Toward the

ACHIEVEMENT

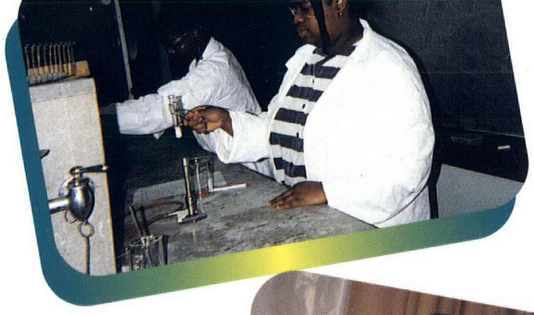
of a Diverse Scientific and Technological Workforce

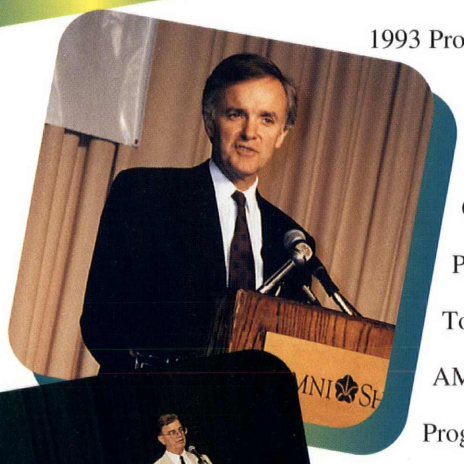
The National Science Foundation

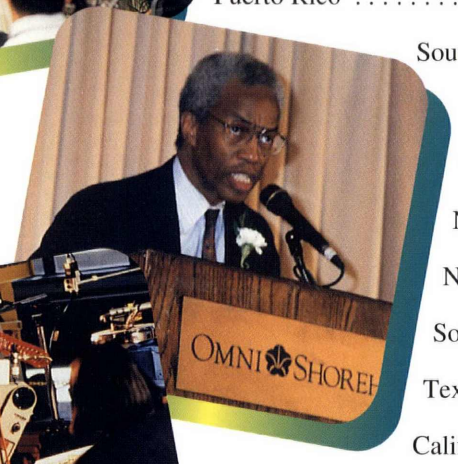
NATIONAL
AMP
Alliances for Minority Participation

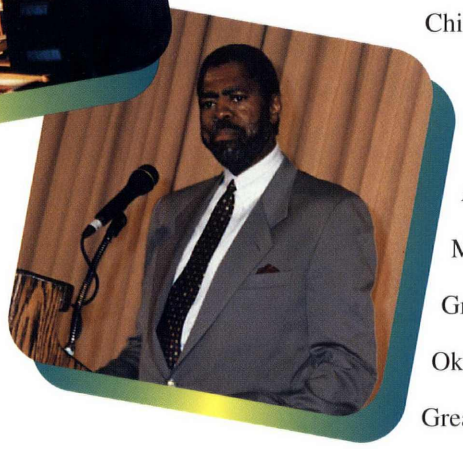
Alabama – Arizona – California – Mississippi – Puerto Rico – Texas
Florida/Georgia – New York – North Carolina – South Carolina
Illinois – New Mexico – Washington, D.C.
Michigan – Montana – New Jersey – Oklahoma – Pennsylvania

1994









Preparing a Diverse Scientific and Technological Workforce

Dr. Neal Lane

The National Science Foundation (NSF) takes very seriously its responsibility for mathematics, science, engineering and technology education. In fact, education is at the core of what we do at NSF. Education is a high priority within NSF because we want to ensure that we have a capable work force in the future.

In an increasingly complex and rapidly changing world, the complexity of jobs is also increasing. To compete successfully in this environment, a better understanding of basic mathematics and science concepts is essential. For this reason, we must focus attention on developing an education curriculum that prepares people for work in an increasingly technology-driven environment. All students must receive an education that provides them with problem-solving skills that will be useful throughout their lives. In our role as the catalytic agent for change, NSF has been very successful. We have been a leader in developing ways to broaden the base of students who are interested and engaged in science topics; and we will continue to do so.

- **A Commitment to Excellence**

I believe that the first element of our science, engineering, and mathematics education strategy must be a commitment to excellence; we must encourage creativity, innovation, and hard work from all students. This includes actively identifying and developing the talent and skills from groups underrepresented in the science, engineering, and mathematics work force (women, minorities, and persons with disabilities). For example, African Americans represented 11 percent of the total US work force in 1992 but only 3 percent of natural scientists, 4 percent of engineers, and 7 percent of math and computer scientists. Toward that end, we are making great strides with our Alliances for Minority Participation (AMP) program in boosting the science, engineering and mathematics enrollment of underrepresented minorities. We are dedicating our resources — that is, the resources of the American taxpayers — to help create programs that will enable these students to succeed. Statistics demonstrate that the efforts are paying dividends. Our 15 AMP consortia, the oldest of which has been in operation for just over two years, already have produced a net increase of 1,500 science, engineering, and mathematics baccalaureate degrees awarded to underrepresented minorities.

But we cannot afford to rest on the laurels of interim successes. Many challenges remain, and we must continue to focus on them. Far too many minority students are still "lost in the pipeline," and retention is a strong concern. While NSF alone cannot correct the culturally-based underpinnings of underrepresentation, we can and will continue to do our part.

Dr. Neal Lane
Director of the National Science Foundation

- **The Economic Impact is an Important Element**

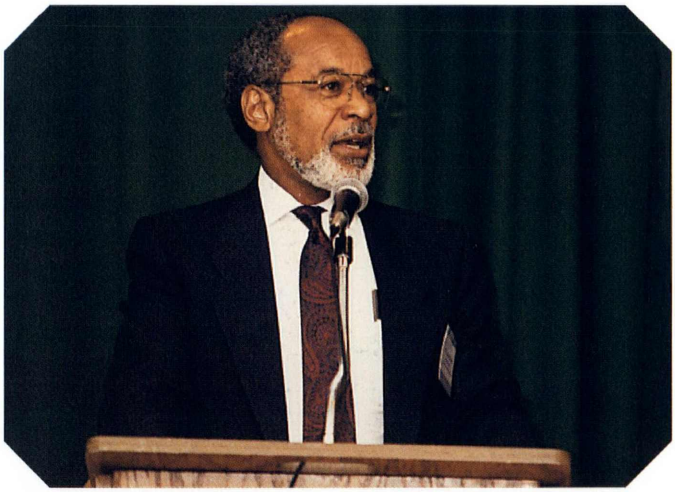
We recognize that the future of our nation's economic productivity may well depend on programs such as AMP. Over the next 30 years, minority students will increase from one-fourth to almost one-half of the total number of school-age children.

Collectively, women and minority students will constitute nearly three-fourths of all students in our elementary and secondary schools. By the year 2000, a substantial percentage of new entrants to the nation's work force will be women, members of minority groups, and persons with disabilities.

Yet demographics are not the sole justification — and perhaps not even the primary one — for dedicating resources to correcting the underrepresentation of minority students in science, mathematics, and engineering (SEM). Very simply, it is the right thing to do. We must not rest until all segments of the population have the same opportunity to learn mathematics, science, and engineering. Our children, and our nation, deserve no less.

EHR Coordinates NSF's Education Activities

Dr. Luther Williams



Dr. Luther Williams
Assistant Director
Directorate for Education and Human Resources
The National Science Foundation

Primary responsibility for the National Science Foundation's educational activities is assumed by the Directorate for Education and Human Resources (EHR). The programs supported by EHR represent a continuum of activities covering student, teacher, and faculty development and improved public science literacy.

These programs provide for upgrading educational materials and equipment and for new approaches to science, mathematics, engineering, and technology education (SMETE).

The nuclei of EHR's efforts are changing the curriculum and the classroom, promoting science to students and the community, enhancing teachers and their craft systemically with specific emphasis on their individual and collective impacts.

The Directorate supports projects managed by five divisions and one office. Below is a brief outline of the activities supported under each division or office:

- The Division of Teacher Preparation and Enhancement supports activities designed to improve the qualifications and effectiveness of SEM elementary and secondary school teachers.

- The Division of Materials Development, Research, and Informal Science Education supports programs that develop, improve, and disseminate instructional materials and methods in both informal arenas and classroom settings.

- The Division of Undergraduate Science, Engineering, and Mathematics Education focuses on undergraduate education in two-year and four-year colleges and universities. It manages undergraduate education programs of its own and coordinates the education activities supported by the research directorates.

- The Division of Research Career Development manages programs at the graduate and postdoctoral levels.

- The Division of Human Resource Development supports student enrichment, teacher development, curriculum expansion, and research-oriented and training activities designed to correct underrepresentation at every level of SEM education.

- The Office of Studies, Evaluation, and Dissemination serves all units engaged in educational programs by supporting data collection, conducting analytic and evaluative studies of SEM education at all levels, and evaluating individual projects and programs. It also supports the dissemination of the results of NSF supported projects.

The expansion of activity in the Education and Human Resources Directorate over the last few years has taken place within the context of careful attention to strategy that will permit effective use of the increased programmatic resources. More specifically, NSF has taken the position that resource acquisition and new programming must be coupled with defined outcomes and results–a literal and profound change in the basic paradigm. This accommodation acknowledges that shift from inadequate, insufficient and, perhaps, even ill-defined objectives to emphasis on documentable measures of progress toward the achievement of specific goals for programs of appropriate scope and scale. In these efforts, we are responding to the challenges of the present and the future that entail a fundamentally different order of resourcefulness and productivity expectations.

Future efforts must ensure the systemic objectives of EHR are realized and rapid progress is being made in such instances as innovation transferability, sustainability, full implementation of math/science standards based on instructional innovations, equitable participation by all students, and enhanced project design informed by research and practice. By effectively conjoining individual experiences, outcomes, knowledge bases, programs, and resources, the nation will be afforded a reasonable opportunity to address an exceedingly complex problem. The resolution of this problem will further increase the quality of life for all its citizens.

Division of Human Resource Development Focuses on Achievement

Dr. Roosevelt Calbert

The Division of Human Resource Development (DHRD) has primary responsibility for broadening participation of individuals from underrepresented minority groups in science and engineering. The activities reflect NSF's growing commitment for developing the resources of the scientific and technological community as a whole and ensuring an adequately trained research and development work force in the next decade.

To meet the challenges presented by the nation's accelerating needs in science and technology, DHRD is initiating a consolidated thrust to increase the presence of minorities, women, and persons with disabilities in science and engineering. The objectives of DHRD are to:

1. increase the representation of minority individuals in SEM at all educational levels through more comprehensive and regional initiatives;

2. strengthen the research and training capabilities of academic institutions with significant minority student enrollments;

3. increase the number of women in science and engineering careers; and

4. increase the number of persons with disabilities participating in SEM.

The Annual Diversity Conference, held each year in Washington, DC, provides a unique opportunity to highlight the achievement of programs in DHRD. The following is a summary of program achievements.

- The Second Diversity Conference represents the NSF's effort, on a national scale, to increase the participation of minority students in science, engineering, and mathematics (SEM).

- Student participants include representatives from pre-college, undergraduate, and graduate level programs sponsored by NSF, all exhibiting the results of intense educational and scholarly endeavors during the past year.

- The Summer Science Camps (SSC) Program, established in 1992, had an increase in the number of projects from 28 in the initial year, involving 1,700 students, to 56 projects in 1993 involving a total of 3,262 minority students in grades seven through nine.

- The Partnerships for Minority Student Achievement (PMSA) Program was also established in 1992 with grants to four public school districts involving 49,329 minority students in grades K-12. In 1993, five additional districts received funding with a potential involvement of 106,230 students. This brought the total number of precollege minority students impacted in nine major school districts to 155,559.

- The Comprehensive Regional Centers for Minorities (CRCM) Program has the broadest scope of intervention activities of the three precollege programs in the Human Resource Development Division. Established in 1988, the Program increased from 12 awards in 1992, involving approximately 27,000 students, to 14 projects in 1993 involving 46,140 students.

Dr. Roosevelt Calbert
Director
Division of Human Resource Development
The National Science Foundation

- NSF's precollege programs are reaching 204,961 minority students in the K-12 sector.

- The Research Careers for Minority Scholars (RCMS) Program, which has a 92% retention rate, provides scholarships to 1,078 undergraduate students who are involved in significant research experiences with research-active faculty mentors. At the 1993 Diversity Conference 143 of these students made presentations on their research.

- The Alliances for Minority Participation (AMP) Program, a multidisciplinary comprehensive undergraduate Program, initiated six projects in 1991 with an undergraduate enrollment of 40,834 students in science and engineering disciplines. In 1992, the enrollment for these projects increased to 44,307. Forty-one of these students made research presentations at the 1993 Diversity Conference.

- NSF's programs for undergraduate minority participants are reaching 45,385 minority students.

- Two institutional and research-focused Programs, Research Improvement in Minority Institutions (RIMI) and Minority Research Centers of Excellence (MRCE), show an increase in the production of Master's degrees earned by minorities in science and engineering from 21 in 1991 to 51 in 1993. These programs are represented by 82 students who will make high quality research presentations that will ultimately be published in refereed journals.

Alliances for Minority Participation Is Outcome Oriented

Dr. William McHenry

Dr. William McHenry
Program Director
Alliances for Minority Participation
The National Science Foundation

The National Science Foundation's Alliances for Minority Participation (AMP Program) plays a critical role in the nation's efforts to increase the participation of individuals from groups underrepresented in science, engineering, and mathematics.

Since the effectiveness of the SEM workforce is directly related to the ability of US science and technology to compete in a global economy, the nation must provide an opportunity for talented students from all ethnic and gender groups to prepare for and successfully pursue careers in SEM. Currently not all students have an equal opportunity to compete for degrees in SEM fields. For a myriad of circumstances, individuals from certain minority groups are underrepresented in SEM at all higher education degree granting levels. African Americans, Latinos, and American Indians are not as likely to pursue careers in SEM as are individuals from other ethnic groups (e.g. African Americans represent 12.1% of the general population, yet they earned only 4.8% of the BS degrees in engineering, life sciences, mathematics, and the physical sciences, 2% of the masters degrees, and 1% of the doctorate degrees in those disciplines in 1991.)

To address this concern, NSF initiated the AMP program in 1991. AMP is the National Science Foundation's flagship initiative for helping the nation in meeting its SEM workforce needs of the Twenty-First Century. AMP is a multidisciplinary comprehensive undergraduate program designed to increase substantially the quantity and quality of minority students receiving baccalaureate degrees in science, engineering, and mathematics and, subsequently, to increase the number of minority students entering graduate schools to obtain the doctorate in SEM fields supported by the NSF. AMP requires the formation of coalitions among SEM leaders throughout academia, government, industry, and other organizations to better use their knowledge, resources, and capabilities in addressing AMP's goals. AMP is outcome oriented. Its goals are to increase the number of individuals from underrepresented minority groups completing the doctorate degrees in Natural Science and Engineering (NS&E) disciplines from about 350 currently to 2,000 annually by the year 2010 and the number of minority individuals completing BS degrees from about 13, 000 to 50,000 annually by the year 2000.

The AMP program will have a significant impact on the SEM workforce. AMP institutions are committed to better serve all SEM students today and to institutionalize changes that will ensure that all students have access to quality SEM educational opportunities. Institutions, businesses, or other organizations should consider becoming a part of the AMP team. The initiation fee (proposal preparation, SEM community team building, and an institutional diversity self-study) and the membership dues (the annual AMP project evaluations by NSF, AMP Site Visits, AMP Annual Reports, and AMP Reverse Site Visits) are high, but the rewards are higher.

1993 Profile of AMP

- The Alliances for Minority Participation (AMP) program is a multidisciplinary and comprehensive undergraduate program designed to increase significantly the number of baccalaureate degrees in science, engineering, and mathematics earned by individuals from groups who are underrepresented in SEM.

- AMP supports alliances via cooperative agreements that contain each alliance's goal (the current number of minorities obtaining BS degrees in SEM and the alliance's five year goal) and specific work statements that describe how the alliance will achieve its goal. Each alliance agrees to participate in an annual three-phase project review process that involves (1) a site visit, (2) an annual report, and (3) a reverse site visit.

Group I Alliances

	Enrollment Increases			Degree Production		
Alliances	**Fall 1991**	**Fall 1993**	**Increase**	**1990**	**1992**	**Increase**
Alabama	4,075	4,983	22%	541	746	38%
Mississippi	2,864	3,434	20%	288	436	51%
Southern Rocky Mountain	7,064	9,803	39%	484	664	37%
Texas	1,331	1,470	10%	344	516	50%
Puerto Rico	12,624	13,823	9%	1,709	1,896	11%
California	10,390	12,137	17%	1,339	1,453	9%
Total	38,348	45,650	19%	4,705	5,711	21%

Group II Alliances

	Enrollment Increases			Degree Production		
Alliances	**Fall 1992**	**Fall 1993**	**Increase**	**1991**	**1992**	**Increase**
North Carolina	8,378	9,635	15%	1,098	1,340	22%
Florida/Georgia	9,842	12,902	31%	537	594	10%
New York City	4,360	4,942	13%	321	351	9%
South Carolina	2,637	2,704	2%	232	270	16%
Univ. of Texas System	9,645	10,192	6%	564	573	2%
Total	34,862	40,375	16%	2,752	3,128	14%

AMP Awards Summary

1991 Alliances

Alabama
The University of Alabama at Birmingham

Arizona
Arizona State University

California
The University of California - Irvine

Mississippi
Jackson State University

Puerto Rico
The University of Puerto Rico

Texas
Texas A&M University

1992 Alliances

Florida/Georgia
Florida A&M University

North Carolina
North Carolina A&T State University

New York
The City University of New York

South Carolina
The University of South Carolina

Texas
The University of Texas at El Paso

1993 Alliances

California
California State University

Illinois
Chicago State University

New Mexico
New Mexico State University

Washington, D.C.
Howard University

1994 Alliances

Michigan
Wayne State University

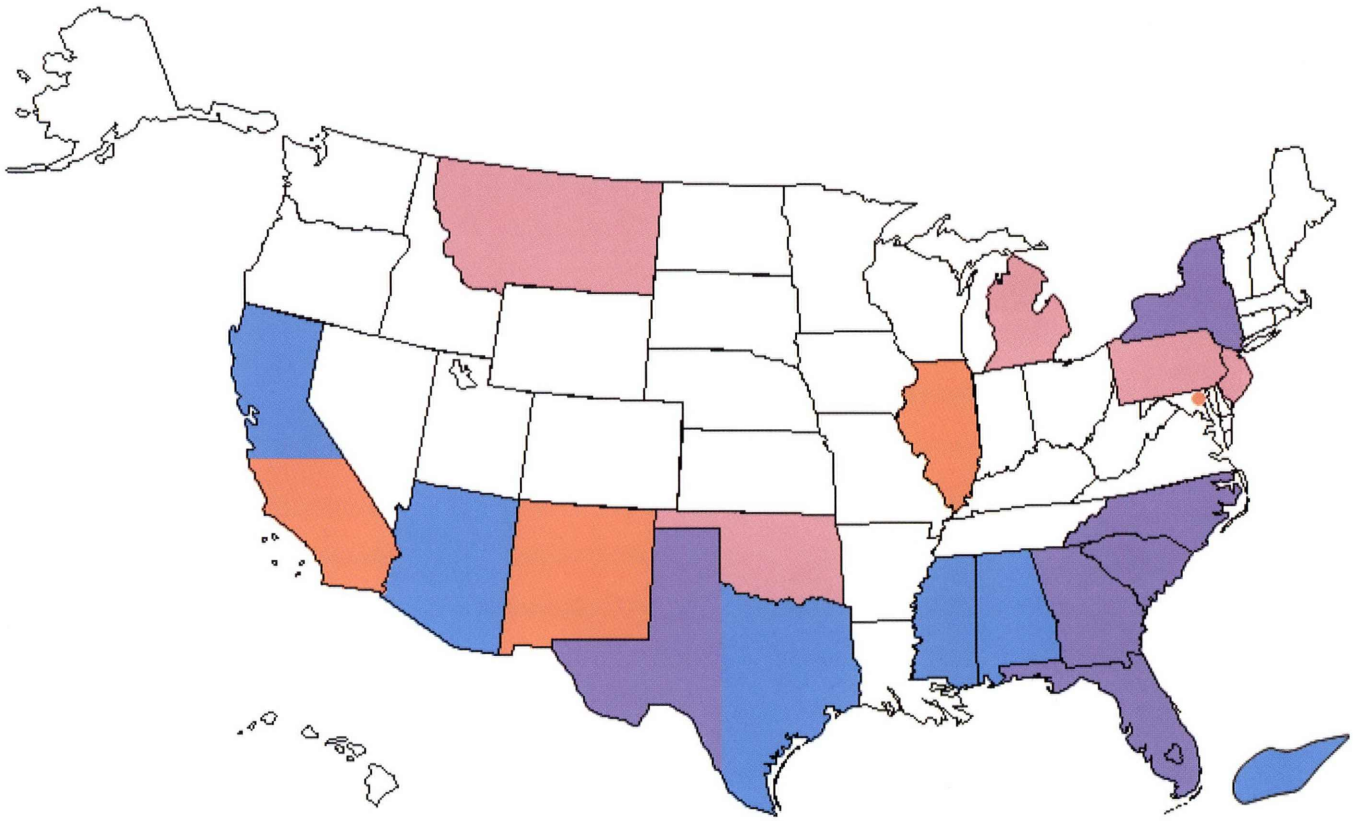
Montana
Montana State University/Salish Kootenai College

New Jersey
New Jersey Institute of Technology

Oklahoma
Oklahoma State University

Pennsylvania
Temple University

AMP Awards Recipients



1991 Alliances

1992 Alliances

1993 Alliances

1994 Alliances

Common Project Activities

- **Each Alliance has developed strategies for addressing "Gate Keeping" courses.**

  - The Alabama Alliance received the Noel-Levitz 1994 Retention Excellence Award.

  - Montana State University, representing the All Nations Alliance, received $500,000 from the David and Lucile Pardard Foundation (We are pleased at the prospect of joining forces with NSF, AIHEC and the All Nations Alliance to increase the number of American Indians in the scientific professions).

  - The American Council on Education, the College Board, the Rockefeller Foundation, and the Charles A. Dana Foundation are supporting the Arizona Alliance's MEGA conference on expanding minority opportunities.

- **Each Alliance has developed meaningful collaborations with colleges, community colleges, universities, and businesses.**

  - The South Carolina AMP developed a Memorandum of Understanding with the State's Statewide Systemic Initiative (SSI) and Experimental Program to Stimulate Competitive Research (EPSCoR) projects. Jointly the State has appropriated $600,000 for AMP, $1,800,000 to SSI, and $2,000,000 to EPSCoR.

  - Mississippi's AMP has developed for all the AMPs an agreement with Stennis Space Center (SSC) businesses that will provide opportunities for AMP students to intern at SSC.

  - Florida is working with the NSF funded National High Magnetic Laboratory to develop opportunities for AMP students.

  - Texas has over $500,000 worth of agreements with businesses, primarily to provide summer opportunities for AMP students.

Common Project Activities

- **Each Alliance has implemented strategies for institutionalizing AMP activities.**

  - Dr. Walter Massey led the University of California institutions in placing a direct appropriation into three programs that he described as vital to the future of SEM in California and AMP was one of the programs ($1,000,000).

  - Many AMPs receive direct appropriations from their states to support AMP activities– Alabama, Mississippi, Florida, South Carolina, and City University of New York.

  - Many institutions and businesses are forming new relationships based on the institutions' involvement as an AMP.

- **The Alliances for Minority Participation Program Calculus Reform Initiative at Historically Black Colleges and Universities (HBCU) and Minority-Serving Institutions**

  - North Carolina A&T University (NCAT), Hewlett-Packard (HP) Co., the Mathematics Association of America (MAA), NSF (HRD and DUE), HBCU, and other minority-serving AMP institutions have formed a national Calculus Reform Initiative within the AMP framework.

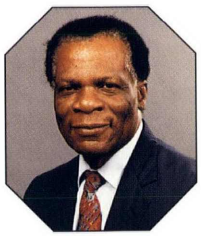
  - HP donated $255,000 in equipment (42 classroom sets of graphing calculators – 30 HP 48s, a classroom display device, an infrared printer, PC and MAC interface hits, and instructional materials).

  - The MAA provides the technical assistance (TA). The TA involves (1) a ten-day summer workshop for calculus faculty members, (2) four weekend cluster meetings, and (3) an on-call expert who can be accessed to assist with any problems encountered by participating institutions.

  - NCAT provides national leadership for this project, coordinates evaluation and dissemination of project activities, and convenes a panel of calculus professors from participating institutions to ensure those institutions are active in calculus reform initiatives.

Project Directors

ALABAMA

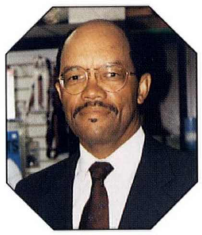


Dr. Louis Dale
Associate Vice President
Professor of Mathematics
The University of Alabama at Birmingham

CALIFORNIA

Dr. Laurel L. Wilkening
Chancellor
University of California, Irvine

MISSISSIPPI



Dr. Richard Sullivan
Chairman
Department of Chemistry
Jackson State University

PUERTO RICO

Dr. Manuel Gomez
Professor of Physics
University of Puerto Rico

SOUTHERN ROCKY MOUNTAIN

Dr. Gary D. Keller Cardenas
Regents' Professor
Arizona State University

TEXAS

Dr. Ana Guzman
Associate Vice Chancellor for
Academic Support Programs
Director of Texas AMP
Texas A&M University

FLORIDA/GEORGIA

Dr. Lynette Padmore
Professor of Biology
Florida A&M University

NEW YORK CITY

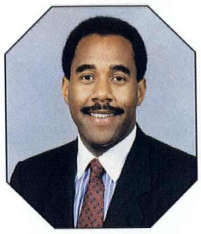
Dr. Fitzgerald Bramwell
Dean
Graduate Studies and Research
City University of New York

Project Directors

NORTH CAROLINA

Dr. Harold L. Martin
Dean, School of Engineering
North Carolina A&T State University

SOUTH CAROLINA



Dr. Michael Howell
Research Associate Professor
University of South Carolina

TEXAS SYSTEM

Dr. Diana Natalicio
President
University of Texas at El Paso

CHICAGO

Dr. Dolores E. Cross
President
Chicago State University

NEW MEXICO

Dr. Ricardo Jacquez
Professor of Civil Engineering
New Mexico State University

CALIFORNIA STATE

Dr. Alfonso F. Ratcliffe
Dean Emeritus
San Francisco State University

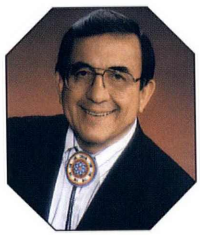
WASHINGTON-BALTIMORE-HAMPTON ROADS

Dr. Clarence M. Lee
Dean
Howard University

DETROIT

Dr. Hanley Abramson
Associate Provost
Wayne State University

ALL NATIONS



Dr. Joseph McDonald
President
Salish Kootenai College

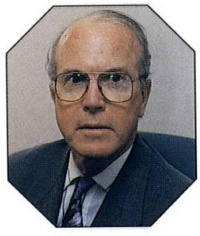
NEWARK

Dr. Harold Deutschman
Professor of Civil Environmental Engineering
New Jersey Institute of Technology

OKLAHOMA

Dr. Earl Mitchell
Interim Associate Vice President
for Multicultural Affairs
Oklahoma State University

PHILADELPHIA



Dr. James England
Provost
Temple University

Toward the Achievement of Goals

Dr. Luther Williams

Several years ago, NSF elected a comprehensive, systemic and collaborative strategy for its programs for minorities. Further, this strategy obligated the enumeration of specific quantitative goals framed in a milestone context.

Specifically, we dared to publicly state the goals:

(a) to increase the number of minority undergraduate science and engineering degree recipients from approximately 13,000 to 50,000 annually by the year 2000 and,

(b) to occasion a corresponding increase in minorities receiving SEM doctorate degrees from less than 350 to 2,000 annually by the same calendar year.

Under this new paradigm, primacy was assigned to:

(a) programming to accommodate each level of the education continuum;

(b) resource acquisition or programming that permits the transition from programs, per se, to results; an accommodation that acknowledges the shift from inadequate, ill-defined, highly fragmented objectives/programs to emphasis on documentable measures of progress toward the achievement of specific goals and milestones;

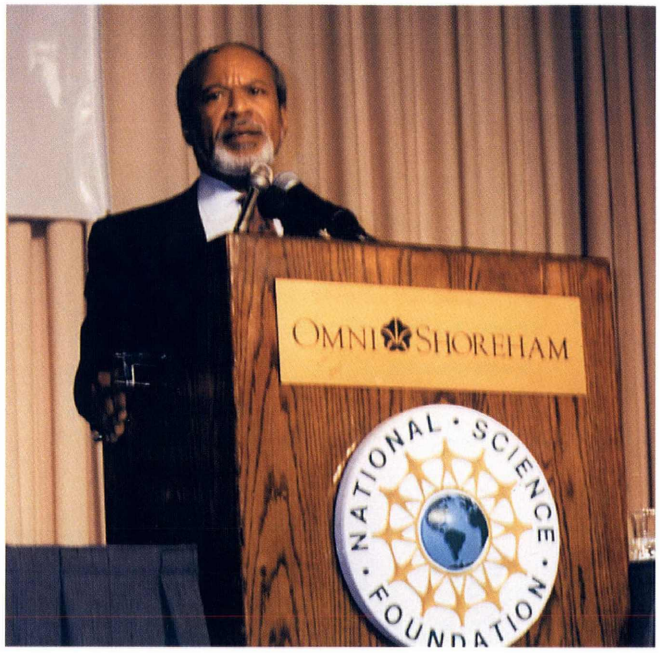
(c) setting the program domain to equal the requisite scale and scope of the problem;

(d) increased emphasis on accountability, i.e., acknowledging that the students are the customers; that program monitoring and evaluation are mandatory; that extant program designs must be sufficiently elastic to permit alternative efforts in response to new knowledge/understanding/outcomes/productivity gains; and

(e) non-redundancy, as regards program investment costs, is the hallmark.

What have we accomplished via 203 projects? Impact data from the 1992-93 academic year show the following:

Students	Precollege	Undergraduate
Base	86,000	40,000
Goal	170,000	82,000
Increment	78,658	45,385



Through our programming, we seek to disallow less purposeful, less connected, and "entrepreneurial at the margin" activities that serve to reinvent the status quo. Rather, we seek to contribute to the production of contemporary, agile, and competitive participants (problem solvers) throughout the K-undergraduate continuum—consistent with demands for greater yields, program monitoring, and evaluation to occasion greater accountability.

We elect a new paradigm for making goals and rearching goals together. When the media focuses so much on the pathology and not the progress of minority communities, it is often difficult for minority youths to transform despair into hope—but they must, and our collective efforts must serve as an effective vehicle.

We must break rank with modest goals designed to yield, at best, partial address of complex problems and effectively challenge that assorted collection of anthropological, sociological, psychological academic paraphernalia that bespeaks of something other than excellence in the instance of ethnic and racial minorities in science, engineering, mathematics, and technology.

Let me close by referencing the words of one of our great educators, Benjamin Mays, the President of Morehouse College in Atlanta for several decades, "The tragedy of life does not lie in not reaching your goals, but having no goals to reach. Not failure, but low aim is sin."

National

• AMP Project Directors' Collaboration Gets Results

Dr. William McHenry held a joint Project Directors meeting in 1993 involving AMP and RCMS Project Directors to discuss collaboration with various government and private agencies. A by-product of that meeting was the beginning of collaborative efforts among the AMP Project Directors. The efforts include the following:

- Publication of the 1993 National AMP Brochure. Because of the need to inform the public of AMP activities, this will become an annual publication.

- Southeastern AMP Student Conference and Science Exhibit Competition. This conference was attended by over one hundred students and faculty from twenty-two AMP colleges and universities throughout the United States. A second conference will be held in 1994.

Physical Sciences

First Place	Second Place
LaBarron McMillan	Jabar Williams
University of	University of
Southern Mississippi	California-Irvine
Mississippi AMP	California AMP

Mathematics and Computer Science

First Place	Second Place
Judine Fairweather	Jerri Moore
Bethune-Cookman	Florida A&M
College	University
Florida/Georgia	Florida/Georgia
AMP	AMP

Engineering

First Place	Second Place
Stacie Mebane	Jerome Davis
North Carolina A&T	University of
State University	California-Irvine
North Carolina AMP	California AMP

Life Sciences

First Place	Second Place
Yvonne Harris	Alea Eusebio
Tuskegee University	University of
Sonya Hartley	California-Davis
Oakwood College	California AMP
Alabama AMP	

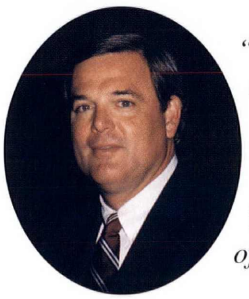
Alabama

- **Alabama AMP Retention Program Wins National Recognition**

  The University of Alabama at Birmingham and Alabama AMP were recipients of a 1994 Retention Excellence Award presented by the Noel-Levitz National Center for Student Retention. The award was in recognition of Alliance-wide retention efforts resulting from a retention study of Alabama Alliance Institutions conducted by Ms. Theresa Smith, Director of Institutional Research at the University of Oklahoma.

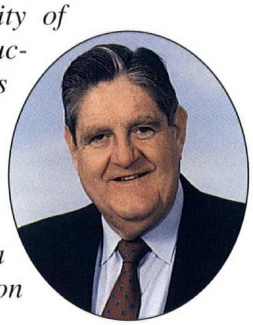
- **Political Leaders Laud Alabama AMP**

  As Alabama AMP passed the midpoint of its five year award period, political leaders took this opportunity to express their continuing support and their satisfaction with program efforts and accomplishments.



Governor Jim Folsom

"We are proud of the National Science Foundation-supported Alabama Alliance for Minority Participation Program and its success in Alabama and the Southern Region. This program, with the cooperation of the major state universities and the Historically Black Colleges and Universities, has increased the number of minorities receiving bachelor's degrees in science, engineering and mathematics in Alabama. The state will certainly benefit from these efforts by having highly skilled people available to work in high tech jobs as more industries locate in Alabama over the next several years. The Alabama Alliance for Minority Participation Program provides invaluable assistance in this endeavor."

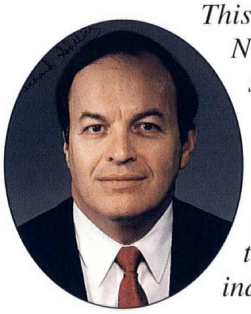


Senator Howell Heflin

"I am pleased that The University of Alabama at Birmingham has a successful program which encourages minority youth to enter undergraduate school in the areas of science, engineering and mathematics.

The success of the Alabama Alliance for Minority Participation Program has not only been a benefit to the minority youth of Alabama, but an inspiration for future development in our state.

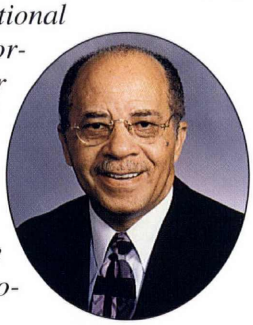
I am certainly encouraged by the number of universities and colleges in the state of Alabama participating in such a fine program. Our young people need to be prepared to face the challenges of the Twenty-First Century. This program provides assistance to that preparation."



Senator Richard Shelby

"It is with great pride that I salute and endorse the Alabama Alliance for Minority Participation Program. This program, in conjunction with the National Science Foundation, has substantially increased the number of minority students receiving bachelor's degrees in science, engineering, and mathematics. These highly skilled youth will be assets to the state in medicine, technology and industry.

I am especially pleased that this program, with the support and cooperation of colleges and universities throughout the state, will encourage not only Alabama, but the entire Southern Region to excel in research and development."



Mayor Richard Arrington, Jr.

"The City of Birmingham is grateful to The University of Alabama at Birmingham and the National Science Foundation for their sponsorship of the Alabama Alliance for Minority Participation. I commend the Project Director, Dr. Louis Dale, the participating Historically Black Colleges and Universities, and especially the young people who have been selected for this program.

I shall not belabor the point about the serious challenge we face in our nation in preparing our young people for an increasingly competitive world market. The statistics which tell us what the composition of our labor force will be in the year 2000 clearly underscore the need to enhance educational opportunities for talented minority students, such as the participants in this program. I thank you all for helping to meet the challenge through this program for minority student participation."

- **Three More Universities Join Alabama AMP**

  Auburn University, Grambling State University, and The University of Alabama joined the Alabama Alliance this year, bringing the total number of institutions to thirteen. This number includes nine Historically Black Colleges and Universities and four majority universities. With the addition of Auburn and Alabama, the Alliance now contains all of the major state-supported universities.

Arizona

- **Southern Rocky Mountain AMP Exceeds Its Goals**

The Southern Rocky Mountain AMP Alliance has exceeded its goals for both the first and second year of activities. We had proposed to serve 400 Level 1 (intensively served) students in each of the first two years, and we actually served 611 the first year and 656 in the second year. Level 1 students were engaged in new activities that were created with AMP funding which were: Faculty-Directed Undergraduate Research Projects; Peer Study Groups; Summer Bridge Programs; and Undergraduate Summer Research and Graduate Preparation Institutes. In all, 297 distinct projects were undertaken during the first two years (1991-1993) of our alliance. These activities are made possible by the commitment of over 500 resource individuals at 75 campuses and organizations in our alliance. Each individual is committed to participating in the SRM-AMP by instructing, mentoring, or tutoring students and/or being a member of one of our operational committees. Approximately 85% of these resource personnel are scientists, engineers, and other faculty, and 15% are administrators; just over 40% of them are underrepresented minorities themselves.

California

- **California AMP Has Outstanding Accomplishments**

Contact with scientists, both academic and corporate, is a critical component to encouraging minority students to complete their undergraduate degrees and to continue their education into graduate school. A total of 1,378 students participated in various CAMP activities, including undergraduate research. This is an increase of 139% over the first year. CAMP students attended and, in many cases, presented research at a variety of professional societies and research conferences including the National Society of Black Engineers, the American Indian Science and Engineering Society, the Society for the Advancement of Chicanos and Native Americans, the American Zoological Society, the Southeastern AMP Student Research Conference (where three students received awards for their posters), the American Indian Research Opportunities conference, the NSF Diversity Conference, and others. CAMP supported 163 student trips to conferences during the program's second year. Additionally, dozens of minority scientists have addressed CAMP audiences through the *CAMP Seminar Series* at participating institutions.

Programs targeting community college students supported participants in their plans to transfer to four year institutions by providing academic enrichment and academic support services including personal contacts with faculty and graduate students.

A sub-committee of industry representatives was created from the CAMP Advisory Board to focus on the development of a plan to maximize corporate involvement and intern placement throughout the Los Angeles and Orange County area. Students are being matched with exciting internship opportunities at several different corporations for summer 1994. Plans are underway to expand this model program to other regions.

New York

- **New York Alliance Takes on New Members**

The New York City Alliance now includes sixteen City University of New York (CUNY) campuses and covers all five boroughs of New York City. The addition of the College of Staten Island, Baruch, Queens and York Colleges ensures that Alliance curriculum reforms will be felt throughout CUNY. The new colleges add to the project's strength in mathematics and computer science and improve the ratio of senior to community colleges. They increase the number of students participating in the Alliance by 25%, bringing the total to 6,200.

NASA's Goddard Institute for Space Studies (GISS) and the U.S. Food and Drug Administration's Northeast Regional Laboratory have joined the Alliance. Such partnerships offer Alliance students and faculty the opportunity to do research and analytical work alongside distinguished scientists in state-of-the-art laboratories.

The Undergraduate Research Experience Program is in full swing on CUNY campuses: sixty minority students are currently receiving Alliance research stipends.

CUNY and Polytechnic University of New York have forged a groundbreaking public-private educational partnership under the auspices of two NSF programs: the Alliance at CUNY and RCMS at Polytechnic.

Eleven Alliance Research Scholars at Queensborough Community College are working with faculty on the Queensborough-based, NSF-funded project *Engineering Technology for the 21st Century.*

The CUNY Office of Academic Affairs is supporting the Alliance professional development program with a $20,000 grant for colloquia on workshop approaches to teaching Calculus, Chemistry and Physics based on the ideas of City College alumnus Uri Treisman.

Puerto Rico

- **Puerto Rico AMP Continues Trend**

The Puerto Rico Alliance for Minority Participation (PR-AMP) Program consists of an alliance of all major institutions of higher education on the island that offer BS degrees in SEM. As of 1993, enrollment of minority students in science and mathematics programs in Puerto Rico totalled 9,231, while enrollment in engineering programs totalled 3,937. The main strategy is to promote systemic changes in undergraduate education and thus, increase the number and quality of minority students graduating in SEM fields by 934 per year by 1996, an annual increase of over 30%.

PR-AMP increased the number of student interventions by over 60% from 3,397 the first year to 5,445 during the second year. The most significant growth occurred in the intensive student interventions: 3,280 intensive ones out of a total of 5,445 total interventions (which is 60% of the interventions that occurred during the second year of the program). This is a bias for long-lasting intensive activities which will have a permanent impact on PR-AMP institutions.

One of the major barriers to increasing the number and quality of students graduating in SEM fields is the traditional way of teaching SEM. Seventy-one (71) % of all intensive student activities are systemic interventions (2,322 out of 3,280) which will have a permanent effect on the way SEM courses are taught and, therefore, facilitate changing the teaching-learning culture in the institutions in the Alliance.

The transformation of the way SEM is taught has been undertaken by the Undergraduate Center for Curricular Assessment and Development in which multi-institutional teams of faculty have conducted an in-depth curricular assessment of the gatekeeper and bottleneck courses. Key curricular revisions, such as the integration of lectures with laboratories in the Physics courses and the application of the principle of "less is more" to Mathematics, have been critically examined to reduce the amount of content and increase the depth of understanding. The results of the assessment efforts are being implemented through pilot projects.

The trend to increase PhDs granted to Puerto Ricans, both in Puerto Rico and the mainland, has continued, reaching a total of 76 in 1992. Among Hispanic PhD recipients, the UPR was the source of BS degrees for 20% of females and 16% of males.

South Carolina

- **South Carolina AMP Produces Encouraging Results**

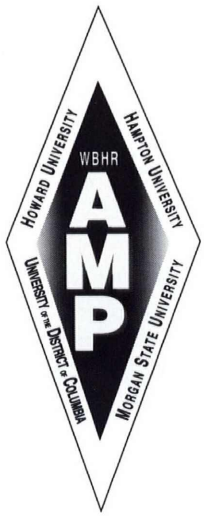
Academic reforms in calculus and pre-calculus have provided encouraging results. Students participating in "reformed" calculus at Benedict College experienced a 65% increase in passing grades; and a dramatic increase in the number of As and Bs, as compared to previous years. In contrast to the overall class average of 1.8 (out of 4.0), students who participated in pilot sections of calculus workshops at USC-Columbia had an average of 3.1. Special problem solving workshops in Chemistry were initiated in the fall of 1993 as part of the physical sciences curriculum reform efforts.

In 1993, 109 rising freshmen took part in SCAMP Summer Bridge Programs that primarily focused on Pre-Calculus instruction. The majority of the participants received As and Bs. Students participating in directed summer research represented SCAMP at the 1993 Southeastern Student Conference in Birmingham, Al, and the 1993 NSF Diversity Conference in Washington, D.C. Faculty from several SCAMP institutions have participated in USC-Columbia's University 101 training seminars and are implementing various aspects of this successful course at their institutions. To foster cooperation among three major South Carolina NSF projects, a memorandum of understanding was developed between SCAMP, SSI (Statewide Systemic Initiative) and EPSCoR (Experimental Program to Stimulate Competitive Research) projects. The memorandum specifies areas of mutual concern that the projects have agreed to address and work together on providing a system of scientific, educational, and research reform from K-Graduate School in South Carolina. As evidence of the State's commitment, the South Carolina Legislature has appropriated $600,000 in matching funds for SCAMP activities in 1994.

Texas

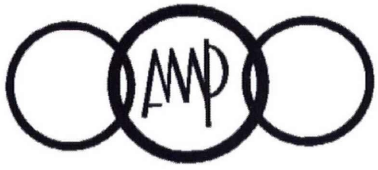
- **Texas AMP Takes Innovative Steps to Increase Minority SEM Graduation**

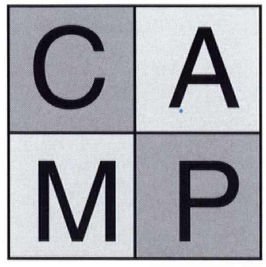
During the 1992-93 year Texas AMP took incremental steps toward significantly increasing minority graduation in SEM disciplines by spearheading a series of innovative activities. These innovations resulted in a 26% increase in the number of minority graduates from 1991-92 to 1992-93, a 36% increase in minority sophomore enrollment, and an 86% increase in transfers from community colleges to four-year institutions. The activities included: 1) supplemental instruction workshops for gatekeeping courses; 2) summer internships for students from community colleges and four year institutions; and 3) summer bridge programs for over 185 incoming freshmen and community college transfers. These carefully planned programs continue to strengthen the pipeline between community colleges and four year institutions to increase the numbers of minority students who choose SEM careers and are able to successfully complete a bachelor's degree.



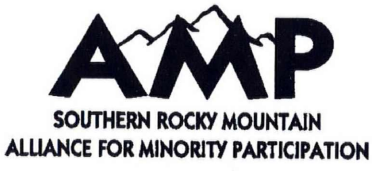
NATIONAL AMP

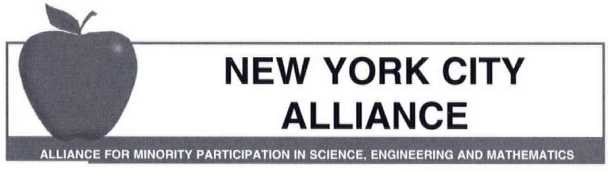
Alliances for Minority Participation

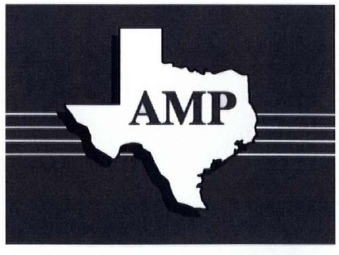


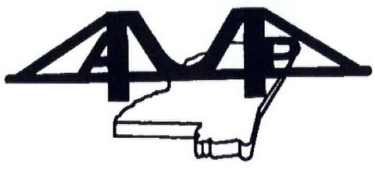


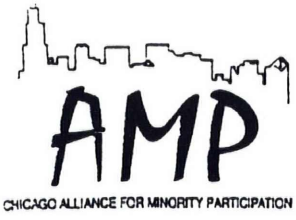
Program Descriptions →





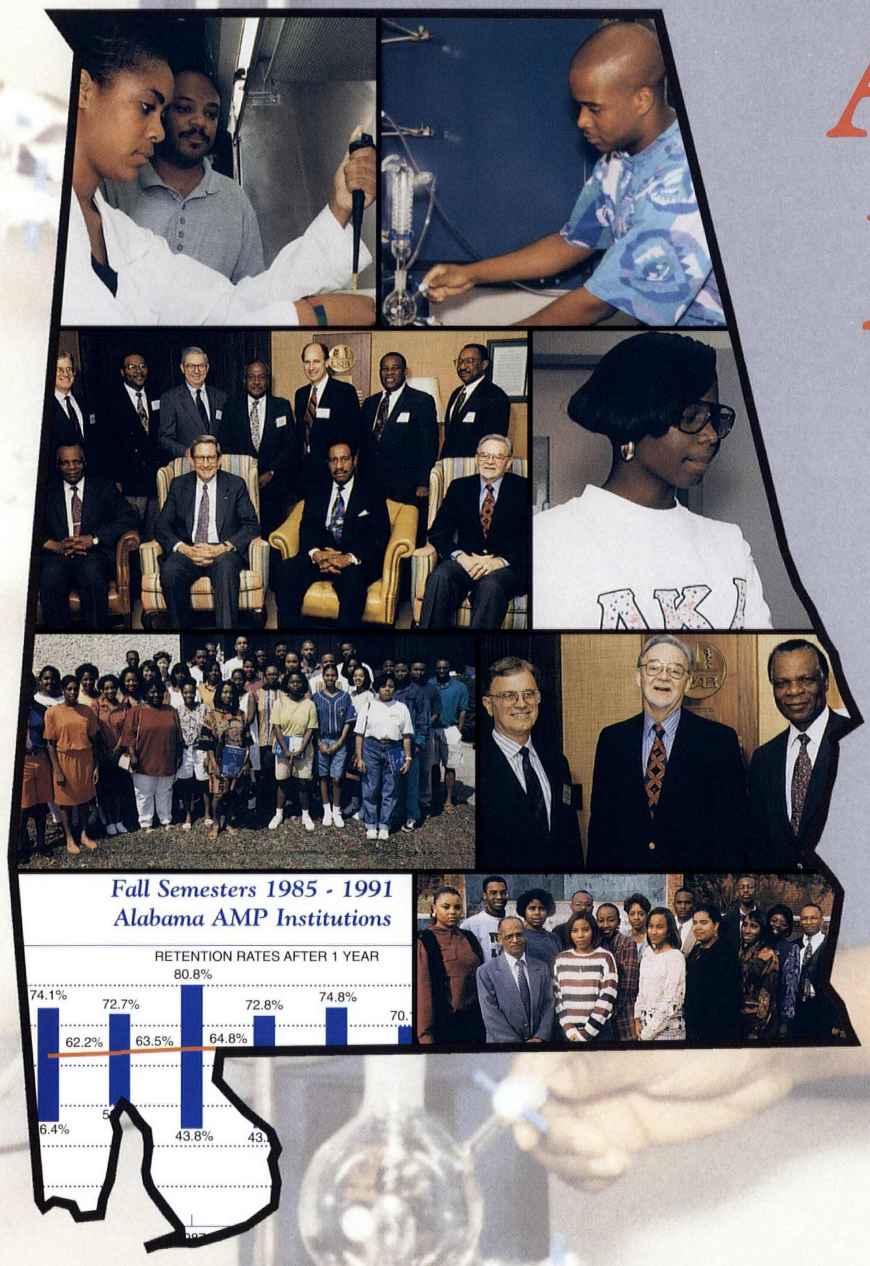






Alabama

Alliance for Minority Participation



Increasing the quantity and quality

of minority students receiving degrees in science, engineering, and mathematics

Alliance

Alabama Alliance for Minority Participation is an alliance consisting of the National Science Foundation, nine Historically Black Colleges and Universities, four majority universities and four national and international businesses with a single goal of significantly increasing the number of minorities receiving bachelors degrees in science, engineering, and mathematics in Alabama and portions of the South. Conceived and initiated by ten black faculty members at these institutions with PhD degrees in mathematics and science, Alliance programs include:

- **AMP Scholars**-A group of high achieving minority students, supported by Alabama AMP, forming a nucleus or core of successful science, engineering, and mathematics students and role models at each alliance institution. These students lead study groups and serve in the AMP Drop-In Centers.
- **AMP Summer Research Internship Program**-A program involving students from the alliance institutions in research activities, mentoring, and science career seminars. Students prepare research projects for presentation at the Student Conference.
- **AMP Student Summer Conference**-A conference bringing students from alliance institutions together to share experiences and meet graduate students studying science, engineering, and mathematics. Students are exposed to minority scientists and other role models and present research projects resulting from their Summer Internship Program.
- **AMP Institution Mentoring Program**-A program involving AMP Scholars and faculty mentors in academic guidance activities. Faculty mentors provide assistance in academic and other school related matters.
- **AMP Drop-In Centers**-A center at each alliance institution designed to assist students taking science, engineering and mathematics courses. These centers are used for group study sessions in all of the sciences and are equipped with computers and appropriate software. They are staffed by faculty and students and some have a full-time director.
- **AMP Faculty Conferences**-A series of conferences bringing science and engineering faculty from alliance institutions together to discuss and make recommendations concerning student retention, curriculum reform, and student progress in the science "gatekeeping" courses. Notable speakers are invited to give a national perspective on these issues.
- **Summer Bridge Program**-A summer program for entering freshmen planning to study science, engineering, and mathematics at alliance institutions. Program participants receive academic enrichment, attend weekly seminars and career counseling sessions and engage in mentoring and orientation activities.
- **Annual Southeastern AMP Student Conference and Science Exhibit Competition**-An annual conference and scientific exhibit competition bringing NSF AMP students from throughout the United States together to share successes and problems faced by minority students. A forum is provided to showcase student research.

Alliance Institutions

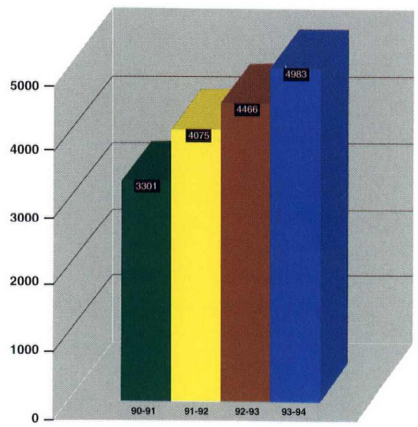
Alabama A and M University
Alabama State University
Tuskegee University
The University of Alabama at Birmingham
The University of Alabama in Huntsville
The University of Alabama
Grambling State University
Miles College
Oakwood College
Stillman College
Talladega College
Tougaloo College
Auburn University

Alliance Business Partners

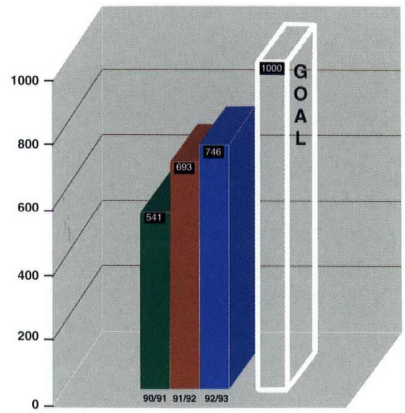
The Coca-Cola Foundation
Time Warner/Southern Progress
Minnesota Mining and Manufacturing (3M)
American Oil Company (AMOCO)

Program Results

SEM Enrollment History



SEM Degree Production



CALIFORNIA AMP

Chancellor Laurel L. Wilkening
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WHAT IS THE CALIFORNIA ALLIANCE FOR MINORITY PARTICIPATION?

The California AMP program raises aspirations and adheres to the philosophy that creative research is one of the highest academic goals undergraduates can attain and one of the best ways to prepare them for persistence and success in graduate work or transition into the corporate workplace.

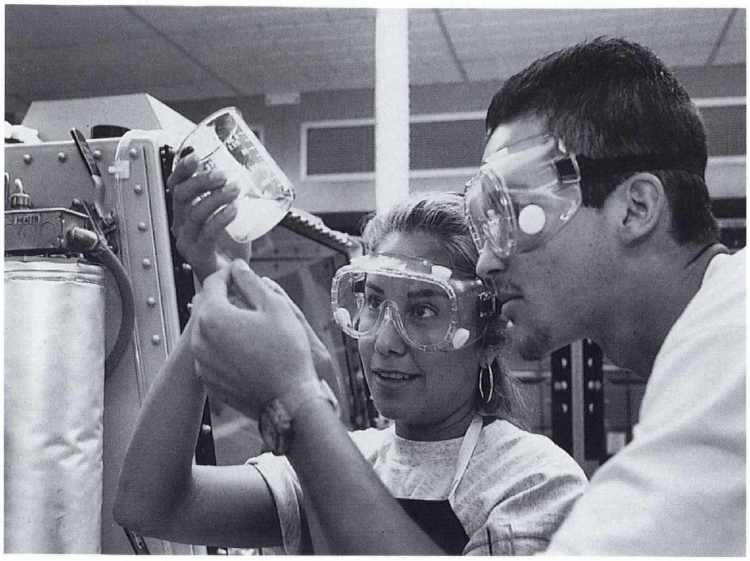
CAMP was established in 1991 through a five-year cooperative agreement funded by the National Science Foundation. The Alliance promotes a common vision: to double the number of minority students (from 1,339 to 2,678) who successfully complete undergraduate degrees in science, engineering, and mathematics majors across the State of California and to develop an education pipeline for access to these disciplines which will continue beyond the duration of the NSF grant. Administered at the University of California, Irvine (UCI), CAMP provides stipends and support for research, educational travel, and internships to students through four regional alliances coordinated at UC Davis, UCI, UCLA, and UC Santa Cruz.

CAMP is a consortium of faculty at UC campuses, California State Universities, California Community Colleges, independent colleges and universities, and national laboratories working together to achieve a doubling of minority BS recipients in California. Cooperative relationships with MESA, the American Indian Summer Institute in Computer Science (AISICS), and other NSF programs with congruous goals provide improved communications and continuous opportunities for students from all regions of California. Corporate partnerships within each region provide for student placement in industrial research and development settings. Program participants must be enrolled in a two-year or four-year college or university in the state of California.

SERVICES & BENEFITS FOR STUDENTS AT FOUR YEAR INSTITUTIONS

Faculty provide a wide variety of services and programs under the auspices of CAMP. The prevailing philosophy is that scientists are best developed by other scientists serving as mentors who exhibit and expect scholarly excellence. A partial list of services includes:

Faculty Mentoring
Academic Skills Development
Distinguished Faculty Seminars
Internships with Industry
Science Conferences
Access to Computer Labs & Study Centers
Electronic Mail Access
Facilitated Study Group Sessions
Professional Development Activities
Presentation Skills Development
Individualized Academic Advising
Tutoring for Select Topics
Hands-on Research Opportunities
Employment Opportunities
Social Activities
Opportunity to Help Others



CALIFORNIA COMMUNITY COLLEGE

The purpose of these programs is to assist California Community College students with transfer to a four-year college or university by providing a rigorous academic program that models work which is consistent with the corresponding transition between a two-year and a four-year school.

At one CAMP Site, Workshops for Excellence Programs (WEP's) are offered during the academic year at local community college campuses to build math and science skills and to forge a sense of community and commitment to excellence among underrepresented students. During these workshops, collaborative learning styles are fostered while creative problem solving and analytical thinking are encouraged. WEP's are offered in math, chemistry, geology, and engineering.

At two other Sites, a one-week, residential, summer institute offers academic preparation in basic science, math, and computer science curricula. Specific topics include calculus, chemistry, scientific writing, electronic mail, and library skills.

A partial list of services includes:

Academic Advancement

Chemistry, Mathematics, Scientific Writing, Electronic Mail, Library Skills

Institutional Services

Academic Advising, Admissions, Financial Aid, Basic Study Skills, Time Management

Social Interactions

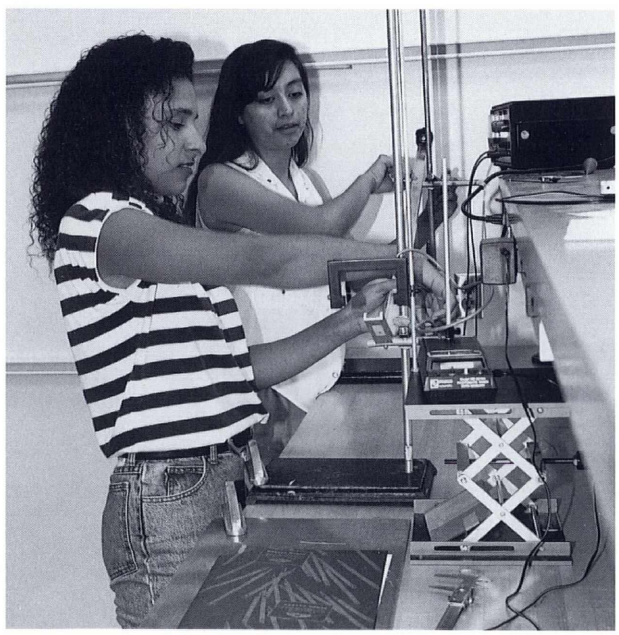
Small and large group interactions, barbecue, recreation activities, recognition event

CORPORATE PARTNERS

Rapidly changing demographics of the workforce in California have led CAMP corporate partners to an understanding that the preparation of a technically educated pool of employees for the 21st century must include a significant number of historically underrepresented individuals. Corporate partners have an opportunity to collaborate in the shaping of goals and objectives for improved science education. Participating corporations benefit from the synergistic linkages offered through the Alliance.

Corporate sponsors interact with program participants and faculty in a variety of settings. Industry representatives are invited as speakers to address CAMP students at local and statewide symposia, to participate in seminars with leading experts for industry and Academe, and to supervise student interns.

A sub-committee of industry representatives created from the CAMP Advisory Board focuses on the development of a plan to maximize corporate involvement and intern placement throughout the Los Angeles and Orange County area. To date, at least 10 new internships are being offered at seven different corporations for summer 1994. Recruitment and placements occur during the spring. Plans are underway to expand this model program to other regions. Companies which excel at workforce planning for tomorrow begin with CAMP today.



MISSISSIPPI

ALLIANCE FOR MINORITY PARTICIPATION

MAMP is a statewide alliance of Mississippi's eight publicly supported universities. Participating institutions include Alcorn State University, Delta State University, Jackson State University, Mississippi State University, Mississippi University for Women, Mississippi Valley State University, University of Mississippi, and University of Southern Mississippi.

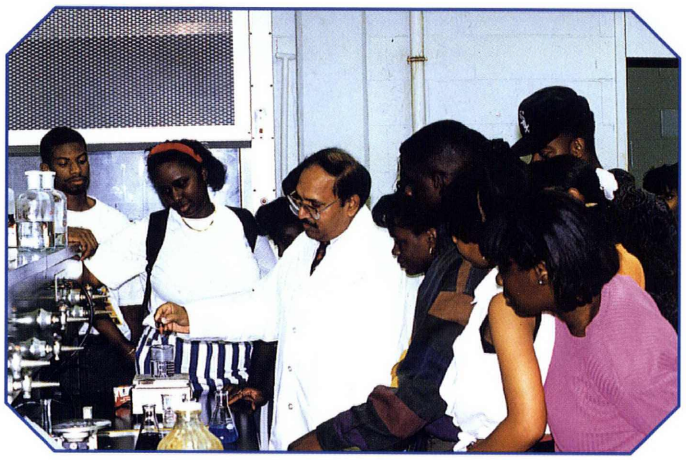
By 1996, Mississippi will more than double the number of minority students who earn SEM degrees to 600 annually.

IMAGE (**I**ncreasing **M**inority **A**ccess to **G**raduate **E**ducation) is the primary focus of the Mississippi Alliance. MAMP programs which support this goal are:

- **IMAGE Scholars:** a number of students at each institution are partially supported by MAMP scholarships and form the core of student participants on each campus.
- **Summer Bridge Program:** A 4-6 week residential program on each campus assists in "bridging the gap" between high school and the freshman year of college. These are intensive programs consisting of both academic and life skills activities. Full support for housing and subsistence as well as weekly stipends are provided.
- **Drop-in Centers:** Space on each university campus dedicated to MAMP student activities. These activities include individual tutoring, computer-assisted instruction, study groups and meetings with faculty and peer mentors.
- **Professional Conference:** Many IMAGE students attend and present papers or posters at the annual meeting of the Mississippi Academy of Sciences (MAS). At the MAS meeting they have the opportunity to meet with MAMP students from other universities in the alliance as well as to interact with professional researchers from academia and industry. MAMP students also participate in regional and national conferences such as the annual NSF Conference on Diversity in the Workforce and the National Conference on Undergraduate Research.
- **Undergraduate Research Experiences:** IMAGE Scholars are encouraged to link with a faculty member in his/her discipline to develop research skills. The expectation is that this linkage will motivate students to consider and prepare for graduate education.
- **Outreach:** MAMP students serve as mentors, role models, and facilitators for students and teachers at area middle and high schools.
- **SEM Curriculum Reform:** A number of science, engineering, and mathematics faculty have initiated programs with MAMP financial support designed to increase student success in "gatekeeper" courses such as chemistry and mathematics.
- **Workshops:** Student Empowerment and "Learning to Learn" Workshops are conducted to assist students with reaching their goals of high achievement.

Bridge to Graduate School seeks to increase the number of MAMP students who continue SEM studies on a graduate level. Activities which facilitate this transition to graduate study include:

- **Graduate Bridge Newsletter;**
- **GRE Workshops;**
- **Dissemination of information on graduate fellowships and assistantships;**
- **Assistance with application to graduate school.**

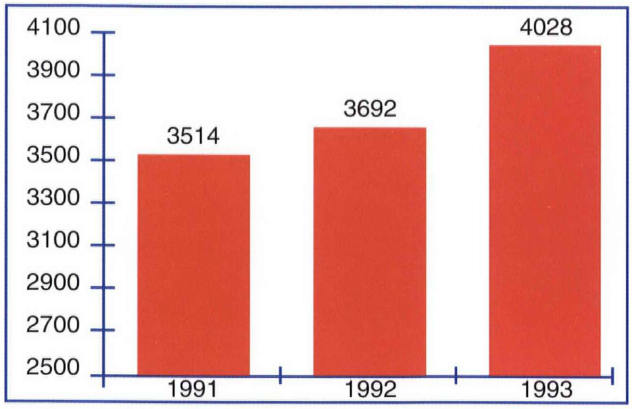


Business and Industry Linkage

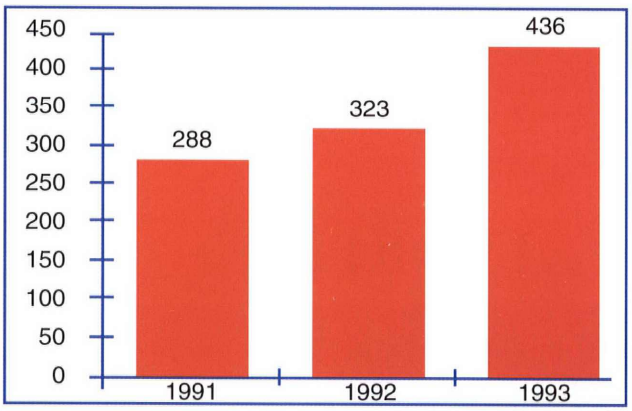
expands and strengthens partnerships between the business and academic communities to serve both the needs of business for productive professionals, and the needs of minority students for support and experience during their undergraduate years. Business, government, and industrial sites are asked to participate in a variety of ways including provision of:

- **Internships for undergraduate students;**
- **Visiting scientists for seminars and interaction with IMAGE scholars;**
- **Professional mentors for IMAGE scholars;**
- **Student tours of business and industry facilities.**

YEAR 2 Accomplishments
Enrollment and Degrees Granted



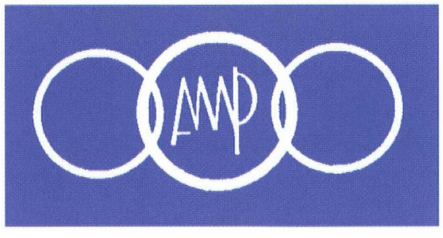
SEM Enrollment in MAMP Institutions



SEM Degrees Granted by MAMP Institutions

Both enrollment and SEM degrees granted to minority students in Mississippi universities have increased significantly since MAMP's baseline year. With a 15% percent increase in enrollment, and a 51% increase in degrees granted, the eight institutions of MAMP are making notable progress toward the five-year goal of doubling annual degree production to 600 by 1996. Over 800 Level 1 students who received MAMP funds ranging from book stipends to full support posted an average GPA of 2.91 for the academic year. Special consideration was given to increasing student involvement in research through participation in mentored research projects during the academic year, summer internship placements, and professional conferences.

PUERTO RICO ALLIANCE FOR MINORITY PARTICIPATION



WHO IS ELIGIBLE?

All students enrolled in two-year or four-year colleges or universities in the Alliance.

PR-AMP ALLIANCE INSTITUTIONS

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WHAT IS THE PR-AMP?

Puerto Rico Alliance For Minority Participation (PR-AMP) was established in 1991, through a five-year cooperative agreement funded by the National Science Foundation. The major public and private institutions of higher education, joined in an Alliance with the goal of developing a comprehensive, statewide program to increase the number of students who successfully complete undergraduate degrees in science, mathematics, and engineering, and to develop an educational pipeline for PhDs in these disciplines. PR-AMP provides stipends and support for research, educational travel, and internships to students through the alliances.

PR-AMP aims at transforming SEM undergraduate education by:

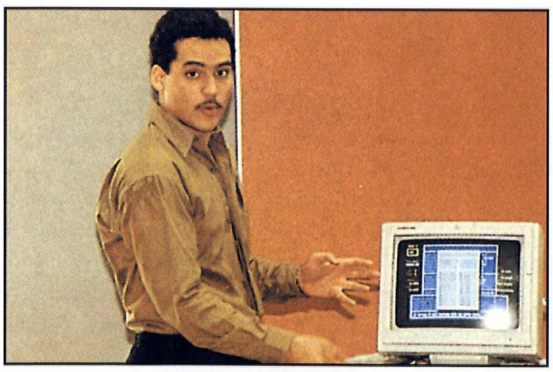
1) providing students access to top quality curricular and extracurricular experiences that will help them develop higher level cognitive skills and increase their competence and motivation to pursue graduate studies and careers in SEM fields;

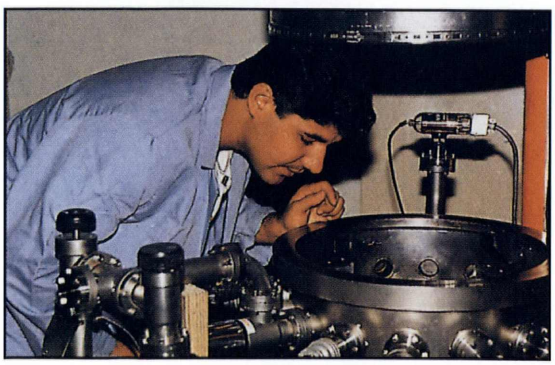
2) transforming the undergraduate curriculum, particularly the gatekeeper courses (introductory courses that turn students away from science careers) and the bottleneck courses (upper division courses that prevent students from graduating), by modifying course content and adopting innovative teaching strategies;

3) strengthening research capabilities of the faculty;

4) strengthening opportunities in engineering education, and

5) strengthening graduate programs at UPR Graduate Centers.





SIGNIFICANT PR-AMP PROGRAMS

Awards for highly meritorious low income students to increase the pool of students who continue studies in SEM by providing them with additional financial assistance for unmet needs

Presentations in Scientific Meetings to enhance undergraduate preparation and students' motivation in SEM research by developing their scientific communication skills and exposing them to scientific meetings in the mainland

Cooperative Learning Student Groups to increase the number of students graduating with bachelor degrees in SEM by promoting active and pro-active learning processes

Traveling Lectures Series to broaden students' knowledge and interest in current developments in SEM and applications to industry, to improve their preparation and motivation for careers and graduate studies in SEM

Orientation Lecture Series to increase students awareness of the broad number of options for graduate studies and careers in SEM and assist them in defining career goals and plans to achieve them

Workshop on Scientific Presentations to provide students with the enhanced skills needed for participation in research related activities and scientific forums

Summer Research Programs to increase research experience opportunities for students in order to improve their preparation and motivation to continue graduate studies in SEM

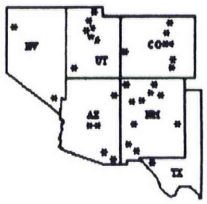
Puerto Rico Interdisciplinary Scientific Meeting (PRISM) to enhance minority students' preparation and motivation in SEM research, thus encouraging them to pursue graduate studies and careers in SEM

Short Courses/Workshops for Continued Education of Faculty to keep undergraduate faculty current on SEM developments and in effective strategies to enhance the quality of the courses they teach

Summer Faculty Research (Minisabbaticals) Program to improve the research competence of undergraduate faculty by expanding their research opportunities, therefore improving their ability to train undergraduates in research

Collaborative Research Opportunities to improve research competence of undergraduate faculty to strengthen their teaching of research and expand their research experiences

Other PR-AMP Programs are in place. Please contact the AMP liaison office in your institution.



Southern Rocky Mountain AMP

NSF sponsored undergraduate component of the Coalition to Increase Minority Degrees.

CIMD
Coalition to Increase Minority Degrees

The SRM-AMP is very active in enhancing the undergraduate experience for minority students through a number of activities including: Faculty-Directed Research Projects, Peer Study Groups, Summer Transition Programs, Undergraduate Summer Research, Graduate Preparation Institutes, and Internships. Our alliance encompasses institutions from Arizona, Colorado, New Mexico, Utah, and westernmost Texas. All told, over 1,200 individuals representing 75 institutions and organizations from this region are part of the Southern Rocky Mountain-AMP.

The Minority Engineering and Sciences Summer Bridge Program University of Colorado at Boulder

The Sun Devil Bridge Program faculty and team leaders displaying logos designed by all three teams

This past summer, SRM-AMP transition programs included *The Minority Engineering and Sciences Summer Bridge Program* at the University of Colorado at Boulder and the *Sun Devil Bridge Program at Arizona State University. The Minority Engineering and Sciences Summer Bridge Program* served 25 minority students in a four-week program designed to better prepare freshmen engineering and science students for the rigors of university coursework during their first semester at UC Boulder. Students built peer networks; bolstered their academic preparation for calculus, physics, and chemistry; and developed collaborative learning skills.

The Sun Devil Bridge Program was a first-time collaboration between Arizona State University and South Mountain Community College to provide a five-week residential program for 32 minority students who were either freshmen or transfers planning to attend the College of Engineering at ASU. Students took a combination of coursework in communications, computer programming, and manufacturing technology during the program. Throughout the program, the students worked in teams to design and manufacture a plaque with the Sun Devil Bridge Program logo. Teaming and competition provided enthusiasm, encouraged peer study, and helped students adjust to the university environment.

SRM-AMP students who engage in Faculty-Directed Research activities provide written reports on their research projects. Each year, some SRM-AMP students also present their research results at regional and national conferences. One popular conference for SRM-AMP student research dissemination is the annual Society for Advancement of Chicanos and Native Americans in Science (SACNAS). The SACNAS conference, held March 24-28, 1994, in Chicago, saw eight SRM-AMP students display posters describing their research accomplishments. The SRM-AMP attendees are undergraduates from the University of Arizona, El Paso Community College, Arizona State University, New Mexico Highlands University, and New Mexico State University.

SACNAS Conference student attendees from left to right: Edward Elkan, Eloisa Romero, Angela Martinez, Raye McCabe, Patricia Rodriguez, Alan Bedell, Sean Garcia, and Marc Reyes

This year SRM-AMP is expanding AMP networking and information dissemination capabilities through the use of software, an electronic network, and a national conference. These additional media will greatly increase the efficiency and the speed in which we can coordinate and communicate within our alliance with students and faculty as well as with the other alliances around the country.

During the past two years, we have compiled numerous sources of financial aid and internships for minority students in the sciences and engineering. This spring we published Hypermedia-based software *(HyperAid)* that allows students to search their database electronically. During the summer, SRM-AMP established an electronic bulletin board accessible through the Internet that will allow students to download *HyperAid* and other files of interest, communicate with faculty and students, and conduct electronic peer study groups. The electronic peer study groups will be formed by having students work problem sets in calculus, chemistry and physics which will be developed by upper division minority students under the direction of faculty who routinely teach these gatekeeping courses.

On January 19-21, 1995, the *First Annual National Conference on Expanding Minority Opportunities* will be held in Tempe, Arizona. Sponsorship for the conference is provided by the American Council on Education, Arizona State University, the Coalition to Increase Minority Degrees, The College Board and the Charles A. Dana Foundation. The conference will focus on coalition building at each step along the educational pipeline from precollege to postgraduate employment issues. Educators, educational administrators, students, foundation officers, corporate representatives, and minority initiatives program staff from around the nation will be present to discuss issues of critical importance to minority students and minority professional opportunities in education and in employment.

Texas Alliance for Minority Participation is aiming high. Its goal is to dramatically increase the number of African American and Hispanic Texans who earn the BS degree in the sciences, engineering, and mathematics. In 1990, the number was 500. The target for 1996 is 1,500.

Texas AMP, led by Texas A&M University, is composed of senior institutions, community colleges, industry, and national laboratories. NSF funding for the alliance is administered by the Texas Engineering Experiment Station, a state agency dedicated to improving the economy of Texas through engineering research and technology development.

Why Texas Needs AMP

"Texas AMP will make a major contribution to our state over the coming years, particularly in achieving a greater participation of African-American and Hispanic students in engineering and science degree programs. The students assisted by Texas AMP today will play a central role in our technological enterprise of the future. " says Dr. Ana Guzman, Director of Texas AMP.

Between 1980 and 1990, Texas experienced a population increase of almost 2.8 million, the third largest increase in the nation. Two-thirds of this growth came from minority populations.

"By the end of this century, projections suggest that one-third of Texas residents enrolled in colleges in the state could be minority compared to about 26 percent in 1990—and that number could grow to nearly one-half by 2025," says Guzman. "The quality of our technical work force and enterprise in Texas and the nation is clearly linked to the educational experience these students receive."

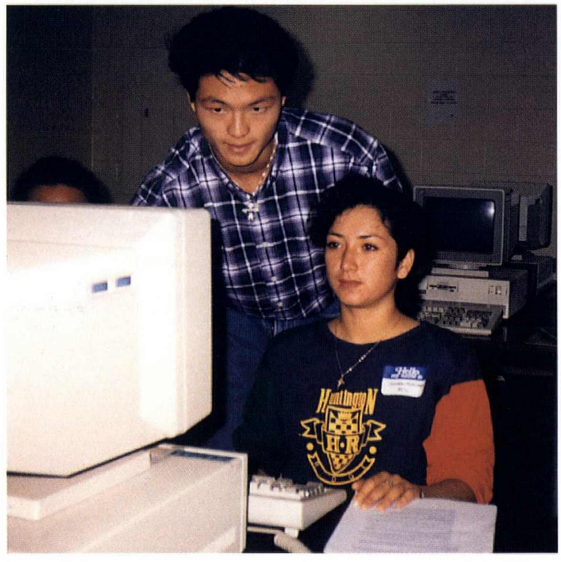
Why Students Need Texas AMP

"Because the quality of mathematics and science courses offered in Texas high schools varies so widely, minority students in many instances enter college without the rigorous science and mathematics course work that non-minority students have received in their schools," Guzman explains.

"Texas AMP, through funding from the National Science Foundation, helps remove obstructions that minority students face at four-year institutions and creates a pipeline between community colleges and four-year institutions," she says.

Students in the alliance's community colleges visit participating four-year institutions during recruitment weekends, qualify for stipends at those institutions and attend summer bridge programs. Entering freshmen also participate in bridge activities.

"Minority students often feel isolated when they face a lack of 'community' in larger, four-year institutions," Guzman notes. To combat this problem, Texas AMP provides for clustering of minority students in gatekeeping courses, where they receive enrichment from graduate students. To further improve the delivery of these key subjects,



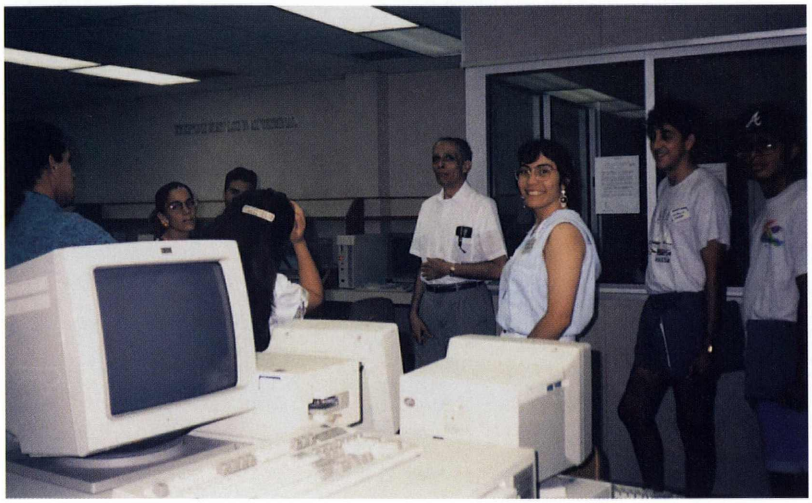
TAMUK Discovery & Exploration Day (Pal Alto College Participant receiving assistance from TAMUK engineering student)

additional funds are allotted to establish peer study groups that build a sense of community and help students cope with the challenges of university life and course work.

Technical internships and private sector scholarships also play a key role in the success of Texas AMP. Students who earn the bachelor's degree in engineering or science and then enter industry with this experience are clearly more valuable and productive as employees—as well as better prepared for advanced training in their disciplines.

"Traditionally, community college students have not had equal access to industry internships," Guzman observes. "However, through Texas AMP, industry is being recruited so that all students can benefit from this experience."

Scholarship support often makes the critical differ-



Community College Bridge I '93
Engineering professor demonstrating
TAMUK lab facilities to participants

ence in whether minority students can afford to pursue studies in higher education. Similarly, private sector stipends allow pre-college minority students to participate in summer engineering and science programs, proven to be highly effective in recruiting and retaining students for college-level programs.

Creating the Pipeline

A primary goal of Texas AMP is to establish a direct pipeline between community colleges and four-year institutions. Two activities that promote this goal are the Trans-Texas Videoconference Network (TTVN) and the Office of Transfer and Articulation.

The TTVN network, available to all members of the Texas A&M University System, allows Texas AMP institutions to communicate with each other, to offer professional development activities and to team teach courses that otherwise might not be available on some campuses. Community colleges in the alliance are within a two-hour drive of a Texas A&M University TTVN site and are able to access this videoconferencing network.

The Office of Transfer and Articulation, directed by Ms. Elva Short, assists minority students in making a smooth transition from two-year colleges to four-year institutions. Located at Texas A&I University in Kingsville, the office coordinates Texas AMP's comprehensive transfer program and helps develop articulation agreements among alliance institutions. Currently, Texas AMP institutions have more than 20 such agreements in place.

"With programs such as the 2+3 Program and the Common Course Numbering System, which require full participation from both types of institutions in regard to degree plans, transfers can be made with few, if any, academic losses to the students," Short says.

She visits all community colleges to meet with students receiving NSF stipends and to help facilitate their transfer to senior institutions in the alliance. Short continues to track students' progress at the four-year institutions and beyond graduation to better determine the results of Texas AMP funding and job opportunities.

Mentors Make the Difference

An important feature of Texas AMP is the immediate reception of students transferring from one institution to another. Before a student transfers, a mentor at the receiving institution obtains complete information on the student. The receiving mentor contacts the student to arrange for a meeting upon arrival. This exchange of mentor responsibility enhances the student's transition to a new campus environment.

"Students in Texas AMP have the opportunity to work with dedicated mentors from the partner institutions and industries. These mentors are many things to AMP students: teachers, supervisors, advisers, colleagues in the work environment or counselors," says Dr. William Perry, associate provost and dean of faculties at Texas A&M, who established the Texas AMP mentor program. "These varied roles represent the many facets of a student's development in the science, engineering, and mathematics pipeline."

"It is not enough for mentors to give out information. They must also care about students and take an interest in their academic progress," he adds.

Active Texas AMP Institutions

Senior Institutions

- TAMU - Corpus Christi
- TAMUI - International at Laredo
- Prairie View A&M University
- Texas A&M University - Kingsville
- Texas A&M University - College Station

Community Colleges

- Bee County College (Beeville)
- Blinn College (Brenham)
- Del Mar College (Corpus Christi)
- El Centro College (Dallas)
- Houston Community College System
- Laredo Community College
- Palo Alto College, San Antonio
- Richland Community College (Dallas)
- San Antonio College

The Florida-Georgia Alliance for Minority Participation

The goal of the Florida-Georgia Alliance for Minority Participation (FGAMP) is to increase significantly the enrollment, retention rate, and graduation rate of African-American, Hispanic, Native American, and other minority students majoring in undergraduate and graduate science, engineering, and mathematics (SEM) disciplines. FGAMP became operational in November 1992 with Florida A&M University assuming primary responsibility for planning, operating, and managing the project. During its first operational year, FGAMP experienced a 31% increase in its enrollment rate and a 10% increase in its graduation rate. This project brings together an excellent mix of administrators, faculty, students, and support staff from baccalaureate and graduate degree-granting institutions as well as community colleges. It is the intent of FGAMP to infuse systemic changes which will impact the representation of minorities in SEM areas. Support from the National Science Foundation is matched by contributions from each member of the alliance. Participating institutions include Albany State College, Bethune-Cookman College, Florida A & M University, Florida International University, Clark-Atlanta University, Florida State University, University of Central Florida, University of Florida, University of South Florida and affiliates Daytona Beach Community College, Miami-Dade Community College, and Tallahassee Community College.

The FGAMP concept spans the entire continuum in preparing students for graduate education. Specifically, the FGAMP project aims for a 200% increase in the graduation rate of SEM minority students by 1997. The enrollment of the Alliance increased 31% from 9,842 in fall, 1992 to 12,902 in fall, 1993; BS degree production increased 10% from 537 in 1991 to 594 in 1992. Activities implemented to aid in the retention and progression of students are: *summer bridge programs, peer study groups, undergraduate summer research and graduate preparation institutes, faculty-directed undergraduate and student research projects, summer internships, and graduate level mentorships.* The approach used is broad-based and spans from the pre-matriculation stage to the graduate level. For the current academic year FGAMP scholars are supported at Albany State College, Bethune-Cookman College, Florida A & M University, Florida International University, and Tallahassee Community College.

FGAMP Students

FGAMP scholars at these institutions are engaged in both curricular and enhancement activities sponsored by the project. Students follow prescribed curricula within their disciplines and are expected to engage in FGAMP sponsored retention sessions, discipline seminars and tutorial/study sessions. A key factor in the success of these students is the nurturing and support they receive through the project. Currently, each institution supporting undergraduates has a Science Academic Coordinator who monitors each participant's progress. Faculty mentors and peer support groups are also expected to positively influence the success

of the FGAMP participants. Members of the alliance use the medium of audio-conferencing for communication among institutional coordinators as well as the three levels of students-community college, undergraduate, and graduate enrollees. Additionally, each FGAMP institution supporting undergraduates has formed a student organization for student-to-student interaction. In an attempt to expand visibility, FGAMP is collaborating with several other agencies to facilitate recruitment, retention, student progression, and discipline exposure.

All SEM students at the 12 institutions are provided with special speakers/seminars and computerized instruction to support their continued pursuit of undergraduate education. A special appropriation from the Florida Legislature supports a structured program of graduate-undergraduate interaction at six of the participating institutions. Graduate students in SEM areas within the alliance support the project by serving as mentors and primary level role models to SEM undergraduates. Liaisons with identified graduate programs will be continuous to effect eventual placement of FGAMP graduates. FGAMP Institutional Coordinators with SEM graduate programs will assist in providing graduate placement and summer research experiences for FGAMP scholars.

Summer internships are planned for pre-junior, pre-senior, and post-baccalaureate summer activities. Industry endowment is expected to continue to provide students with challenging, on-the-job research experience. Among the laboratories supporting FGAMP scholars during the 1993 summer were: 3M Corporation, Pratt & Whitney, US Steel Corporation, MeHarry Institute, Uniformed Services University of the Health Science, Massachusetts Institute of Technology (MIT), Clark Atlanta SEM Institute, and Florida International University Biology Department. At the 1993 NSF Diversity Conference held October 28-30 in Washington, DC four FGAMP scholars participated in panel/poster presentations. Cecilia Danger-Florida International University; Peter Cabauy-Florida International University; Kimberli Fagan-Florida A & M University; and Christie Gooch-Albany State College were among the approximately 300 undergraduates and graduates giving presentations. Peter Cabauy, Physics sophomore at Florida International University, placed first in the undergraduate category for his panel presentation entitled "Straightforward Inexpensive Method for Determining Critical Micelle Concentrations in Undergraduate Laboratories."

Lab

Students and Dr. Williams

FGAMP outreach included presentations at the 1994 winter meeting of the Conference of Southern Graduate Schools and at the 1994 Florida Academy of Sciences Annual Meeting. In December 1993, the FGAMP Steering Committee met with the Director of SouthEastern Regional Vision for Education (SERVE) Consortium to develop strategies for future collaboration. The Alliance held its first Regional Conference July 15-17, 1994, on the campus of Florida A&M University.

For additional information, please contact:
Florida-Georgia Alliance for Minority Participation
Florida A&M University
Title III - Modular Unit
Tallahassee, Florida 32307
(904) 561-2679

NEW YORK CITY ALLIANCE

ALLIANCE FOR MINORITY PARTICIPATION IN SCIENCE, ENGINEERING, AND MATHEMATICS

A Broad Partnership Led by CUNY

The New York City Alliance for Minority Participation is a coalition of sixteen colleges within the City University of New York (CUNY) who share a five-year goal of doubling the number of underrepresented minority students earning bachelor's degrees in science, engineering, and mathematics. The coalition includes seven community colleges, eight senior colleges, and one technical college. Joining the CUNY campuses are Polytechnic University of New York, the Northeast Regional Laboratory of the US Food and Drug Administration, NASA's Goodard Institute for Space Studies and partners from industry.

Addressing Transition Points

The Alliance is easing the transitions in a student's career which can be stumbling blocks to advanced study in science and mathematics. Its support is helping students succeed in gatekeeper courses in Calculus, General Chemistry and Physics. Alliance initiatives are improving the articulation between community and senior colleges and between undergraduate and graduate schools. They include developing relationships between the mentors who advise students as they progress through the CUNY system and pairing community and senior college faculty to analyze math and science course content and propose innovations.

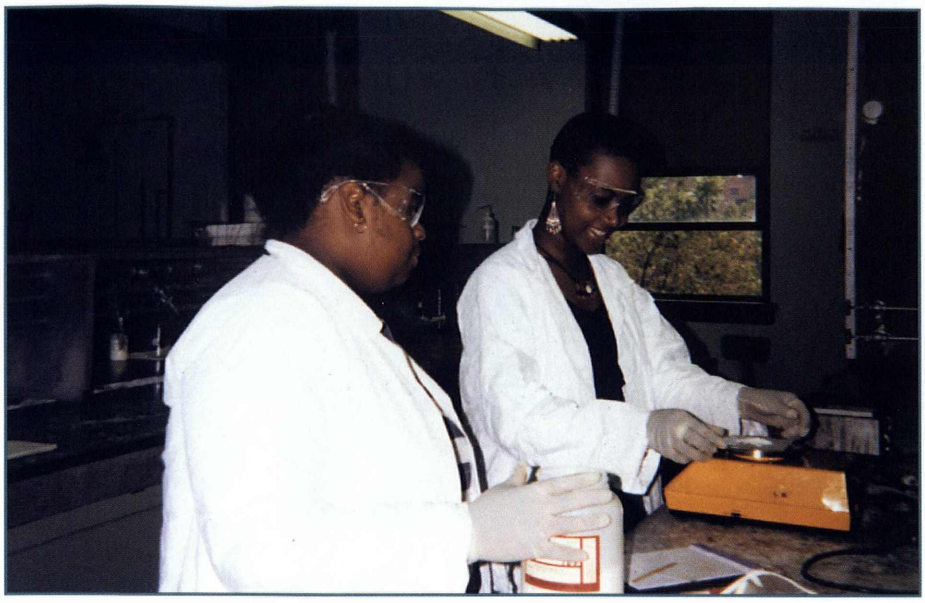
Systemic Change in Math and Science Teaching

The project will lead to University-wide change in the teaching of mathematics and science, especially at the introductory level. The new approach, emphasizing problem-solving and collaborative learning, will be the largest application of the method developed at the University of California at Berkeley by City College alumnus Uri Treisman. Currently, over 1,000 CUNY students are enrolled in Calculus courses which offer a Treisman workshop approach. Similar methods are being implemented in General Chemistry and Physics. While the New York City Alliance targets minority students, the changes it brings about will enhance math and science instruction for all CUNY undergraduates.

Undergraduate Research Experience

In their freshman and sophomore years, Alliance students are introduced to the rigors and rewards of scientific research. A pre-research course exposes them to the scientific method, teaching them to formulate an hypothesis, review scientific literature, collect and analyze data, and write a research paper. During summers and intercession, Alliance students undertake short but intensive research projects under the guidance of research faculty. In their junior and senior years, students work in a campus laboratory, conducting independent projects and preparing a thesis based on their findings. Stipends are awarded to all students who participate in the Undergraduate Research Experience Program and are critical to its success.

CUNY provides Alliance students with a vast array of research opportunities. The Alliance benefits from the fact that CUNY scientists last year attracted more than $23 million in external funding and from the University's aggressive recruit-



ment of minority scientists and engineers. In the last decade alone thirty research-active minority faculty members have come to CUNY. They provide Alliance students with an excellent cadre of role models.

For advanced undergraduates, summer internships are available in the laboratories of the Alliance's partners, including NASA's Goddard Institute for Space Studies, IBM Corporation, Bellcore, Westinghouse, and Brooklyn Union Gas.

Learning Centers and Faculty Mentors

Science and Mathematics Learning Centers are a key component of the Alliance program. These provide a "home base" for students and offer tutoring, diagnostic testing, computer-based instruction, and career information. Through the Centers, all Alliance students are assigned a faculty mentor who has been trained for the role. All sixteen CUNY colleges participating in the Alliance have established Learning Centers.

Faculty Development Colloquia

Working in conjunction with the CUNY Office of Academic Affairs, the Alliance presents faculty development colloquia. These feature nationally known guest speakers and CUNY faculty who are on the cutting edge of educational thought in mathematics and the sciences. Topics have included *Models for CUNY Calculus Reform; Peer Instruction in Introductory Science Courses; Mentoring in the Urban University: A Forum on Mentoring Minority Students; and Restructuring Chemistry: The CUNY Workshop Approach.*

Profiting from CUNY's Experience

The Alliance is building on the success of other University programs designed to expand minority achievement in science, engineering, and mathematics from junior high school to graduate school. The agencies and organizations funding these efforts include: the US Department of Education, the Howard Hughes Medical Institute; the Aaron Diamond Foundation; the New York State Education Department; NASA; the New York City Board of Education; the National Institutes of Health; and the National Science Foundation.

Participating Academic Institutions

Brooklyn College
City College
Hunter College
Lehman College
Medgar Evers College
New York City Technical College
Baruch College
College of Staten Island
Queens College
York College
Borough of Manhattan Community College
Bronx Community College
Hostos Community College
Kingsborough Community College
LaGuardia Community College
Queensborough Community College
Polytechnic University

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North Carolina Alliance

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PROGRAM OVERVIEW

The North Carolina AMP is based on a comprehensive, longitudinal plan which focuses on the enrollment and retention of undergraduate minority students in science, engineering, and mathematics. Attention is given to early identification efforts on both sides of the undergraduate experience, between high school and community college to a four-year institution, and between undergraduate and graduate SEM programs. Community-building principles applied in this project form the underlying philosophy in the development of a more successful environment for minorities in SEM areas.

Three major project areas have been chosen as critical focal points for achieving the qualitative and quantitative goals of the Alliance. **Project Area 1, Academic Enrichment,** is designed to improve the academic performance of minority SEM students during their freshman through senior years.

Project Area 2, Linkage/Outreach and Community College (LOCC), is designed around three major efforts: Recruitment, Linkage, and Bridge Programs. Target populations for these efforts include twelfth graders and community college students and teachers.

Project Area 3, Industry Involvement, utilizes industry expertise in curriculum and seminar development and delivery systems. Specifically, program implementation includes industrial scholarship/internship/co-op programs; a structured loan executive/visiting faculty program; university/industry-executive seminars program; an Alliance-wide career receptions program; and student internships.

Through an increase in access and opportunities, the Alliance intends to substantially augment the numbers of underrepresented minority students earning BS degrees in engineering and science who subsequently attain MS and PhD degrees. Together, the Alliance institutions possess the capability to play a key role in producing minority research scientists and faculty to adequately address the workforce needs of America in the 21st Century.

NCAMP GOALS

- To improve the quality of the learning environment for minority science, engineering, and mathematics students at all schools.
- To substantially increase the numbers of minority students graduating with degrees in science, engineering, and mathematics.
- To develop and implement effective methods of attracting talented minority students who would otherwise not choose science, engineering or mathematics as a career.

NCAMP VISION

- Establish a collaborative learning approach, including group study and support.
- Establish hands-on experience in science and engineering, including undergraduate opportunities with industry and intensive classroom projects.
- Promote positive and sustained interactions with faculty.
- Promote intensive interaction with other support persons at the university and in the wider community (alumni, parents, and mentors from industry).

UNIQUE FEATURES OF NCAMP

- National in Scope
- Partnership of HBCUs and majority institutions (both public and private)
- Partners include institutions which are leaders in graduating African American, Hispanic American, and Native American engineers
- Commitment to double the output of minority SEM graduates

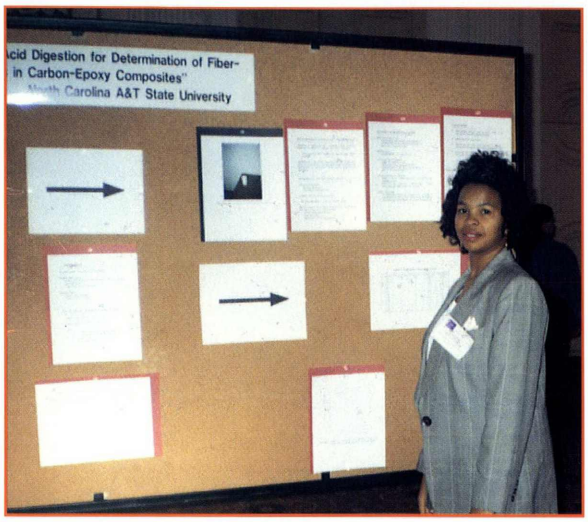
NCAMP HIGHLIGHTS 1992-1993

- Successful implementation of key aspects of NCAMP activities within first year.
- Successful development of an Alliance-wide Strategic Plan.
- Successful implementation of network connectivity throughout the Alliance.
- Excellent collaborative interactions NCAMP-wide resulting in high levels of enthusiasm, sharing of "best practices," and shared problem solving.

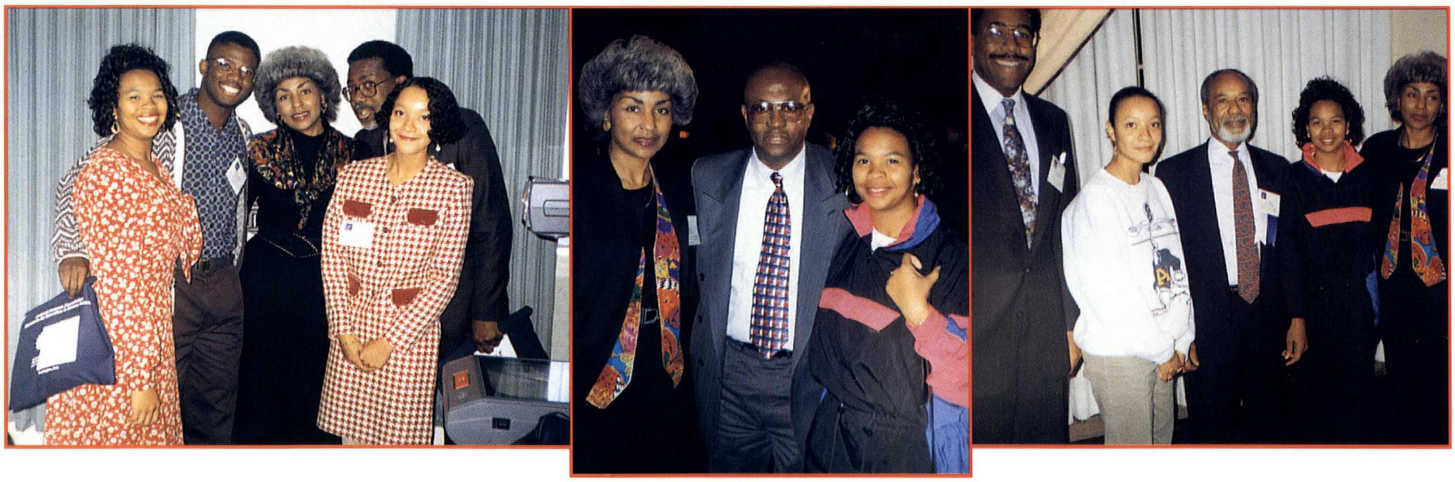
NCAMP PARTICIPATION

National Conference on Diversity in the Scientific and Technological Workforce
Washington, DC, October 28-30, 1993

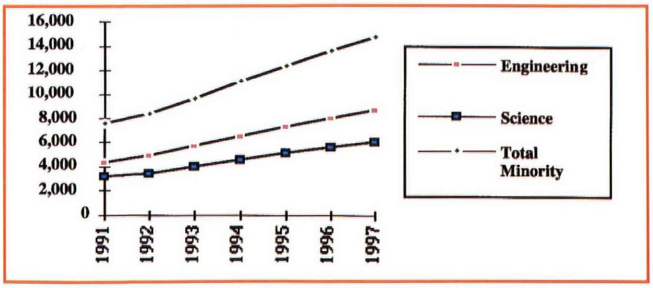
Student Research Presentations



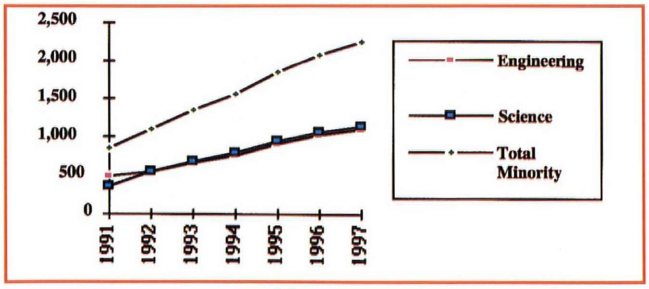
Interaction With Conference Participants



NCAMP Enrollment Projections

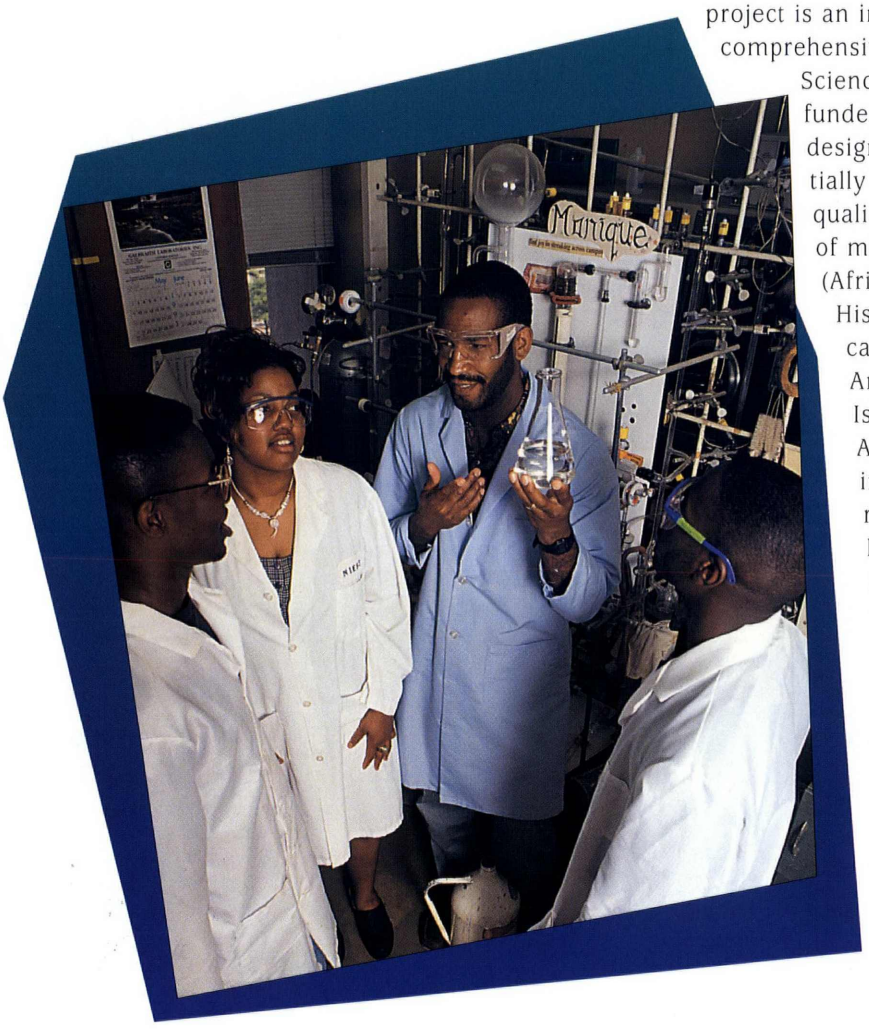


NCAMP SEM Degrees Projections



South Carolina's AMP: Increasing the Quality and Quantity of Minorities in the Natural Science, Engineering and Mathematics Fields

The South Carolina Alliance for Minority Participation (SCAMP) project is an innovative and comprehensive National Science Foundation-funded program designed to substantially increase the quality and quantity of minority students (African-Americans, Hispanic Americans, Native Americans, Pacific Islanders and Alaskan Natives) in South Carolina receiving bachelor's degrees, and continuing with graduate study leading to the PhD degree in science, engineering, and math fields. The program uses a three-pronged approach toward meeting this objective:



- **RECRUITMENT**

Particularly the recruitment of minority high school students into science, engineering, and mathematics curricula at SCAMP institutions

- **RETENTION**

Improving retention of minority students through courses and workshops with emphasis on reforming the traditional gatekeeper courses in calculus and the natural sciences

- **RESEARCH**

Undergraduate research participation is stressed; fostering interest in attaining PhD degrees and pursuing careers in research

By the year 2000, NSF hopes to increase the number of SEM bachelor's degrees awarded annually to minorities from 13,000 to 50,000 and the number of doctorate degrees in these fields from 350 to 2,000. SCAMP's seven-school consortium has set a goal of awarding 750 minority BS degrees and 50 minority PhDs per year in the SEM discipline by the end of this decade.

An Alliance of Diverse Educational Institutions for Greater Impact

Core SCAMP institutions include two research universities, four historically Black institutions and one community college:

- **South Carolina State University**
- **Benedict College**
- **Claflin College**
- **Voorhees College**
- **Clemson University**
- **University of South Carolina, Columbia**
- **Midlands Technical College**

This diversity permits virtually any minority student interested in SEM careers to take advantage of SCAMP programming in the learning environment that best suits their needs.

SCAMP: A Vehicle for Math and Science Reform in Higher Education

More than a scholarship and research program, SCAMP is a vehicle for permanent and systemic change in SEM education at participating institutions of higher learning. An emphasis has been placed on reforming traditional "gatekeeper" courses (e.g., introductory calculus, chemistry and physics, etc.) to improve student success while maintaining high academic standards. SCAMP is implementing

proven and innovative methods of teaching these courses at all participating institutions.

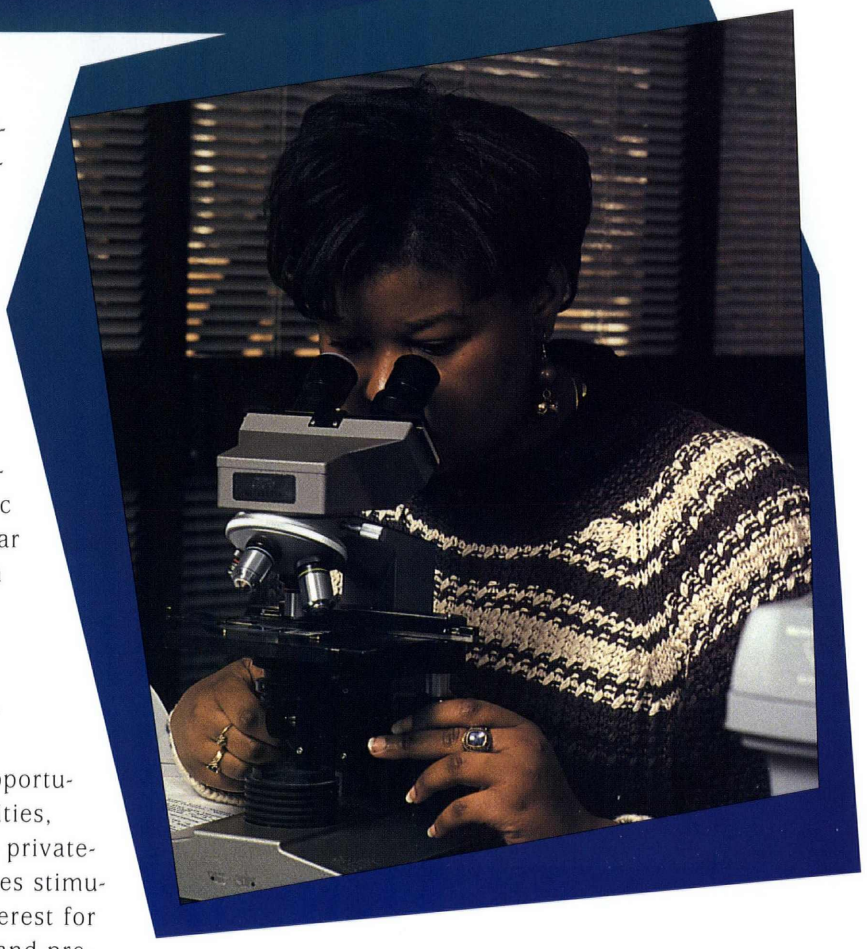
For example, workshops and reformed courses in pre-calculus and calculus at Clemson, Benedict, USC-Columbia and MTC, have exposed students to innovative methods of learning mathematics. This has resulted in improved student success in this subject. The increased interaction of faculty from all SCAMP institutions in the Alliances' curriculum reform efforts helps disseminate effective methods of instruction, improving science and mathematics education for all students.

Programs and Partnerships for Student Success in Science, Engineering and Mathematics

To facilitate recruitment of minority students into SEM majors, SCAMP has formed working partnerships with many pre-college efforts including the NSF-sponsored South Carolina Statewide Systemic Initiative (SSI). Once identified by SSI and SCAMP staff, minority high school students are given information on various academic programs and workshops available through SCAMP including:

- Scholarships and Scholars Programs
- Direct Research and Internships
- Scientific Freshman Seminars
- Academic Workshops
- Summer Bridge Programs
- Graduate School Programs

These students are also invited to special presentations on various SEM careers. Mentor support through programs such as Clemson's Program for Engineering Enrichment and Retention (PEER) provides encouragement for students in their academic pursuit of technical careers. Science and mathematics faculty at SCAMP institutions also participate in scientific freshman seminar classes based on the successful freshman year experience program at USC-Columbia.

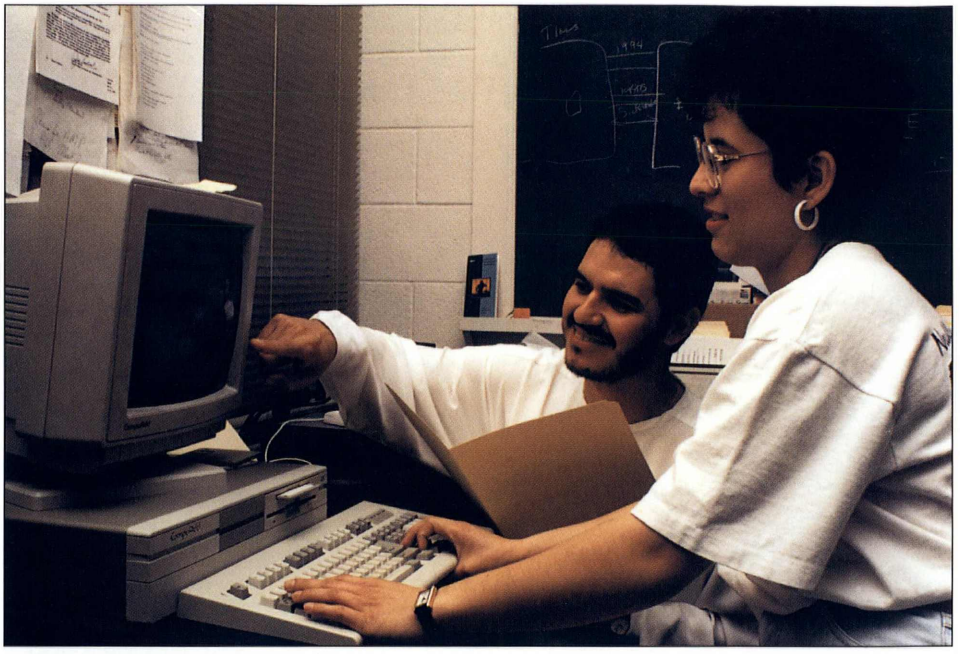


Research opportunities at universities, government and private-sector laboratories stimulate research interest for undergraduates and prepare them for graduate work in SEM. Directed research and internships permit undergraduates to take part in a variety of research projects and has established mentoring relationships with research faculty. Students working on these projects have received stipends and made presentations at national meetings.

In addition to the South Carolina SSI, SCAMP has also forged a partnership with the South Carolina Experimental Program to Stimulate Competitive Research (EPSCoR) to create additional research opportunities for students. These three projects will be a major force in reforming SEM education in South Carolina from K-12 through graduate school.

Through NSF's high standard of accountability and a focus on course reform, SCAMP is improving the climate for minority student success in science, engineering and mathematics academic programs in South Carolina.

SCAMP
South Carolina Alliance For Minority Participation



The University of Texas System Alliance for Minority Participation brings together all nine academic components of the University of Texas System and six regional community college districts in an effort to increase the number of underrepresented minority students enrolling in, graduating from and entering graduate programs in science, engineering, and mathematics.

The activities of the University of Texas System AMP are supported by partnerships with governmental agencies and industry including Sandia National Laboratories, Southwest Research Institute, NASA Johnson Space Center, and IBM. The educational institutions in the Alliance serve a rapidly growing region whereby the decade's end minorities will comprise a majority of the population.

Alliance activities address two shortcomings of most science, engineering, and mathematics undergraduate initiatives: the peripheral nature of "special minority programs" and the lack of substantive involvement of community colleges, where the majority of the minority college students in this country take their entry-level courses.

Key Personnel

Principal Investigator:
Dr. Diana S. Natalicio
President, U.T. El Paso

Chair of AMP Governing Board:
Dr. James P. Duncan
Executive Vice Chancellor for Academic Affairs
University of Texas System

Associate Project Director:
Dr. Scott A. Starks
Associate Dean of Engineering
U.T. El Paso

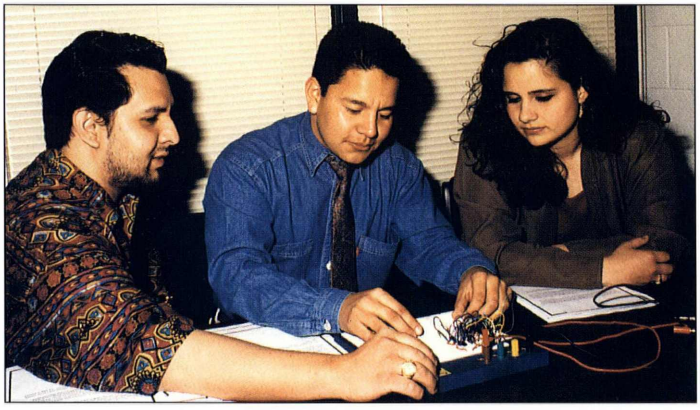
Evaluation Director:
Dr. Sally Andrade
U.T. El Paso

Systemic Change

The Alliance represents a system-wide commitment with the highest level of leadership for **providing coherence and support and evaluation of campus efforts to improve the participation and success of minority students.** The approach developed by the University of Texas System AMP is characterized by: 1) high level leadership for programmatic change; 2) focus on essential, "gate-keeper" science, engineering, and mathematics courses; 3) substantive involvement of community college partners in curriculum revision and other efforts; 4) flexible programs for supporting minority student participation in research activities; and 5) commitment to the development and implementation of a timely and comprehensive system of evaluation for the purpose of determining the impact of particular activities on student participants as well as on the ability of member institutions to successfully achieve enrollment and graduation goals. Evidence that the Alliance has served as a catalyst for systemic change is provided by the start of some thirty-six new initiatives at member institutions addressing various aspects of minority student success.

Undergraduate Research Programs

During its first year of existence, the University of Texas System AMP established programs on each of its university campuses to provide financial support for undergraduate students to pursue research interests in their fields of study. Under the year round AMP Student Research Program, a total of forty-three students at University of Texas System universities received stipends to conduct research under the direction of an accomplished faculty mentor. Also, the Alliance initiated community college to university Summer Bridge Programs at five sites across the state. These programs provide tutition and fees along with stipends to support research activities for student participants during the summer in which they matriculate to the university. During the past year, over seventy-five students received support under Summer Bridge Programs. In addition, the Summer Institute in Mathematical Modeling for minority math, science, and engineering students at the University of Texas at Austin was supported by the Alliance. Under this five-week residential summer program, twenty students participated in an intensive seminar and laboratory course which introduced them to the uses of mathematical modeling with an emphasis on the application of modeling techniques in engineering.



Outstanding Accomplishments

Particularly noteworthy accomplishments of first year activities include: 1) the formation of state-wide Curriculum Task Forces involving faculty from universities and community colleges in chemistry, mathematics, physics, and engineering targeting revision of introductory courses; 2) the establishment of a state-wide Evaluation Task Force which is responsible for the periodic collection and dissemination of enrollment, retention, and graduation data for minorities in science, engineering, and mathematics; and 3) regular reporting on aspects of minority participation and success in science, engineering, and mathematics at each meeting of the Presidents of the University of Texas System campuses. Enrollments of minority students in science, mathematics, and engineering majors at Alliance institutions rose from 9,645 to 10,192 (an increase of 547 students) during the past year.

Participating Institutions include:

The University of Texas at **Arlington**

The University of Texas at **Austin**

The University of Texas at **Brownsville**

The University of Texas at **Dallas**

The University of Texas at **El Paso**

The University of Texas-**Pan American**

The University of Texas **of the Permian Basin**

The University of Texas at **San Antonio**

The University of Texas at **Tyler**

Alamo Community College District

Austin Community College

Collin County Community College District

Dallas Community College District

El Paso Community College

Texas Southmost College

California State University

The California State University Alliance for Minority Participation (CSU AMP) consists of 18 campuses of the twenty campus California State University and a like number out of the 107 state community college system.

The heart of the Alliance program is a two year sequence of supplemental workshops to which a subset of the targeted minority students are asked to make a commitment. The two year program consists of a freshman level four-week summer workshop focused on entry level mathematics courses for students in Science, Engineering and Mathematics (SEM), followed by a year long workshop which parallels and suplements the students' freshman year courses in mathematics. In the second or sophomore year of study, students attend another four week workshop, but these sophomore workshops are focused on physics, chemistry or biology, combined with appropriate mathematics. This second summer is followed by a year long workshop similarly focused on science.

All summer workshops will be located on the CSU campuses but the Academic Year workshops will take place at each of the CSU and community college locations.

While all targeted minority students are free to participate in the Academic Year workshops, only a subset of these students are invited to join one or both summer sessions which offer the added attraction of paying a stipend. Each campus hosting summer sessions has the freedom to set criteria for admission to these workshops, so long as the criteria do not conflict with the intent of the program to double the number of underrepresented minority students receiving baccalaureates in SEM in the next five years.

The initial two year program will be followed by other opportunities for selected students. Those students, who do very well in the first two years, will be eligible to become workshop leaders - or "facilitators" - when they are in their third and/or fourth year of study. This experience will not only offer paid positions, but it will involve the students in the instructional process as "activists": for the first time. This may lead to their making SEM education an alternative career choice.

There is yet another opportunity which will be available to successful upper division students: those with promise may be selected for internships in industry or for undergraduate research assistantships with faculty in The CSU or in research universities. Those with demonstrated success in industry or university research will have an advantage in obtaining support as graduate students, should they choose that path after receiving the bachelor's degree.

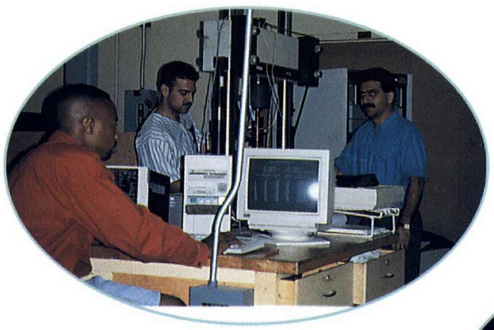
In the first year or two of CSU AMP existence, the students selected will be freshmen or sophomores or the equivalent. In later years the summer programs will be modified to serve as a bridge for transfer students in upper division as well as for lower division students.

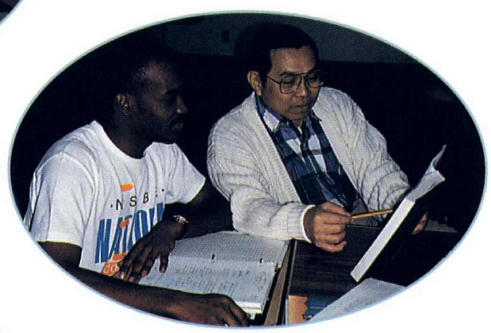
Throughout the five years of the Alliance and any extensions of the initial contract, CSU AMP will collaborate under formal memoranda of understanding with the California Alliance for Minority Participation (CAMP), the University of Texas System AMP and several research universities and programs in California. In addition, the CSU AMP will work less formally with the Department of Energy's Minority Access to Energy Research Careers (MAERC), the Chancellor's Office of the California Community Colleges, and the Mathematics, Engineering and Science Achievement (MESA) programs in this state.

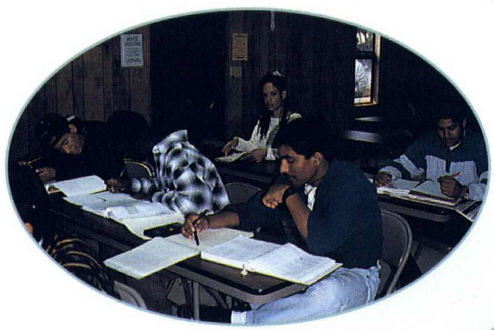
The Alliance is in the process of identifying existing NSF programs in the state - such as the RCMS contracts - which can be allied in some fashion to AMP goals.

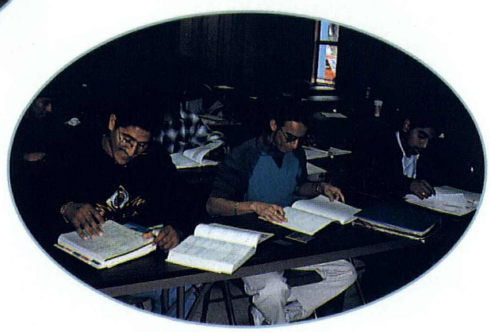
Partners in Progress - Participating California State University Campuses and California Community College Campuses are:

California State University, Bakersfield * Bakersfield College
California State University, Chico * Butte College
California State University, Dominguez Hills * El Camino Community College
California State University, Fresno * Fresno College
California State University, Fullerton * Fullerton College
California State University, Hayward * College of Alameda
California State University, Long Beach * Cerritos College
California State University, Los Angeles * East Los Angeles College
California State University, Northridge * Glendale College
California State University Polytechnic University, Pomona * Mount San Antonio College
California State University, Sacramento * Sacramento City College
California State University, San Bernardino * San Bernardino Valley College
San Diego State University * Southwestern College
San Francisco State University * San Francisco City College
San Jose State University * San Jose City College
California Polytechnic State University, San Luis Obispo * Hancock Community College
Sonoma State University * Santa Rosa Junior College
California State University, Stanislaus * Modesto College









CSU AMP Administration

Chair, Governing Board
Dr. Barry Munitz, Chancellor
California State University

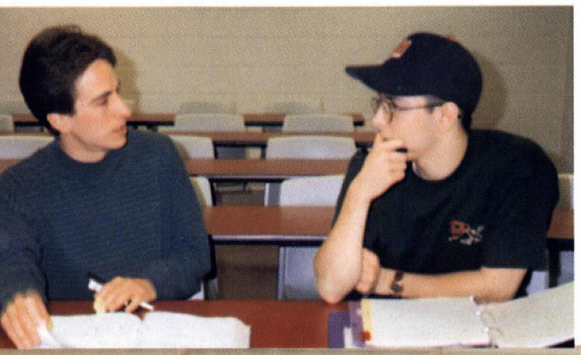
Principal Investigator
Dr. A. F. Rick Ratcliffe
Dean Emeritus
School of Engineering and
Computer Science
California State University,
Northridge

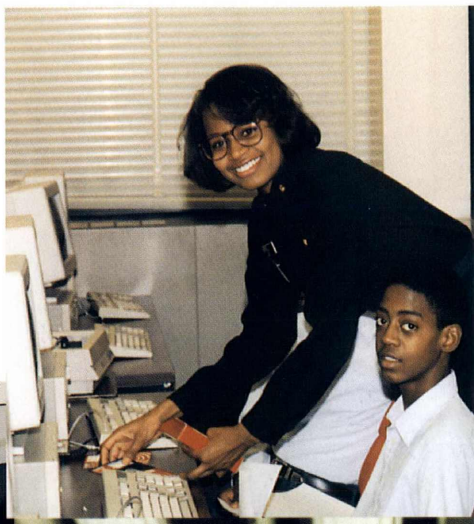
Executive Director
Tobi A. Roffman
School of Engineering and
Computer Science
California State University,
Northridge

Fiscal Management
San Francisco State University

The Chicago Alliance for Minority Participation

Chicago State University
DePaul University
Illinois Institute of Technology
Loyola University
Northwestern University
University of Illinois at Chicago





Chicago Alliance for Minority Participation

The Chicago Alliance for Minority Participation in cooperation with the National Science Foundation, is a consortium of six Chicago area universities supported by a network of local industries, national laboratories, museums, and other SEM programs. The goal of Chicago AMP is to dramatically increase the number of baccalaureate SEM degrees awarded to minorities in the Chicago area from the current 240 per year to 571 per year by 1998 and place at least 200 minority students per year in SEM graduate programs by the year 2000.

The Alliance activities implemented this year include:

Bridge Programs - The program is designed for incoming freshmen minority students. Participants will engage in a multi-faceted 4 to 6 week summer residential or non-residential program. The activities are designed to improve academic performance, sharpen analytical skills and strengthen social preparation for learning and succeeding in higher education.

AMP Research Scholars - Students identified as AMP Scholars participate in research experiences either at their home institution or on the campus of another Alliance partner during the school year and also participate in industrial internships during the summer months.

Educational Technology Center (ETC) - A multimedia resource center implemented at the Illinois Institute of Technology and Chicago State University which provides one-on-one peer tutoring, computerized testing, grading, remediation, and enrichment activities for undergraduate SEM students.

Professional Development Program - modeled after the Treismann calculus program at Berkeley. The program is expanded to include pre-calculus, algebra and trigonometry, and physics courses. The main focus is the development of study skills through cooperative learning experiences.

Faculty Development - Courses in cooperative learning in the sciences are open to all Alliance members' SEM faculty and teaching assistants. The main objective is to assist faculty and TA's to teach without active intervention.

Career Mentor Program - SEM students meet with professionals from industry on a request basis to discuss careers in science, engineering and mathematics. The basis for matching student and professional is similarity of career interests. Three or four one-on-one sessions between student and professional are held. Internships/mentorships arise based on these interactions.

Alliance Partners/ Project Directors

Dr. Dolores Cross, President, PI
Chicago State University

Dr. Juanita Thomas, Executive Director

Washington-Baltimore-Hampton Roads Alliance

Overview

The Washington-Baltimore-Hampton Roads Alliance for Minority Participation (WBHR-AMP) includes four mid-Atlantic Historically Black Colleges and Universities (HBCUs) that are strongly committed to the goal of the National Science Foundation (NSF), namely to significantly increase the number of underrepresented minorities receiving BS degrees in the sciences, engineering and mathematics (SEM). To achieve this goal, several enrichment programs and support systems have been proposed which will enhance retention of undergraduates in the academic pipeline, double the graduation rate in five years, and increase the number of students entering graduate study. Since mathematics is known to be a primary obstacle to the completion of the BS degree within four years for many SEM students, special emphasis will be placed on the Math Bridge Program for incoming Freshmen (Pre-Freshmen) and the Calculus Reform component of this AMP. The latter provides for faculty development and the integration of the Harvard and Professional Development Program (PDP) models into the calculus curriculum of WBHR-AMP universities. These approaches are expected to significantly accelerate the successful completion of the mathematics requirements for students majoring in SEM disciplines. In addition, linkages with selected area research universities, NSF-funded Minority Research Centers of Excellence (MRCEs), federal and industry laboratories, will expand the resources of the WBHR-AMP and expose undergraduate students to SEM applications and forefront topical advances. Interactions with other NSF supported programs will augment the proposed academic and research programs. WBHR-AMP will seek to forge articulation agreements with area community colleges to strengthen the pipeline, and network with other mid-Atlantic HBCUs primarily through the SEM Summer Institutes to offer academic and research experiences to their undergraduates that may enhance their preparation for graduate study.

Left: *Engineering Students at Morgan State University*
Below: *Chemistry Students at Howard University*

The Alliance Enrichment Programs Include:

Math Bridge

Each of the four universities in the Alliance will offer a four-week Math Bridge for incoming SEM Freshmen with math SAT scores in the median range. A common pre-test will be administered across the Alliance and will form the basis for participation in the program. The Math Bridge is designed to facilitate the transition from high school math to college math by engaging SEM Pre-Freshmen in intensive, highly interactive, lab-based sessions. The program will strengthen students' mathematical skills and prepare them for the successful completion of required courses in their freshman year and beyond.

Summer Institutes

The Summer Institutes are designed for rising Sophomores and Juniors to enhance their academic skills in a respective discipline related to their major area of concentration. Special emphasis will be placed on student participation in classroom/laboratory exercises that encourage critical thinking and group discussions which will help in student's formulation and integration of key concepts in the discipline. Visits to federal and industry labs, as well as lectures by visiting scientists and industry specialists will provide students with a broad perspective of the particular discipline. In the summer of 1994, the following six Institutes will be offered for a cross-section of students from WBHR-AMP and "networked" institutions: Polymer Chemistry, Nuclear and Optical Physics, Terrestrial and Extraterrestrial Atmospheres, High

Performance Computing, Engineering Concepts and Molecular Biology. Sophomores and Juniors enrolled in Summer Institutes will serve as campus pals/peer mentors for the Pre-Freshmen in the Math Bridge Program.

Calculus Reform

The Calculus Reform component to be instituted at WBHR-AMP universities is based in part on the Harvard and Professional Development Program (PDP) models. The Harvard model for teaching calculus attempts to expand the mathematical content of calculus by presenting every topic geometrically, numerically, and algebraically. The PDP model that emphasizes one-on-one and small-group problem-solving sessions will be incorporated into the curriculum as structured recitation periods. Computational technologies are an important component of these models.

Right *Award Notification Ceremony at Howard University. Left to right: Dr. Clarence M. Lee, WBHR-AMP Project Director; Dr. Roosevelt Calbert, NSF Division Director; Dr. Joyce Ladner, Vice President, Howard University; Dr. William McHenry, NSF, AMP Program Director, and Dr. Franklyn G. Jenifer, President of Howard University (reprinted by permission of the Capstone)* ***Bottom:*** *WBHR-AMP Administrative Board (Photos by Christopher Gunn)*

Research Traineeships and Internships

Research traineeships and internships for Juniors and Seniors are expected to provide training in research methodology and experience in state-of-the-art techniques and equipment applications at Alliance and linked research universities, as well as at federal and industry labs engaged in cutting-edge areas in science and technology fields. Students and their sponsors will be evaluated by the breadth of experiences evidenced in written reports and oral presentations by the students.

Academic Competency Workshops

Summer and academic year workshops have been designed as open-ended small group sessions to enhance writing, problem-solving, technical and computer application skills. Selected workshops will feature visiting scientists and industry specialists to broaden the students' scope and enhance their professional development in SEM fields.

The Alliance Support Systems Include:

Mentoring and Tutoring

Dedicated faculty, peer mentors, graduate and undergraduate student tutors will conduct help-sessions to address problem areas identified by SEM students. Tutors may be assigned to assist faculty in the Math Bridge program and Summer Institutes or may serve in a dual role as dormitory monitors. Dormitory monitors will conduct evening tutorials and facilitate meaningful academic, cultural and social activities for Pre-Freshmen.

Retention Management

College Student Inventories (CSI; Noel-Levitz) were administered in the first year of the Alliance to profile SEM Freshmen and establish a data base for a longitudinal study of cohort demographics. CSI will be administered from the second to the fifth year as part of the orientation sessions. Selected affective dimensions will be among topics of Freshman Orientation Seminars and discussion groups conducted by faculty mentors. The Action Track (Noel-Levitz) monitoring system will focus on drop-out proneness by measuring such variables as academic preparedness (e. g., ACT and SAT scores), academic performance (GPA and SEM lecture, laboratory and course grades), academic stress (associated with exams, papers and oral presentations), study habits (solo vs cluster) as well as socioeconomic factors.

Performance Evaluation and Assessment

Evaluations will be conducted for each component of the Alliance programs and will include placement tests, pre-and post-testing, portfolios, mid-semester deficiencies, and course grades. A longitudinal study will assess the effectiveness of the program on student performance and retention at critical points as students progress toward graduation.

WBHR-AMP INSTITUTIONS and DIRECTORS

Howard University
College of Arts and Sciences
School of Engineering
Dr. Clarence Lee/Project Director

Morgan State University
School of Engineering
School of Arts and Sciences
Dr. Eugene DeLoatch/Co-Project Director

Hampton University
School of Pure and Applied Sciences
Dr. Robert Bonner/Co-Project Director

University of the District of Columbia
College of Physical Sciences, Engineering and Technology
Dr. Philip Brach/Co-Project Director

NEW MEXICO ALLIANCE for MINORITY PARTICIPATION

NMAMP PARTICIPATING INSTITUTIONS

Albuquerque Technical-Vocational Institute
Clovis Community College
Eastern New Mexico University
Eastern New Mexico University Roswell Branch
Eastern New Mexico University Ruidoso Instructional Center
Luna Vocational Technical Institute
Mesa Technical College
Navajo Community College
New Mexico Highlands University
New Mexico Institute of Mining and Technology
New Mexico Junior College
New Mexico Military Institute
New Mexico State University
New Mexico State University Alamogordo Branch
New Mexico State University Carlsbad Branch
New Mexico State University Doña Ana Branch
New Mexico State University Grants Branch
Northern New Mexico Community College
San Juan College
Santa Fe Community College
Southwestern Indian Polytechnic Institute
University of New Mexico Gallup Campus
University of New Mexico Los Alamos Campus
University of New Mexico Valencia Campus
Western New Mexico University

PROFESSIONAL ORGANIZATIONS

American Indian Science and Engineering Society
National Society of Black Engineers
New Mexico Associaton of Community, Junior & Technical Colleges
New Mexico Council of Independent Community Colleges
Society of Hispanic Professional Engineers

NATIONAL LABORATORIES

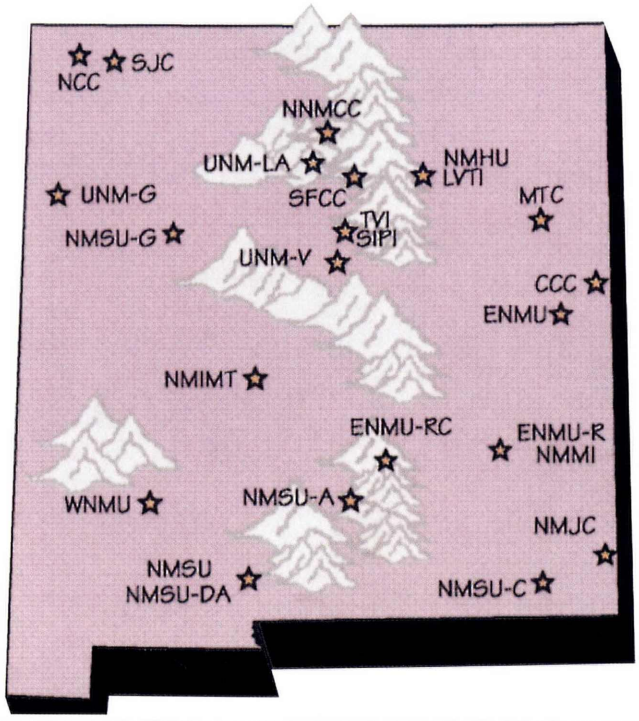
Los Alamos National Laboratory
National Renewable Energy Laboratory
Sandia National Laboratories

INDUSTRY

Amoco Production Company
ARCO
Arizona Public Service Company
BDM International
BHP/Utah International, Inc.
Westinghouse
Conoco
Eastman Kodak Company
E-Systems, Inc.
Four Corners Power Plant
IBM Corporation
U.S. WEST, Inc.
Intel Corporation
Meridian Oil Company
Phillips Petroleum Company
Rockwell International
TRW

GOVERNMENT

New Mexico Commission on Higher Education
New Mexico State Department of Education
New Mexico Office of Indian Affairs
Office of the Governor, State of New Mexico



NMAMP STATEWIDE OFFICES

DIRECTOR:
Dr. Ricardo B. Jacquez

CO-DIRECTOR:
Dr. Rudi Schoenmackers

PROGRAM COORDINATORS:
Ms. Carol Lopez Fischer
Mr. Anthony J. Parra

CO-PRINCIPAL INVESTIGATORS:
Dr. Mark C. Bauer, NCC
Dr. Steven Castillo, NMSU
Dr. Antonio Lara, NMSU
Dr. Sigfredo Maestas, AT-VI
Dr. Connie Valdez, NNMCC

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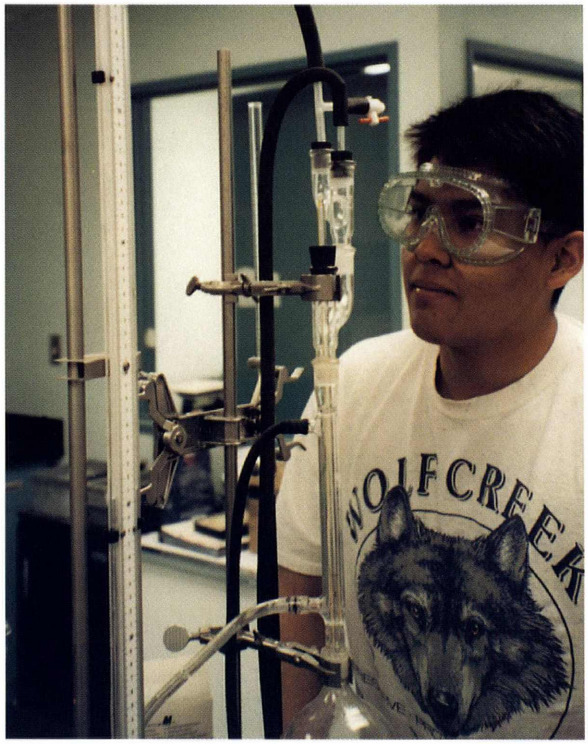
The goal of the New Mexico Alliance for Minority Participation (New Mexico AMP) Program is to increase the production rate of underrepresented minorities in science, mathematics, and engineering (SEM) from the current rate of 327 per year to over 700 per year by 1998 and to over 1,800 per year by the year 2003.

New to the National Alliance for Minority Participation, New Mexico AMP was launched on November 1, 1993. New Mexico AMP has been established through an alliance of 25 post-secondary institutions including **100 percent** of the state's 20 public two-year colleges. A governing board oversees the Alliance in meaningful collaborations with academia, industry, government, and other entities. This issue is vitally important to New Mexico because approximately 50 percent of New Mexico's population is of minority heritage. In grades K-12, 60 percent of all students are of minority heritage. Furthermore, New Mexico has the ***highest*** population percentage of ***American Indians*** and ***Hispanics*** of any state.

New Mexico, with its large pool of minority talent, is poised to make major contributions to achieve the National Science Foundation's national goals. New Mexico AMP is a multi-disciplinary comprehensive undergraduate program. The following strategies are currently being implemented by the New Mexico Alliance in order to meet NSF's and New Mexico AMP's goals.

Articulation agreements are being created that allow students to earn credit at 2-year institutions towards baccalaureate degrees in SEM before transferring to 4-year universities. A Distance Learning Program is underway that provides courses to New Mexico AMP partners via pre-recorded videos with plans to go to live satellite transmissions.

Academic recruitment, retention, and assistantship programs stressing faculty-student interaction outside the classroom are a vital ingredient in ensuring that minority students successfully complete undergraduate degrees. Research assistantships for minority students pursuing SEM baccalaureate degrees, with an emphasis on faculty mentoring, hands-on laboratory experience, and scholarships are also critical elements in the New Mexico AMP program. Many New Mexico AMP partners are developing and expanding local recruiting networks with counselors in pre-college programs.



A number of New Mexico AMP partners have designed ***summer bridge programs*** to help their students succeed in gate-keeping courses that tend to impede advancement in SEM. Intensive five to six week programs will be conducted at selected New Mexico AMP campuses where minority students are enrolled in credit-bearing advanced SEM courses. Students will be able to participate in structured tutoring programs that promote team building and study skills. Tuition, books, food, lodging, and a stipend are typically provided for each of the participants.

Summer research internship programs that enable upper division students to gain experience by working in industry and national laboratories are being developed. Funds have also been allocated for ***upgrading physics, mathematics, and engineering laboratories.***

NSF's Alliance for Minority Participation program will be invaluable to New Mexico's large pool of minority talent. It will provide the means to substantially increase the number of minority students receiving baccalaureate degrees. The New Mexico Alliance for Minority Participation will focus on the human aspects of this critical issue by implementing recruiting, retention, faculty interaction, and student financial assistance strategies.

All-Nations Alliance for American Indians

Abstract

American Indians are the least represented of all minorities in Science, Engineering and Mathematics (SEM). The overall goal of this project is to establish a comprehensive interactive All-Nations Alliance and network to increase substantially the quality and quantity of American Indians receiving baccalaureate degrees and graduate degrees in SEM. The foundation of this alliance is 24 participating tribal colleges located in the following nine (9) states: Montana, Washington, North Dakota, South Dakota, Nebraska, Minnesota, Michigan, Wisconsin, Kansas. The tribal colleges are the functional units of the alliance developing and implementing project activities, recruiting and selecting students, tracking students, maintaining a comprehensive telecommunications network, establishing retention programs, and providing student support services. The alliance will develop and implement innovative programs with input from both the Indian community and the SEM community to enhance matriculation of American Indian students at the following three critical transition points: (1) high school to college (tribal/community/four-year); (2) two-year college (tribal/community) to four-year SEM degree-granting institutions; and (3) four-year institutions to doctoral degree-granting programs in SEM fields. Tribal colleges will develop a pipeline network by establishing linkages with local middle/high schools and four-year SEM degree-granting institutions. Through this unique longitudinal pipeline networking program, the All-Nations Alliance proposes to increase the numbers of American Indians receiving baccalaureate and doctoral degrees in science and engineering by six to ten-fold by the year 2000. One of the objectives of this proposal is to reduce by at least one half the dropout/stopout rate for American Indians in the education pipeline with effective retention programs. The All-Nations Alliance will be supervised by a Governing Board and administered by two institutions: Salish Kootenai College (SKC), a tribal college, and Montana State University (MSU), a SEM degree-granting institution. Initially, SKC, working closely with 23 tribal colleges, will be responsible for programmatic activities and MSU will be responsible for fiscal management. By Years 4 and 5 of the five year program, both programmatic and fiscal management will be transferred to SKC and the participating tribal colleges. The All-Nations Alliance will establish a collaborative network of research scientists at universities and research laboratories to serve as mentors for American Indian students. In addition, the alliance will establish productive linkages and partnerships with other SEM-based programs, businesses, industry, organizations, state/federal agencies and foundations. The two lead institutions, SKC and MSU, offer a comprehensive array of in-kind contributions to the project. Additional sources of support for this project in cost sharing/matching have been identified by the tribal colleges through other grants and foundations. Project evaluation and assessment will be a continuous process and will follow the *NSF User Friendly Handbook*. A seven (7) person Extramural Peer Evaluation Team will conduct periodic detailed evaluations of program activities, accomplishments, and identify specific needs and deficiencies. Information on successful programs will be disseminated to other institutions via monthly newsletters, telecommunications, video tapes, and annual reports.

Metropolitan Detroit Alliance for Minority Participation

Abstract

The Metropolitan Detroit Alliance for Minority Participation has been formed to address the issue of minority underrepresentation in the sciences, mathematics, and engineering (SEM). The Alliance represents a consortium of six Detroit area universities: Wayne State University (the lead institution), Lawrence Technological University, Madonna University, Oakland University, University of Detroit Mercy, and University of Michigan - Dearborn. The objective of the Alliance is to increase the number of minority SEM graduates from these institutions from the current level of 180 to 720 by 1999. In addition, the Alliance will aim to place 150 of these graduates in graduate programs. The consortium has made a substantial commitment of matching funds to assist in bringing these goals to fruition.

To create a region-wide environment of moral and financial support for attainment of these objectives, the Alliance will expand to include the area's public schools, community colleges, and business community. Major foundations will be approached to further undergird the Alliance.

A number of projects aimed at facilitating student passage along the critical points in the SEM career pathway have been designed. Summer institutions and workshops, concentrating on science topics and improving math and study skills, will bridge the transition from high school and community college to the university. A program for parents will stress their critical supportive role in their child's education.

Retention in the university will be enhanced by emphasizing cooperative learning approaches to mathematics and science instruction, using upper-level and graduate students, as well as scientists and engineers from industry, as mentors or tutors. Dedicated counselors, scholarship programs, and electronic bulletin boards will provide additional support mechanisms.

The Alliance will sponsor seminar programs, affording students the opportunity to present their research experiences and to hear guest speakers. An annual day-long symposium focusing on career opportunities in SEM fields will be held.

Region-wide distribution of promotional literature describing project goals will aim at attracting students to the program. The Alliance will publish a newsletter, disseminating information on activities within the Alliance, as well as AMP program news.

Evaluation for the Alliance program will focus on both outcome and process. Outcome evaluation will document progress toward attainment of objectives. Process evaluation will document program implementation.

The success of this project is heavily dependent on obtaining wide community support for its goals. As those goals are realized, institutionalization of the most successful aspects of the project is anticipated to occur. Progress towards institutionalization will be followed by the Alliance's governing board, composed of the presidents of the six consortium members.

Greater Newark Alliance for Minority Participation

Abstract

The Greater Newark Alliance for Minority Participation consists of eleven colleges including four community/county colleges and seven four-year colleges and universities. The lead institutions are the New Jersey Institute of Technology and Rutgers University-Newark, with the partner colleges including Montclair State College, Kean College of New Jersey, William Paterson College, Jersey City State College, Bloomfield College, Essex County College, Union County College, Passaic County Community College, and Hudson County Community College. The Alliance will be a partnership of these colleges along with industry, science centers, school boards, and interested members of the scientific, civic, and governmental communities. The principal goal is to dramatically increase the opportunities for minorities towards successful inclusion in science, engineering and mathematics disciplines, as measured by undergraduate and graduate degrees in these fields.

In collaboration, the Greater Newark Alliance provides educationally, economically, and socially disadvantaged minority students with a support system and learning environment structured to:

- encourage the pursuit of a higher education in science, engineering or other math-based fields of study, particularly in the alliance colleges and universities;
- improve students' academic performance while in high school;
- ease the transition from high school to college;
- provide the support services needed to retain students once they are enrolled in college;
- build self-esteem and self-confidence and raise aspirations;
- increase students' awareness of science, engineering and mathematics related careers;
- stimulate students' interest in research and in continuing for graduate studies;
- ease the transition from college into the workforce.

The objective of the Alliance is to double the number of minority students successfully completing undergraduate degrees in science, engineering and mathematics in the Alliance Colleges, and entering professional career or graduate studies by the year 2000.

The target population focuses on Newark and its metropolitan area. Newark lies within 25 miles of nine counties in northeastern New Jersey with a total population of over 5 million. While the state of New Jersey has a 23% minority population (African American and Latinos), Essex County (where four of the alliance colleges are located) is comprised of a minority population of 54%. The 11 alliance colleges are all located within 10 miles of Newark and are within four adjacent counties: Essex, Hudson, Union and Passaic. The counties of Essex, Hudson and Union make up a total population of 1,825,000 with 47% of all African Americans and 66% of all Latinos in the state.

Evaluation of student's academic performance will include:

a) number of minority students selecting math, science, computer science, engineering majors
b) minority student grades in selected math and science courses at freshman, sophomore, junior, and senior levels
c) minority GPAs within the overall major programs at the sophomore and junior level's and at graduation
d) attrition/retention rates of minority students in the AMPS-related majors
e) entry of minority graduates into AMPS-related graduate programs or careers

The goals of the Alliance will be achieved by adopting an inter-university/regional sharing of ideas, programs and resources to facilitate the maximum use of physical, financial, and human resources for the common goal of attraction and retention of minority students in the science, engineering, and mathematics disciplines. Fifteen programs are planned comprising a comprehensive plan for the Alliance including mentoring, tutoring, undergraduate research experience, academic and financial support, a guarantee of "no cost" tuition, establishing a minority scholars program and providing diversity training for all students, faculty and staffing the program.

Dissemination plans include an Alliance Newsletter, published four times a year, distributed to the Alliance partner colleges for faculty and staff, interested mathematics and science teachers in the greater Newark area, scientists, and others in industry, government, science education facilities, foundations, and persons interested in the project and its outcomes.

Oklahoma State Alliance for Minority Participation

Abstract

The Oklahoma Alliance for Minority Participation in Science, Engineering And Mathematics (OKAMP-SEM), comprising twenty-seven universities and colleges within the state of Oklahoma, has been established to address the critical under-supply of minority students pursuing degrees in SEM. The participating institutions include three research universities, Oklahoma State University, University of Oklahoma, and University of Tulsa; Langston University, Oklahoma's Historically Black University; one large metropolitan and urban university, University of Central Oklahoma, nine regional universities of the state system; eleven two-year colleges including Bacone College, a private American Indian College and three other private colleges and universities. The alliance will also consist of corporate and community based organizations including representations from tribal entities. The 1990 U.S. Census shows Oklahoma to have the highest American Indian population in the United States (8% American Indian, 7.4% African American, 2.7% Hispanic and 1.1% Asian/Pacific Islanders). The Alliance institutions together enroll over 2000 minority students with undergraduate majors in SEM. The three research universities have over 150 minority students pursuing graduate study in these fields. Oklahoma has the largest proportion of American Indian students of any state. Southeastern and Northeastern Oklahoma State Universities have the highest enrollment in the state and confer more B.S. degrees to American Indians respectively than any institution in the United States. The primary objective of this program is to have a 15% increase annually of the number of underrepresented minorities enrolled and graduating in SEM fields of study moreover to increase the number of graduate students in these fields. The activities that will be carried out under the Alliance represent logical extensions to support the goals and objectives of the OKAMP-SEM as outlined by NSF and to support programs that are currently in operation in one or more of the units of OKAMP-SEM. A major component of the program is identification, recruitment and retention of these underrepresented student groups. The specific components of this program are 1) a Summer Bridge Program for students who have graduated from high school and are entering SEM programs immediately following their graduation and for students who are transferring from a two year to a four year institution, 2) an academic year scholarship program for students chosen as OKAMP-SEM Scholars and 3) a Summer Internship designer to give OKAMP-SEM Students a research experience. The request for $4.99 million is supported by $1.73 million in funds committed from the participating institutions. The progress and success of the program will be documented by monitoring the student progress and by tracking the students over time. A quantitative summary along with a narrative report on the individual and group success of participants will be disseminated through brochures and publicity. Because this is a state alliance, it will serve as a model that can be used by other states to form similar consortia.

Alliance for Minority Participation for the Greater Philadelphia Region

Abstract

The Alliance for Minority Participation (AMP) for the Greater Philadelphia Region is a five-year collaborative effort of the Philadelphia Consortium/ Partnership which is dedicated to doubling the number of underrepresented minority students (African American, Hispanic, and Native American) receiving baccalaureate degrees in science, engineering, and mathematics (SEM) and entering into graduate degree programs in SEM disciplines.

The Consortium consists of sixteen colleges/universities, metropolitan school districts, corporate partners, SEM professional organizations, community groups, and educational support organizations established through the implementation of the current Comprehensive Regional Center for Minorities (CRCM) funded by the National Science Foundation. Temple University will serve as fiscal agent for the Consortium.

The AMP will not only focus its efforts on retention in SEM at the undergraduate levels, but it will also place a strong emphasis on the recruitment of students through early intervention mechanisms tied to pre-college initiatives in the region. Retention efforts will focus on improving the quality of the learning environment and the academic performance of minority students using community-building principles which will emphasize collaborative learning approaches, including group study and support, and positive and sustained interaction with faculty.

Eight institutions will lead the Consortium efforts: Drexel University, University of Pennsylvania, Temple University, University of Delaware, Cheyney University, Lincoln University, Community College of Philadelphia, and PATHS/PRISM. These institutions will strengthen and expand their own minority recruitment and retention efforts, and use the knowledge gained from their experiences to expand effective practices to other Consortium institutions and beyond. This will be accomplished through the integration of three areas of concentration:

1) Academic Enrichment which includes pre-freshman bridge and minority undergraduate support programs, curriculum review and development, and undergraduate research activities.

2) Outreach/Transition Activities which includes an early identification mechanism, articulation programs and graduate programs to promote the development of minority faculty, and scholarships.

3) Industry Involvement which includes: pre-professional employment programs, and career awareness activities.

Lead institutions will participate in all project areas, exchange ideas and information, set specific group and institutional objectives, and assist each other with program planning and delivery.

In addition to the assessment of all programmatic activities through the use of a database monitoring system all institutions will be evaluated on their recruitment effectiveness and retention of minority students in SEM. At present, the SEM retention rates at consortium institutions range from 50% to 80%. Regularly scheduled regional meetings, research conferences, newsletters, and electronic media and a resource center will be used to facilitate networking and dissemination of information.

Through institutional cost sharing (one-to-one match), dedicated staff and SEM faculty support, and in-kind contributions by Consortium institutions, the proposed activities will lead to improvements in the quality of the learning environment for minority SEM students at Consortium institutions, and the development and implementation of effective SEM recruitment and retention models. The project will impact approximately 3,500 minority students per year.

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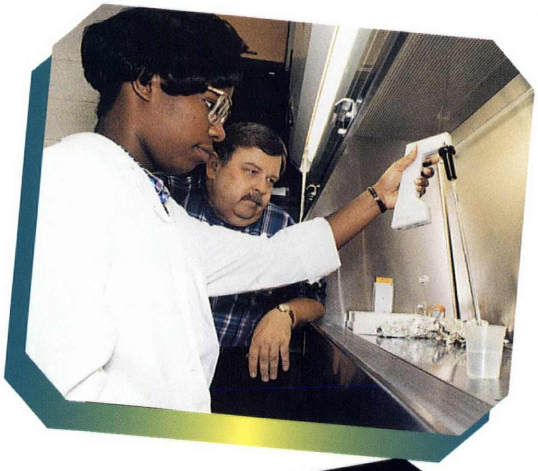

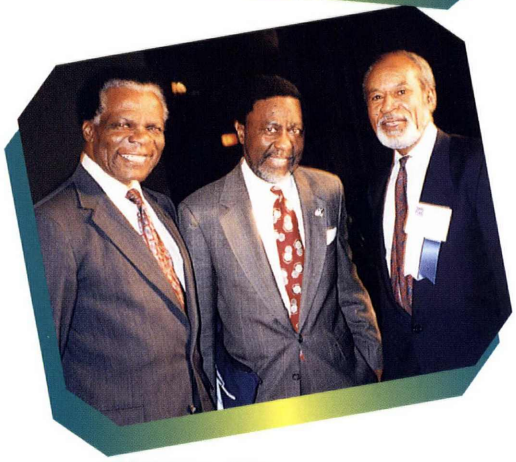

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