, there are not enough trained Americans to fill the existing engineering, science and technology positions. This threatens our ability to compete in the global arena, fill the future professorate, enable U.S. commerce, and provide a strong economic future for the nation.

Women, African Americans, Hispanic Americans, Native American Indians and persons with disabilities make up two thirds of America's workforce, but they are a small fraction of the workforce in science, engineering and technology. Women frequently out-compete their male peers in high school academics as well as outpacing men in earning college degrees. Yet, only 9.8% of all American engineers are women even though women are now the majority on college campuses nationwide.

For the College of Earth and Mineral Sciences, the under representation of women, African Americans, Hispanic Americans and Native American Indians is particularly pronounced. Historically, our disciplines have had notoriously low participation by women and by underrepresented groups. According to a report released by the American Association of Engineering Societies, in the fall of 2002, less than only 1.1% of all the undergraduate mining engineering students, 1.6 % of all Environmental Engineering students, 2.1 % of all Petroleum and Natural Gas Engineering students, 2.2% Metallurgy, and 2.0% Ceramic Engineers in the country were African American. At the graduate level, there was not a single African American student in the nation pursuing a degree in Mining Engineering. 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 African American, Hispanic American, or Native American PhD for the year 2002/2003. At a time in which the

number of college-bound women is growing, the participation in many EMS disciplines is stagnant or even declining.

The College of Earth and Mineral Sciences is far from reflecting the diversity of our Nation, and the demographics of our Nation and of the college-bound population are changing, as President Graham Spanier highlighted to the Board of Trustees in September of 2003. In 2020, 65% of the population growth in the United States will be ethnic minority groups, predominately Hispanics and Asians.

EMS must position itself to attract and enable this future generation of scholars. Neither the fraction of, nor the trends in, traditionally underrepresented groups among students, faculty and staff are a source of pride for the College. The statistics cited above are unacceptable for our disciplines. The challenge for EMS is enormous, but the potential long-term consequences for the success of the College will be significant if we do not focus our energy and commitment in altering these trends.

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*

The College definition of diversity was written by a College Task Force on Diversity, presented to the faculty, and adopted in 2003. It 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 now employing multiple mechanisms for communication and discussion of initiatives and is committed to further enhancing our distribution of information and our discussions of initiatives:

- The report of the College's Task Force on Diversity (2002) and the revised Strategic Plan for the College (2003) were presented electronically to the entire faculty and staff for comment and then both were presented and discussed at College-wide faculty meetings. Reports by the Dean on our progress in achieving our goals are an annual part of College faculty meetings.
- In 2003, the College established a Diversity Council, co-chaired by the Dean and the Director of the Office of Diversity Enhancement, 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 departments or institutes and by promoting a more conducive climate in the College.
- 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.
- Initiatives, task force reports, strategic planning elements, action items, and progress reports are presented and discussed at faculty meetings, and are also provided to the faculty, staff and students by the Dean through email and the web ("Dean Files"). Comments are also solicited as a part of this communication process. The College web page provides access to archival copies of Dean Files, thus providing a permanent record.

The College proposes to enhance these efforts by:

- Establishing the Director of the Office of Diversity Enhancement Programs as a member of the Executive Council, as well as co-chair of the Diversity Council, to enable discussion and promote progress on diversity objectives. In this capacity, the Director will also have a stronger role in overall management and coordination among departments and institutes, and will enable communication between the Executive Committee and the Diversity Council.
- Completing an extensive redesign of the College web page. Although all elements of the College's policies and plans are available on the web, currently access requires too much time and effort. The College is therefore performing a complete redesign of our web page to ensure that diversity and climate are a prominent element of the College's home page, and that the home page is a gateway to all of our policies and plans, as well as to the University and surrounding community.

### ***C) Diversity Committee Roles, Functions and Composition***

The College of Earth and Mineral Sciences is committed to developing a diversity committee function 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. 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 majority faculty have become accustomed to this role. One unfortunate result of this distinction in faculty roles is "diversity fatigue" among faculty from underrepresented groups, as the responsibility is not shared among the whole. They also sense that this responsibility is "defining" their roles as faculty members. EMS has taken several steps to ensure that addressing the College's diversity objectives is the responsibility of all faculty and all groups.

- The College has established an EMS Diversity Council composed of faculty and staff engaged in all aspects of organizational change required to meet our diversity objectives. The EMS Diversity Council members represent every unit in the College. 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 and each of their respective units.
- The EMS Diversity Council is co-chaired by the Dean and the Director for the Office of Diversity Enhancement Programs (our multicultural coordinator). 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, 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.

- The Diversity Council will take an active role in
  - developing metrics and other modes of inquiry to assess the climate within the College for faculty, staff and students and to gauge progress in achieving diversity objectives,
  - ensuring that all fully understand our definitions, goals and actions,
  - working to create a welcoming campus climate, and
  - clarifying best practices in solving climate issues, including communicating their roles as allies.

#### ***D) Role of the Multicultural Coordinator***

The Multicultural Coordinator is the College's Director of Diversity Enhancement Programs. The Director currently 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.

The College proposes a stronger role for the Director, with greater responsibilities for overall management.

- Director of Diversity Enhancement Programs will have greater responsibility for strategic planning and implementation of programs and activities which are central to the mission of the college. The Director will

become a member of the College leadership team (Executive Council) and will become 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.

- The Director will collaborate with students, staff, faculty, department chairs and advising staff, the Office of the Vice-Provost for Educational Equity, Minority Affairs and Community Affairs Office of Admissions, secondary schools, private industry and donors to build a solid infrastructure, develop strong partnerships and create an effective and adaptable strategic plan for program growth and to support efforts to increase the populations of historically underrepresented graduate and undergraduate students.
- The Director will provide leadership and direction for College of Earth and Mineral Sciences in student services, working closely with staff, students, the University community and the broader community to recruit and retain an outstanding and diverse pool of students in the College of Earth and Mineral Sciences.
- The Director will take a lead role in developing metrics and other modes of assessment to ensure that the diversity and student service programs are addressing and making progress to achieve objectives.
- The Office of Diversity Enhancement Programs will collaborate with the Office of the Associate Dean on the design and implementation of a database system for the purpose of coordinated follow-up with prospective graduate students to improve yield.
- The Director will develop a communication strategy within the College and outside in conjunction with program mission and objectives.
- The Director will work cooperatively with the Office of Vice Provost for Educational Equity, the Office of Graduate Educational Equity, student societies (e.g., AISES, NSBE, SHPE, SWE), and other diversity programs on campus in order to increase the impact on recruitment, retention, and graduation of historically underrepresented minorities in science and engineering disciplines and facilitate admission to graduate school, as well as placement in the public and private sector.
- The Office of Diversity Enhancement, through the Alumni Coordinator, will work to utilize GEMS (Graduates of Earth and Mineral Sciences) as a College of Earth and Mineral Sciences Advisory Board on Diversity and Student Services to develop goals and implement strategies for continuous improvement.

## **Challenge 2: Creating a Welcoming Campus Climate**

### ***A) Demonstrated Commitment of Unit Leaders***

The commitment by the leadership of the College of Earth and Mineral Sciences to creating a welcoming campus climate is, and will continue to be, clear to members of the College community, the University community and the external community.

- 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 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 Director of Diversity Enhancement, 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. This commitment will continue to grow over the next five years.

### ***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. We propose to continue to expand upon our efforts to identify and monitor climate issues and to take a proactive stance in providing a more welcoming environment.

- The College is taking several steps to promote different 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. The Dean will continue to engage students in a series of focus groups – actively seeking advice on how to improve the climate for students. In previous focus groups, the comments gathered, and the resulting action items, were incorporated directly into the College Strategic Plan.
- The College proposes to develop a College-level “encampment” modeled after the 2004 University encampment, in which all College administrators join with

student leaders and representative groups to discuss issues of mutual concern and interest.

- 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 addition of a new staff member to support the Multicultural Coordinator should enhance our level of personal involvement and interest.
- 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. These “diversity allies” and the administrative leaders have agreed that these individuals should be reporting at unit faculty meetings. They are also represented on the new College Council. The College Council is composed to the student council chair, chair of the staff advisory committee, chair of the non-tenure track faculty advisory committee, faculty advisory committee, administrative representative, diversity coordinator, and is chaired by the Dean. In addition, the Diversity Council and its activities (including their designation as allies) will be a part of the new College web page. The objective is to improve communication, to better identify the roles and responsibilities of the Diversity Council, and to clearly indicate that the College is very interested in learning about and addressing all climate issues.
- The College proposes, as part of our new home page design, to provide better access to materials related to the College, University, and State College region in order to facilitate and promote a sense of community and partnership.
- The College began a process of a college-wide climate assessment in 2003, but was advised that either the assessment would be biased or that participants would not feel free to participate honestly because of the small numbers of underrepresented faculty, staff and students. As a result, the College abandoned these plans. However, the College must develop better mechanisms to identify, monitor, and assess climate issues. The EMS Diversity Council will determine the best mechanisms to assess climate issues. However, we believe that we may not be able to employ traditional assessment mechanisms. We are currently contemplating a team of external visitors to acquire an independent assessment rather than utilizing a survey method.

### *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 critical to have clear, publicized pathways for resolution of any issues related to climate.

College pathways are based on the Office of Diversity Enhancement, 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. However, the College is working to make these pathways clearer and more accessible.

- The College has reinstated the elected position of Ombudsperson as a College-wide effort to facilitate identification and response to climate issues for faculty and staff.
- The College is proposing to develop an ombudsperson role for students within each department, with formal training provided for each representative.
- The College proposes to utilize the EMS Diversity Council representatives and ombudsperson roles to focus on early detection of issues, prior to having them become serious issues, through the identification of members as allies, and through the proposed methods of assessment and identification of issues.
- The College will also encourage members of the College to join Penn State's "Zero Tolerance for Hate Support Network."

The College has also committed itself to taking a proactive stance in improving the climate within the College 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, spousal hires, 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.

## 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. Intentional 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. There is a new energy and spirit in facing the critical challenges of diversifying the College.

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

The College and each department and institute has identified the issue of recruitment of undergraduates and graduate students, particularly from underrepresented groups, as a key priority. A large number of activities are on-going. These include:

- Outreach activities in the undergraduate area include Geosciences', "Shake, Rattle and Rock," which brings 5<sup>th</sup> and 6<sup>th</sup> 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 as 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. Recent 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 Inc. 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 programs, which provide 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.
- EMS is a financial contributor to WISE, Women in Science and Engineering, and the Dean serves as an advisory board member to guide WISE activities.

In addition, the College proposes a number of new initiatives to recruit and retain a diverse student body:

- Starting in 2004, the College will set aside 14 Graduate teaching assistantships (28 semesters) to support recruitment of African-American, Hispanic-American and Native-American graduate students. In identifying qualified students, each department will utilize these resources to recruit students. Each department will

- present an annual report on the number of qualified applicants, recruiting efforts, and success rates in utilizing these targeted resources. Each department will also take the responsibility for continued funding of successfully recruited students.
- Starting in 2004, the College will set aside \$40,000 in additional scholarship funds for recruiting African-American, Hispanic-American and Native-American freshmen. Each scholarship award will include a promise of continued scholarship funds based on student performance levels.
  - The College will continue to actively seek endowment funds to support recruitment and retention of underrepresented populations. In 2003, the College received a one million dollar trustee scholarship dedicated to first generation college students, enabling the College to be highly supportive of need-based students.
  - The College will begin the development of a more sophisticated tracking system of applicants and of diversity enhancement activities, coordinating activities of the Office of Diversity Enhancement Programs and each of the departments.
  - The College will also begin the development of metrics to examine the success and impact of our retention efforts.

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

The College will continue to fund and support efforts to reduce disparities in enrollment, retention, and graduation. Current efforts include:

- In 2003, the budget for Diversity Enhancement Programs was doubled.
- A staff position was added in 2003 to the Office of Diversity Enhancement Programs 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 with AESEDA (Alliance for Earth Sciences, Engineering and Development in Africa) and the Office of Program 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 Inc. (Graduate Degrees for Minorities in Engineering and Science, Inc.) 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 provides 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.

In addition, the College proposes the following additional initiatives and events:

- In the next three years, the budget for Diversity Enhancement Programs will again be doubled.
- In 2004, the College will advertise for a recruiter/advisor for our new Student Center. This will enable every undergraduate in the College to have an assigned faculty advisor and an assigned formal advisor so that the College can take an even greater interest in the success of our students.
- In 2004, the College will open a new Student Center, including tutoring and advising functions, conference area, student activity area, and computational resource area to promote a “home” for all EMS undergraduates.
- The College proposes to have a focused effort that highlights the role of faculty as role models. One program on role models is being developed by our alumni to provide evidence for successful careers in our disciplines, but has not yet been completed. It will be then incorporated into College plans. An additional effort of the College is to promote the successes of our underrepresented faculty – e.g. through Dean Files and announcements on our web pages. We are also working to develop opportunities to have graduate students who are inclined to be “future faculty” to have the opportunities to socialize and share experiences with successful faculty from underrepresented populations. The College also now rewards faculty who mentor students, staff and other faculty. This award also specifically encourages mentoring designed to promote the success of underrepresented faculty, staff and students.
- The alumni arm of the College, GEMS (Graduates of Earth and Mineral Sciences), has adopted the College’s strategic plan as its own, with the intention of enhancing progress toward College goals. GEMS proposes to develop a diversity enhancement activity in which alums provide teams of successful role models in all of the EMS professions as support and encouragement for our students.
- The College has proposed a pipeline program for involvement of African-Americans in GeoResources Management as a part of AESEDA. This initiative is intended to attract African-American students to EMS disciplines related to energy, minerals, and the environment and to serve the needs of the major energy and minerals related industries. The program will be based on a 3-2 program between HBCUs and Penn State in which students enroll in a BS/MS program with the BS completed at the HBCU, and the students begin to work toward their MS degree in their senior year at Penn State. AESEDA has developed a proposal seeking more than one million dollars to support this initiative.
- BRIE, the Biogeochemical Research Initiative of the EMS Earth and Environmental Systems Institute, has developed partnerships with the University of Puerto Rico, encouraged BRIE graduate students to participate in outreach activities, developed a summer undergraduate research program that has been particularly successful in attracting diverse participants (in 2003, of 9 participants, 8 were female, 2 identified themselves as Black, one as Black/Native American).

BRIE also has a history of showcasing work and research done by women and minorities.

- The College has an extraordinarily strong e-education program, dedicated to adult professional enrollment, certificate and degree programs that enable non-traditional students. The College supports “faculty fellows” and a strong, highly skilled professional workforce to develop these courses and programs. The College has begun the process of gathering statistics on the nature of the student body that are accessing EMS expertise through this mode of delivery.
- The College Council is taking an active role in developing quantifiable measures of climate to identify issues that would limit our ability to reduce inter-group disparities in enrollment, retention, and graduation.

### *C) Mechanisms for Collaboration*

The College prides itself on collaboration in recruiting and retaining a diverse student body. In addition to the many collaborative activities cited above, we will continue a wide variety of activities to support this objective:

- 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.
- 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 10<sup>th</sup> 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.
- 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 number of additional commitments are planned for the future:

- AESEDA will continue to provide a wide variety of opportunities that bring together African and African-American communities as a part of educational and research activities of the institute. For example, an international workshop on

- technology supporting sustainable livelihoods in Africa is planned for May 2004. AESEDA will begin to deploy substantial resources as support from the College and from external contributors grows.
- 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 begin to build a win-win relationship. Howard University is also a member of the Alliance for Earth Sciences, Engineering and Development in Africa, and AESEDA is working to develop additional HCBU partners.
  - The College will financially support graduate student participation in any of the SEEMS experiences. In collaboration with the Upward Bound Math and Science Program, the College of Earth and Mineral Sciences has developed the SEEMS program (Summer Experience in Earth and Mineral Sciences). In the summer of 2003, 12 27-hour research experiences were offered and completed over an intensive 5-week program. This will be the first time that graduate students will have financial incentive to participate in this valuable activity.
  - The addition of resources and staff support for the Office of Diversity Enhancement Programs will enable stronger collaboration with existing partners.

#### **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. 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. Discussion of this strategy is separated into our efforts for faculty and the efforts for staff.

The strategy for faculty has a number of major elements:

- Recruiting faculty from underrepresented groups was established as a priority for the College as part of the strategic objective “to develop a diversity and climate that will empower future generations of scholars.”
- 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

began to fully match any funds provided by a department prior to seeking support from the Provost's opportunity funds.

- The College and its departments adopted a policy of creating the broadest possible advertisements for new positions in order to ensure the broadest possible applicant pool rather than focus on specific specialties. More specific ads tend to have smaller and 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 in the College will dramatically increase the size and the diversity of the applicant pool.
- The College is recruiting more actively at the junior level for faculty as an additional mechanism of promoting a diverse applicant pool.
- In initiating a search, search committees and faculty at-large are deliberately identifying, nominating, and contacting potential candidates from underrepresented groups who fulfill the criteria of the search. Recruitment will be an active part of College practice.
- The College has developed a focused "family-friendly" set of policies for faculty and we have adopted a proactive spousal-hire policy designed to enable recruitment.
- The College is 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.

Each of these key elements of a strategy to recruit faculty from underrepresented groups will continue. We will also focus considerable resources in AESEDA for recruiting and retaining faculty. Specifically:

- The College will identify funds to recruit 3 to 4 new faculty related to AESEDA in which the new faculty member can be 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.

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.

The strategy for staff is more problematic. The College believes that the current University-wide process for hiring staff makes it difficult to develop effective strategies for recruiting underrepresented staff. In fact, many of the strategies proposed for the faculty cannot be easily applied to the staff. We would like to participate in a University-wide task force designed to address these issues. The College has established recruiting

staff from underrepresented groups as a priority for the College, established a staff group to develop focused “family-friendly” policies for staff, and has encouraged and promoted opportunities for staff development and advancement. These steps alone are insufficient to recruit and retain a diverse staff workforce.

In addition, the College proposes to better utilize materials developed as part of efforts to create a welcoming campus climate (e.g. materials that describe our policies, efforts to promote community, family-friendly activities, etc) to enable recruiting of faculty, staff and students.

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

The College will take 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. As an outcome of this effort, the College will invite individuals to visit campus as part of our strategic thinking about future hires to promote recruitment and diversity in our seminars.

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 College has created a network of faculty that is engaged in diversity enhancement. 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 College has developed the concept 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 all 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.

- Based on the highly successful visit of Virginia Valian (author of “Why So Slow? The Advancement of Women”), the College intends to sponsor, in partnership with other Colleges, visits by leaders who can provide insight and training, specifically for administrators. These visits will include seminars open to the entire University, and opportunities for group interaction with faculty, staff and students.
- The College has created mentoring awards to recognize at our annual banquet those who support actions that promote the retention of faculty, staff and students from underrepresented groups.
- 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. Our objective is to have in place the policies, activities and linkages that ensure that we are proactive rather than reactive in recruiting and retention.

## EDUCATION AND SCHOLARSHIP

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

#### *A) Supporting Multicultural Curriculum Efforts*

The College is supporting multicultural curriculum efforts through five avenues:

- Faculty initiatives to develop curricula based on diversity issues that 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.
- Capstone experiences, developed through the College's Center for Advanced Undergraduate Studies and Experience (CAUSE). CAUSE supports innovative curricula developments that are open to any programmatic area. However, preference is given to those projects that promote multicultural and international education. Particular emphasis is placed on efforts that include student travel abroad.
- Service learning. Professor Lucky Yapa's Philadelphia project is a key example of a program that promotes education and scholarship that supports multicultural efforts. The service learning focus is being expanded by the Department of Geography.
- The development of international collaborative teaching projects and programs. The College established collaborative teaching project with universities in South Africa during 2003, and through AESEDA collaborative teaching with other African universities will be expanded. The College also proposes an International Internship Program in Materials (Department of Materials Science and Engineering) for juniors and seniors in collaboration with a host of universities outside of North America.
- The College has established a task force to promote a systematic College-wide approach to the new requirements for U.S. Cultures and International Cultures. We believe that we can substantially enhance the opportunities to foster intercultural and international competencies for science, engineering, and social science students.

Many of the specific elements of these programs are described in the sections that follow.

#### *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 members 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.
- The Biogeochemical Research Initiative for Education (BRIE), an NSF-IGERT program, encourages international collaboration by providing opportunities for extended stays at laboratories abroad. To date, eight students have utilized a total of \$20,000 in travel funds to work with researchers in Denmark, France, Italy, Japan and England.
- 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-U.S. border; gender and nationalism; sexism, racism, and fair employment as human rights issues; and urban poverty in the United States.
- 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. 35 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 "oneration.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.

In addition, the College proposes three new programs, the first two through AESEDA, that will promote curriculum development and innovation:

- A Joint Undergraduate Major in Georesources Management. EMS proposes a Joint Major in Georesources Management administered through AESEDA. 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. Students will explore ways in which the geosciences, social sciences, and engineering disciplines may be linked in a multidisciplinary approach that allows effective resource development, while promoting sustainable livelihoods for local communities. The major would be offered in conjunction with the degree programs in each of the Departments. Students would satisfy the degree requirements of the disciplinary major, including the University's General Education requirements, and would take an additional thirty credits in the joint major.
- A Professional Masters Degree in Georesources Engineering Management. Georesources Engineering Management (GEM) will integrate social, environmental and technical aspects of resource extraction and utilization. Although focused on Africa, the model is adaptable to any environment where extraction of georesources is a fundamental component of economic activity. New integrated learning models and metrics will bring together teachers, researchers and students from several African universities, HBCUs and Penn State to increase capacity and pioneer robust and mutually-enriching programmatic elements for participating institutions. It is expected that this program will draw a wide clientele including African-Americans, who may like a focus on Africa. Several internal candidates have already expressed interest in participating in this new degree program when established. AESEDA is working on developing the curriculum, which will be submitted to the Graduate School for approval.
- A focus on the Life Sciences. Faculty in the Department of Geosciences are leading the development of a B.S. degree in geobiology and biogeochemistry. Geography has added substantial emphasis in landscape ecology, and Materials Science and Engineering is developing a strong focus in biomaterials. These programs are a natural outgrowth of research strengths in the department and also

serve to promote life sciences within the College. Life science disciplines have one of the strongest track records in attracting female students of all science disciplines.

The College also proposes to promote a number of new international programs.

- The Department of Geosciences has formal student exchange programs with the University of Leeds, England, and McGill University in Montreal. Given the relatively small number of students who will travel abroad each year from a single department, we plan to limit the number of formal exchange programs to (6-8 across the College), and to focus on those institutions that are of interest to two or more of our departments. Some institutions will be selected because of their compatibility with our programs – offering students the opportunity to take courses that substitute directly for courses in their major (i.e. providing an opportunity to study abroad while maintaining regular progress in the degree). Others may be selected because they provide opportunities (field programs, for example) that are not available at Penn State.
- The College Center for Advanced Undergraduate Studies and Experience (CAUSE) offers a year-long research seminar for undergraduates. About half of these have included summer programs abroad. These will continue in the future, but we will add a second research seminar that has an African focus and will include a summer program in sub-Saharan Africa.
- The College has had success with collaborative teaching projects in which a Penn State course and a course at a South African university have been run in parallel, with the faculty sharing the teaching, and the students interacting via video conferencing. We plan to continue the development of such courses with several African partner institutions as part of our AESEDA initiative.
- The Department of Materials Science and Engineering is developing the International Internship in Materials (IIM) in order to enrich the learning experience of undergraduates by immersing them in international, world-class research activities. Likewise, by providing reciprocal opportunities for undergraduates from host institutions at Penn State, our students will benefit from the international student's perspectives and culture. Course credit will be dependent on previously arranged memoranda of agreement between the respective institutions. The students selected for the program will be offered research internships based on collaborations of MatSE faculty with faculty at the host institutions. Each student will have a faculty advisor at both the host and sponsoring institutions.

### ***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 College has now developed a task force to focus on U.S. and international competencies as a part of the new GI requirements. We are specifically focusing on mechanisms to introduce these competencies within a science, engineering, and social science curriculum. The College has committed resources for course development. We are also encouraging partnerships with other colleges.

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 has recently been approved. 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 Geosciences courses. 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.

The College utilizes College funds and has received a substantial endowment to support CAUSE. Future CAUSE classes will include a focus on Africa, through the linkages developed by AESEDA.

# 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. Each unit has set aside funds to support recruitment of graduate students from underrepresented populations. Our strategic goals, and the actions required to achieve them, are topics of frequent discussion at EMS executive council meetings. EMS leaders will remain as active participants in all of 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, and department heads have presented the opportunity to develop a more diverse leadership team. This has included the College's first female administrator (Director of the Earth and Environmental Systems Institute), the College's first African-American administrator (Director of AESEDA), and with a start date of August 15, 2004, the College's first African-American department head (Department of Energy and Geo-Environmental Engineering). The College is committed to ensuring diverse representation in the College administrative and executive levels. Associate Deans, Department Heads, Institute Directors, and the chair of the Faculty Advisory Committee are all members of the Dean's Executive Council.

The College faculty members have also approved a new representative body – the EMS College Council. The College Council, chaired by the Dean, will include administrative representation, chairs of the respective committees for faculty, non-tenure track faculty, staff, and students. The Council will include members of Graduate Council and EMS Senators. The Director of the Office of Diversity Enhancement Programs will also be a

member. The College Council will promote greater communication across the College, as well as greater access to leadership and to College representatives. The Director of the Office of Diversity Enhancement Programs is also a member of the College's Executive Committee – promoting communication and direct access to the administrative team.

***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. As a consequence, EMS has few opportunities to develop diverse applicant pools for administrative searches. The College is committed to developing a diverse applicant pool for every administrative opening. Recruitment will be an active process, including requests for vitae, personal discussions at national society meetings, and discussions with colleagues.

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 and will be 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 proposes to support these aspirations in four ways:

- Support of faculty who are interested in participating in the Administrative Fellows program or CIC leadership programs.
- Use of rank-balance criteria, and opportunities to name chairs for significant committees and task forces, to promote faculty and staff from underrepresented groups. 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 all faculty to College leadership and leadership roles, and creates a portfolio of service for the faculty member that promotes success.
- Development of the newly approved College Council as an opportunity to promote leadership opportunities for faculty, staff and students.
- Development of leadership initiatives. The College is currently developing a proposal designed to establish a Penn State Women's Issues Forum and a Leadership Center in the College of Earth and Mineral Sciences at Penn State. The Center and Forum will be dedicated to the development of women leaders in the disciplines of the College.

## **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, and will continue to be, 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. 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 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, 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.
- Climate and environment are now a prominent element of the administrative review criteria.
- 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 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.
- Climate assessment and metrics that measure success are now an active element of the tasks of the Diversity Council.

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

The College of Earth and Mineral Sciences has instituted several recent 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. The College has already committed \$250,000 in permanent funds in support of AESEDA.
- 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.

The College will continue to expand the resource commitment and development efforts directed toward fulfilling our commitment to fostering diversity in the College of Earth and Mineral Sciences. These initiatives have been described throughout this report. Some of the key commitments that require additional financial commitments include:

- Investments in a complete overhaul of the College web pages to ensure that diversity and climate are a prominent element of the College's home page, and that the home page is a gateway to all of our policies and plans, as well as to the University and surrounding community.
- Identification of a significant number of graduate teaching assistantships to support recruitment of African-American, Hispanic-American and Native-American graduate students.
- Identification of significant funds for recruiting African-American, Hispanic-American and Native-American freshmen. Each scholarship award will include a promise of continued scholarship funds based on student performance levels.
- A second doubling of the budget for Diversity Enhancement Programs during the next three years.

- The addition of a new recruiter/advisor for our new Student Center. This will enable every undergraduate in the College to have an assigned faculty advisor and an assigned formal advisor so that the College can take an even greater interest in the success of our students.
- Financial support for graduate student participation in SEEMS.
- Continued commitment to provide College-level “opportunity funds” as a direct match to the opportunity funds provided by the Provost. As a matter of policy, the College will fully match any funds provided by a department prior to seeking support from the Provost’s opportunity funds.
- Continued expansion of the budget and resources for AESEDA beyond its current \$250,000. This support will include the funding required to add 3 to 4 new faculty related to AESEDA in which the new faculty member can be in any discipline within the College, as long as they have a compelling and enduring interest in Africa.
- College funds, raised through development efforts, to provide up to \$750,000 to add to University funds in the completion of the new EMS Student Center (including the advising and tutoring functions), CAUSE classroom, and Freshman Seminar classroom, computer support complex in the Deike Building, designed to create a “home” for EMS undergraduates.
- Continued investment in developing new courses, programs and international experiences for our undergraduate and graduate students.

The College of Earth and Mineral Sciences also has a growing base of support for enhancing diversity through our development efforts. These sources of support include:

- 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.
- Lockheed Martin, \$20,000 to support Nittany Science Camp for Girls and Girls Utilizing Technology and Science.
- 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.
- \$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.

- 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.
- 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.
- The William F. Vogely Fund in the College of Earth and Mineral Sciences (\$20,000) 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.

The College is committed to enhancing our fund-raising in support of the Framework to Foster Diversity. Specifically,

- AESEDA has become a major target for College development activities from private giving, corporations, and foundations. 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 is actively working to enhance our Trustee scholarship resources to support need-based students and to endow the student-centered activities within the College.

## **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***

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, 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.