

# *The First Five Years*



**Supported by: National Science Foundation and the State of Florida**

**Participating Institutions:** Albany State University, Bethune-Cookman College, Clark Atlanta University, Florida A&M University, Florida International University, Florida State University, University of Central Florida, University of Florida, University of South Florida, Tallahassee Community College, Florida Community College @ Jacksonville, Miami-Dade Community College.

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The information presented in this report reflects the cooperative effort of the National Science Foundation (NSF) and the participating institutions. A special appropriation from the State of Florida has impacted FGAMP activities at those Florida institutions which are a part of the Alliance.

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## FGAMP THE FIRST FIVE YEARS, 1992 - 1997

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## FROM THE DIRECTOR

To Our Readers:

The Florida-Georgia Alliance for Minority Participation (FGAMP) project began with a vision and the commitment of partners to make a difference in the goals and achievements of our student population and, in so doing, to impact directives of the National Science Foundation (NSF) to increase the graduation rate of science, engineering and mathematics (SEM) majors at the participating institutions. FGAMP has created a community of individuals bonded by principles which focus on students' needs and engage the involvement of administrators, faculty, parents, student groups and others who have an interest in education. The support of the NSF staff has been invaluable.

Guided by our mission, individual teams within the FGAMP have had significant influence in maintaining the direction of the Alliance. In particular, the FGAMP student organizations have addressed the need for peer support both in the academic and extracurricular arenas. Beyond supporting the academic development of their peers, these students have reached out to their respective communities and are providing assistance to precollege students. The faculty have contributed

beyond their regular teaching assignments by serving as mentors and, where appropriate making their laboratories available for experiential activities in the SEM areas. The commitment of the FGAMP coordinators and support staff has contributed to a redefinition of accepted boundaries for SEM undergraduates.

This anniversary issue summarizes key components which have influenced the direction of the FGAMP project over its first five years of operation. We are appreciative of the contributions made by all in assisting us to achieve our Phase 1 short-term and long-term goals. We welcome your comments and or suggestions and solicit your support as a 'Friend of FGAMP.'

Sincerely,

Lynette P. Padmore  
FGAMP Project Director



FGAMP Team Leaders

"Whatever one touches his aim should always be to leave that which he touches better than he found it."

Benjamin Mays



**THE CHALLENGE.** Education for all youths has not always been the focus of the American people. In the 1950s, America recognized it had not been a fully inclusive society and had not developed the talents of all of its citizens to maintain its global competitiveness. The nation was shocked when the Soviet Union launched Sputnik, the first space satellite. Almost overnight, the nation became obsessed with the failure of our educational system to keep pace with international technological advances. The schools were blamed for a watered-down curriculum that left

the nation's youth unprepared to face national and international challenges.

As a result, Congress passed the National Defense Education Act and appropriated nearly \$1 billion in federal aid to education, which supported the teaching of science, engineering and mathematics, (SEM).

By the mid-1970s, concerned citizens became more alarmed at the decline in academic indicators, weak preparation of high school graduates for college and

work, and the unfavorable showing of U.S. youth in international comparisons. Dropout rates during high school years occurred at significantly higher percentages for African Americans, and a much larger percentage for Hispanic and Native Americans. College enrollment for minorities, particularly those majoring in SEM areas was at an all-time low.

In 1983, the National Science Board report, *Educating Americans for the 21st Century*, set forth the goal that "By 1995, the Nation would provide, for all its youth, a level of mathematics, science, and technology education that is the finest in the world, without sacrificing the American birthright of equity and opportunity."<sup>1</sup>

Fourteen years later, it is clear that the nation has not achieved this goal and that much remains to be done. Although there seems to be little doubt that school effectiveness in teaching SEM areas declined for a number of years, it is clear that much has been accomplished in the past six years.

In 1991, the National Science Foundation (NSF) implemented the Alliances for Minority Participation (AMP) Program and thereby created a paradigm shift for education of minorities in SEM areas. The program is designed to provide sustained intervention for minority students and to achieve increased minority representation in SEM disciplines. Science and technology are disciplines that continue to bring about major changes worldwide in all areas affecting our citizens. Realizing that gaps in the education of any segment of our population threatens our national competitiveness, it is increasingly important that we commit to meaningful dialogue and programs that open doors to careers in the SEM areas.

## THE HISTORY

The Florida-Georgia Alliance for Minority Participation (FGAMP) was established to assist the nation in meeting the challenges of increasing the number of minori-

ties matriculating in the SEM areas. Representing a coalition of twelve academic institutions, FGAMP is committed to directing its efforts to improve curriculum, instruction and outcomes for minority students, particularly in the States of Florida and Georgia.

FGAMP has been influential in motivating students to pursue and persist in attaining a bachelor's degree in SEM areas. The five-year cooperative agreement between FGAMP and the NSF has served as a driving force in bringing the participating institution together to develop a model whereby resources can be combined to impact undergraduate education. Support from the NSF is matched by contributions from each member of the Alliance. In addition, a special appropriation from the Florida legislature provides financial support for Florida institutions.

Florida A&M University (FAMU) has been the lead institution of the FGAMP project since its inception. Director Lynette P. Padmore, professor of biology at FAMU, facilitates the project. The participating member institutions of FGAMP are Albany State University, Bethune-Cookman College, Clark Atlanta University, Florida A&M University, Florida Community College at Jacksonville, Florida International University, Florida State University, Miami Dade Community College, Tallahassee Community College, University of Central Florida, University of Florida, and the University of South Florida.

The 1996-1997 academic year marked the fifth anniversary of the project and also witnessed the graduation of the first cohort of students who received full exposure to the FGAMP strategy.

Since its establishment in November 1992, the Alliance has experienced a 40% increase in SEM enrollment and more than doubled its graduation rate.

The FGAMP Central office is located on the campus of Florida A&M University, Time Magazine Princeton reviews 1997-98 College of the Year located in Tallahassee, the state's capital city.

Three full time employees staff the office and collaborate with FGAMP staff at participating institutions.

<sup>1</sup> National Science Board. *Educating Americans for the 21st Century*. 1983.

FGAMP's mission is to ensure that all of its participants have the academic and counseling support needed to pursue a career in science, engineering and mathematics.

**Governing Board of Florida-Georgia Alliance for Minority Participation in Science, Engineering and Mathematics**

**Dr. Frederick S. Humphries**

Florida A&M Univ.

**Dr. Talbot D' Alemberte**

Florida State Univ.

**Dr. Oswald P. Bronson, Sr.**

Bethune Cookman Coll.

**Dr. Betty Castor**

Univ. of South FL.

**Dr. Thomas W. Cole, Jr.**

Clark Atlanta Univ.

**Dr. John C. Hitt**

Univ. of Central FL

**Dr. John V. Lombardi**

University of Florida

**Dr. Modesto Maidique**

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**Dr. Eduardo J. Padron**

Miami Dade Comm. Coll.

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**Dr. Steven Wallace**

Florida Comm. Coll.

@Jacksonville

**Dr. T.K. Wetherell**

Tallahassee Comm. Coll.

## ORGANIZATION


FGAMP is one of twenty-seven alliances in the network of AMPs throughout the nation. The programmatic structure of FGAMP creates an excellent and viable avenue for intervention and collaboration among students, faculty and administrators. Over the years, a high level of enthusiasm has ignited a sense of cohesiveness essential that all may benefit from the explosion of knowledge in the SEM fields and, at the same time, serve a diverse population of students.


Representatives from each institution comprise the FGAMP Steering Committee which is responsible for planning and monitoring the project. FAMU, as lead institution, has the primary responsibility for project management. Each institution has an advisory committee which oversees the campus-based operations. Additionally, broad-based activities are reviewed by the FGAMP Governing Board which is comprised of the presidents at each participating institution.


## GOALS


Participating institutions in the FGAMP project have established specific goals designed to significantly influence the enrollment, progression and graduation rates of African Americans, Hispanics, Native Americans, and other minorities in SEM areas. Guided by a framework established by the NSF which has as its goal the production of more than 50,000 B.S. SEM graduates by the year 2000.


FGAMP has established eight specific goals:


 To recruit increased numbers of high school students to the SEM disciplines and to graduate them on time.


 To establish working relationships with a significant number of graduate institutions to facilitate the placement of all SEM B.S. degree graduates from FGAMP institutions.


 To enhance graduate school placement opportunities through significant external research experiences.

 To improve the students' academic performances by enhancing and strengthening working relationships among students and between students and faculty.

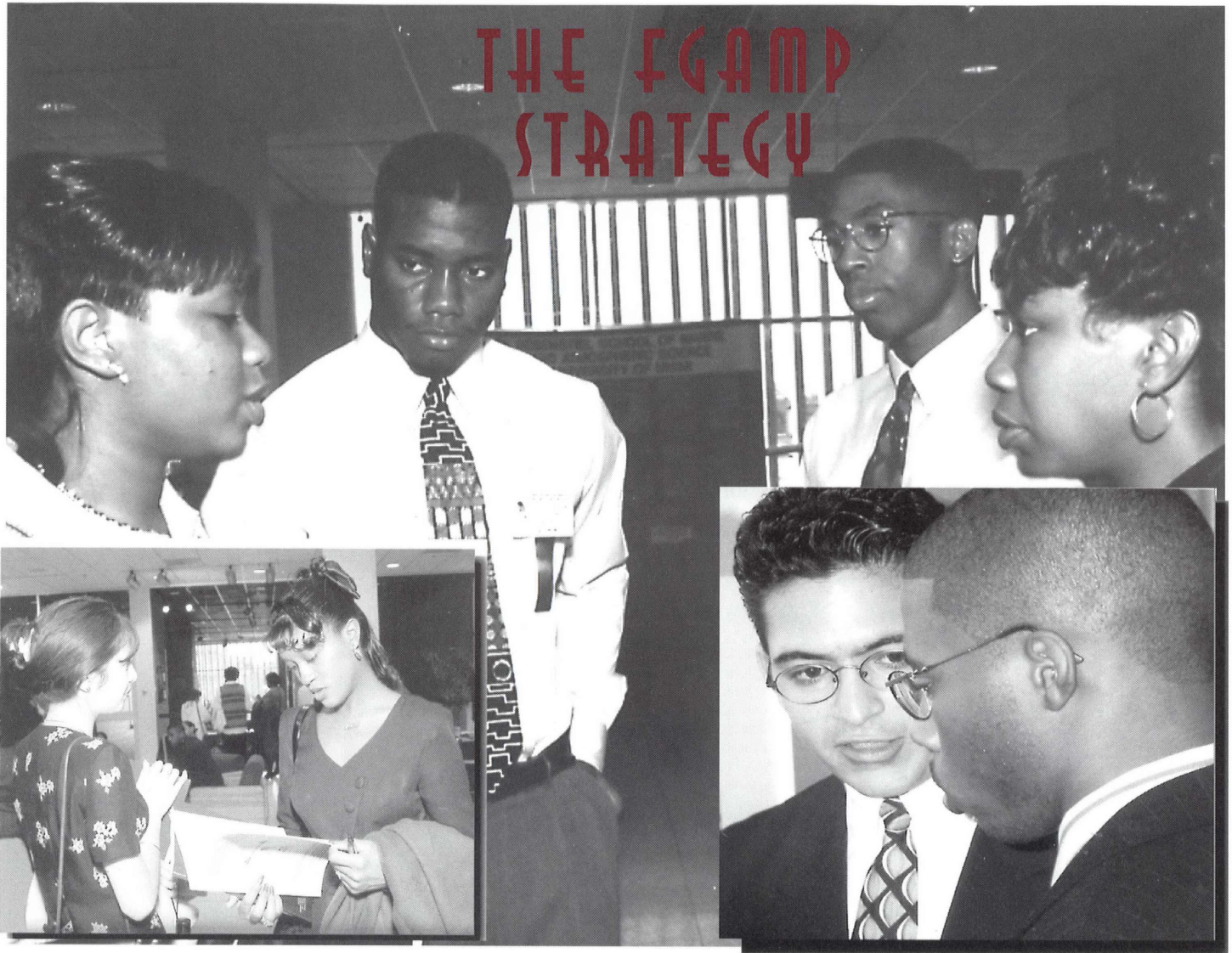
 To reduce high attrition in the freshman year by providing summer academic experiences that will review and preview important mathematics and science concepts.

 To expose undergraduates to an integrated computerized instructional support system which will enhance classroom performance.

 To bring together significant numbers of highly motivated minority students who, by their organized and serious approach to their program of study, will serve as positive role models for other students.

 To improve the quality of instruction provided by the teaching faculty through workshops and regional conferences.

FGAMP has employed internal and external tools of accountability to measure actual outcomes with project goals. (See the *Accomplishments* section for more information.)



**FGAMP** achieves its mission through a holistic plan that spans from the pre-matriculation level to receipt of the B.S. degree. On every rung of the college education ladder, students are evaluated, nurtured, enhanced and prepared for the 21st century and beyond.

The best match for academic success results from competent teachers who are committed to teaching and students who are enthusiastic about learning. An important contributor to FGAMP's success is the high performance expectations that faculty have for the students. Faculty expect and challenge students to excel and to recognize that their success is critical for achieving their goals and the goals of the program.

Faculty are aware that the way they are perceived by students influences the attitudes the students hold toward the basic tenets of our society. Deep and extensive communication is consistently provided in an encouraging yet challenging environment.

FGAMP serves to build a community of individuals bonded by a sense of mission; a commitment to excellence; and the dedication to serve students.

Another integral contributor to the success of the program is the external research experience. Students have secured more than 450 summer internships since 1994 in more than 35 states, Canada and Germany.

Historically Black Colleges and Universities and Minority Institutions (HBCU/MIs) continue to educate more minority students than any other higher education institution. However, there is an upward trend of minority enrollment at independent and two year colleges. According to the American Council on Education (ACE), in 1995, more than 42% of all African American, more than 55% of all Hispanic, and nearly 90% of all American Indian college students enrolled in two year institutions.

Nationally, minority students made significant progress in SEM areas from 1993 to 1994, at both the bachelor's and master's degree levels. The largest increase at the bachelor's level, 14.3%, occurred in biological/life sciences. Minority students made the greatest gains at the master's level, with one year increases of 13.9% in the number of social sciences degrees earned. However, minority students showed the lowest growth rate in the number of engineering degrees earned at both the bachelor's and master's level with increases of 3.4% and 7.8%, respectively.

These experiences provide valuable technical information and serve to enhance professional and social skills with direct implications for the nation.

## RECRUITMENT, PROGRESSION AND GRADUATION

The scope of FGAMP activities encompasses recruitment through graduation. The primary activities of the FGAMP Project include strengthening the level of academic preparation and progression of students opting for careers in SEM areas. Activities include the summer bridge programs, peer study groups, undergraduate summer research, workshops for graduate school preparation, faculty-directed undergraduate research projects, faculty and peer mentoring and graduate level mentorships.

Through established linkages, FGAMP involves students in research projects as early as the pre-junior summer.

At the time of enrollment, students are provided an operational plan that details the curricular and enhancement components of the project. Students follow prescribed curricula and are expected to engage in FGAMP sponsored retention sessions, discipline seminars, tutorial/study sessions and summer research activities. Participants are strongly encouraged to participate in formal study group sessions termed 'study-pods.'

The first element in the FGAMP strategy is the recruitment of high school and community college students. Brochures, announcements and other marketing tools are distributed through the FGAMP Central Office to high schools, AMPs nationwide, community colleges, baccalaureate granting colleges and universities, and various government and industry representatives. Pre-college students are introduced to career opportunities in SEM areas and encouraged to achieve academic success, attain a college

preparatory curriculum, and pursue a career in a SEM area.

A key factor to increased enrollment in the project is FGAMP's ability and commitment to monitor student activity during the entire pursuit of the baccalaureate degree. The FGAMP Central Office provides periodic reports to FGAMP institutions relative to the persistence of students enrolled at their respective schools and colleges. The Prefreshman Institute (Freshman Bridge Program) appears to solidify the student's interest in FGAMP and influences their performance during the freshman year. The bridge program provides a mentoring component designed to prepare students for the college experience.

Additionally, FGAMP influences careers through regional and national conferences and workshops. These opportunities provide an excellent opportunity for interaction and provide an avenue for existing students to showcase their research internship experiences via required poster and oral presentations. The FGAMP Career EXPO, for example, is an exciting and rewarding annual event that continues to draw large numbers of industry and graduate program partners who provide crucial career-related information to students.

The most encouraging outcome in the project during the first five years has been the second level of the FGAMP strategy, progression. FGAMP has demonstrated that a holistic approach to education is a key factor in achieving academic success. FGAMP has achieved an 83% level of progression. Progression is defined as progress made toward attaining the B.S. degree in the declared major in four or five years. Persistence in SEM is defined as students who remain enrolled in a SEM area and make progress toward the B.S. degree. Persistence toward the B.S. is defined as students who may have made a major change from the declared SEM



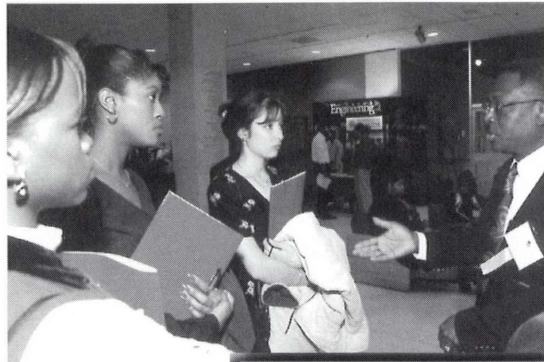
major but are still progressing toward the B.S. degree.

FGAMP considers persistence a major factor in assessing the pathway by which SEM graduates are produced. If the SEM community can retain approximately 90% of its participants through a holistic approach of mentorship and academic sustenance, then strategies which enhance academic performance will result in a larger and more competitive pool of SEM graduates. This development will not only contribute to NSF's goal of producing 50,000 minority B.S. graduates in SEM areas by the year 2000, but will also influence NSF's second goal of increasing the production of SEM Ph.D.'s from underrepresented groups.

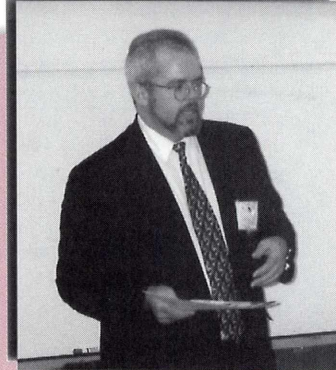
Students are motivated to persist to the baccalaureate degree in a SEM area through faculty and peer mentoring; staff monitoring; enhanced curricular offerings; motivational workshops; career seminars; GRE preparation workshops; presentations at national and regional meetings and internships.

Three FGAMP institutions, Bethune-Cookman College (BCC), Florida A&M University (FAMU), and Florida International University (FIU), host summer institutes for freshman and sophomore FGAMP students. Prefreshman institutes are held at FAMU and BCC. Presophomore institutes are held at FAMU and FIU. These five week residential institutes are designed to enhance academic recruitment and retention. They provide coursework, tutorials and career development exposure in the SEM areas. FGAMP staff at graduate institutions interact with their campus retention offices to affect performance in introductory SEM courses.

The mentoring component reinforces knowledge and understanding of subject areas as well as provides assistance in securing internships. Techniques



***The FGAMP program has made great strides in recruiting women and minorities and works on an ongoing basis to ensure they remain and flourish in their fields of scientific interest.***



employed include peer mentoring and cooperative learning. Students in the lower division are mentored by students in the upper division and faculty. Lower division students also serve as mentors for their peers and for precollege students.

The final tier in the FGAMP strategy is graduation. Leading up to this event, students receive orientation to graduate school or preparation for success in the work environment.

As the first cohort of students matriculate in 1997, FGAMP will maintain contact and monitor the progress of its alumni through graduate school and their professional experiences.

## IMPACT ON THE CURRICULUM

Many students who start college quit before completing a baccalaureate degree. However, research indicates

At the master's level, engineering was the only degree category in which minorities did not experience double digit increases for 1994, according to a national study conducted by ACE.

ACE reports that 10.9% of all undergraduates in 1995 were African Americans, 8.3% Hispanics, and less than 1% American Indians.

Despite the continued underrepresentation of minorities nationally, ACE reports that 1995 was a banner year for minorities who achieved their largest gains in life sciences, engineering, physical sciences and doctorates earned.

Source: American Council on Education. Fifteenth Annual Status Report on Minorities in Higher Education, (Deborah Carter and Reginald Wilson).1996.

FGAMP students benefit from the expertise and wisdom of eminent scientists and researchers during class instruction, tutoring, mentorship and national and regional conferences.

“The information society should serve all of its citizens, not only the technically sophisticated and economically privileged.”

Bill Gates

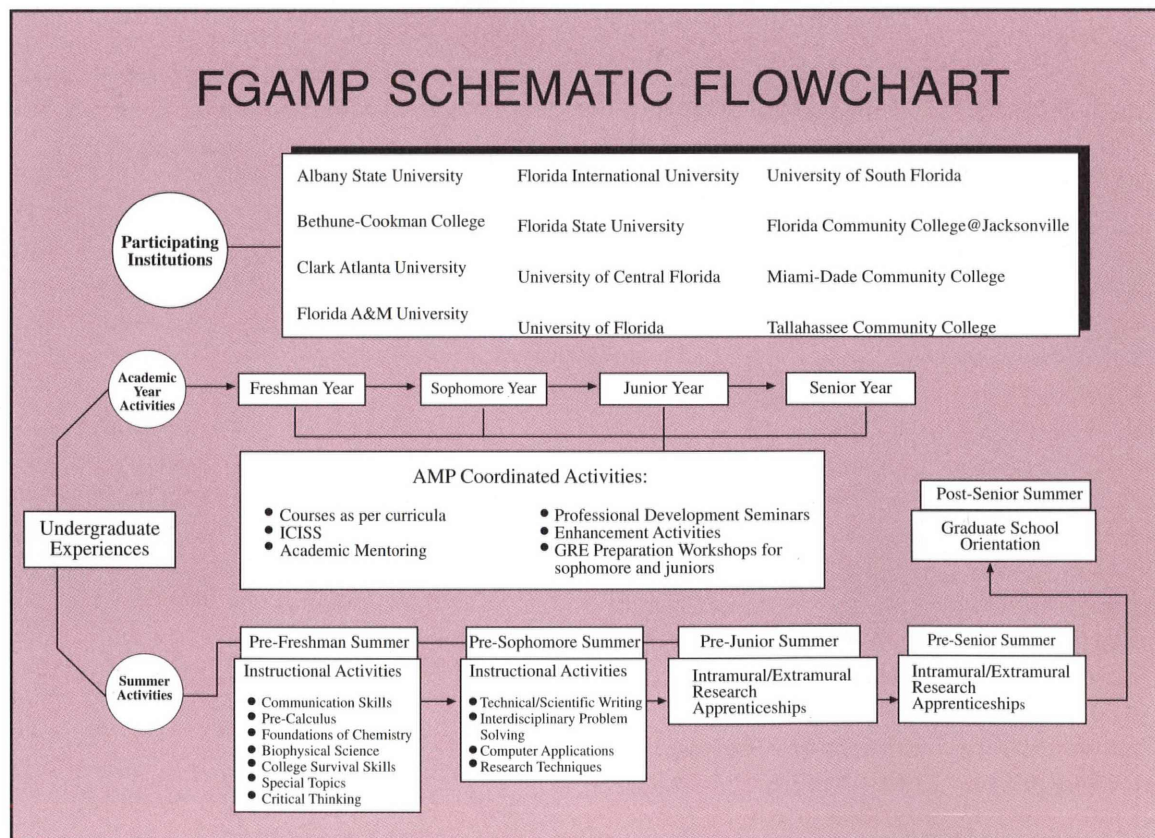
The FGAMP philosophy is to embrace all who have a thirst for education regardless of their level of preparation.

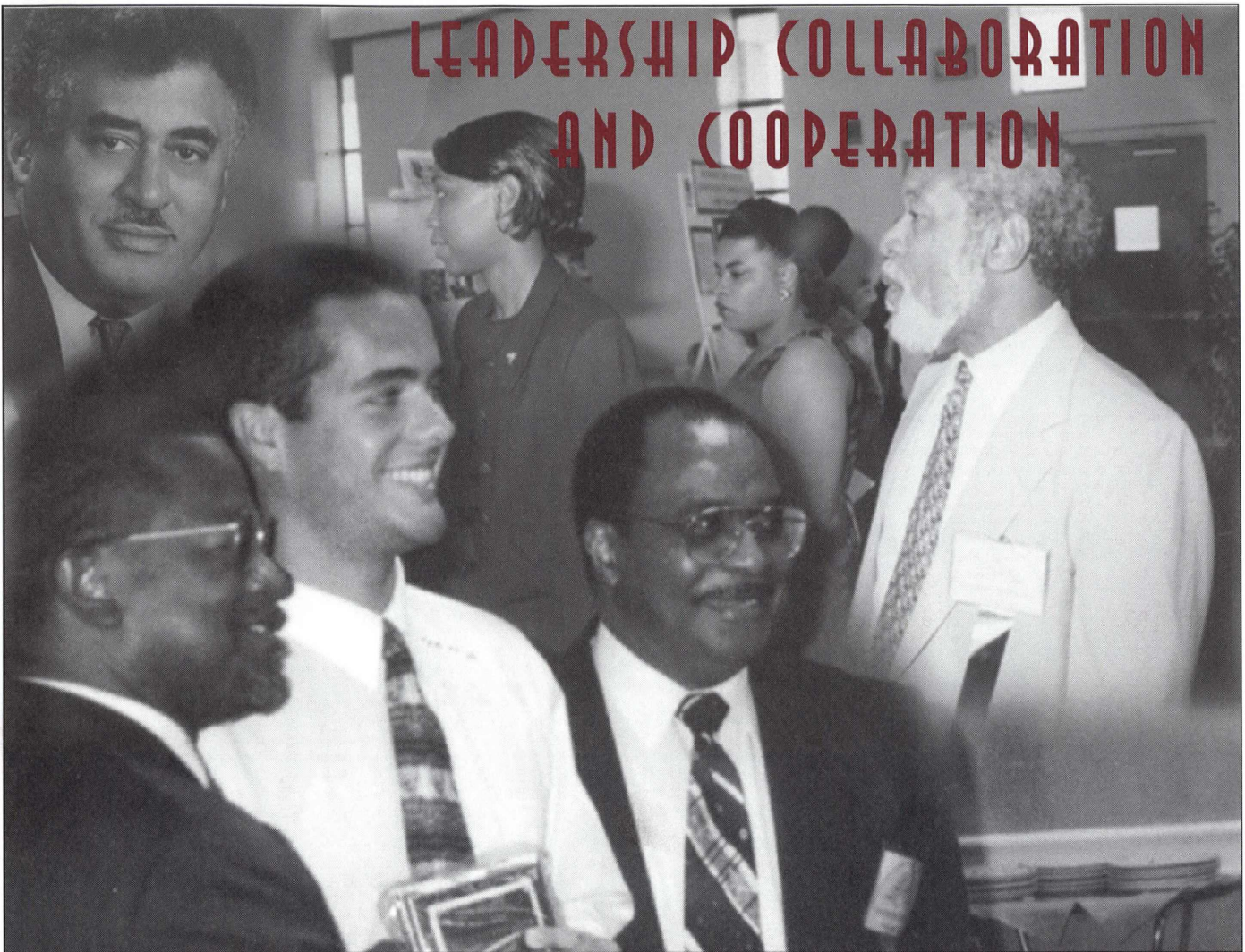
that greater exposure and mastery in the SEM areas in high school give students an advantage in the college environment. When coupled with motivational and mentoring components, student persistence and matriculation increase. The FGAMP Schematic Flowchart illustrates the activities at each phase on the college education ladder. Incoming SEM students are given the opportunity to get a head start on college during the summer preceding their freshman year. Pre-matriculants are instructed in the following areas: pre-calculus; chemistry; biophysical science, critical thinking and communication skills.

Subsequent summers offer instructional activities in technical and scientific writing; interdisciplinary problem solving; computer applications and research techniques.

The FGAMP curricula cultivates and reinforces leadership skills, provides an opportunity for students to express concerns and become aware of academic and nonacademic support systems available to them. The curricula also provide students with opportunities to explore careers in the SEM areas.

Many students in FGAMP have the credentials that would make them competitive at any university. Other students, however, may need additional development through a nurturing and supportive environment. The FGAMP strategy demonstrates how students can achieve when the proper environment is provided. Additionally, the model solicits the involvement and commitment of a diversified force to accomplish the goal of the project. The model is transportable and can be used at any level of academic endeavor.





**FGAMP Institutional Motto's**

- "Celebrating Excellence Creating Opportunities"
- "Soaring To High Heights"
- "I'll Find A Way Or Make One"
- "An Enlightening Educational Journey"
- "Learning To Care For You"
- "Imagine What You Can Do"
- "Florida's Educational Attraction"
- "Accent On Learning"
- "Excellence Wiith Caring"
- "A Past To Cherish.....A Future To Fulfill"
- "The Welfare Of The State Rest On The Character Of The People"
- "Vires Artes Mores, Through Theses Three Ideas The Student Is Educated Physically, Mentally And Morally"

**INDEED**, execution of the FGAMP model has proven successful. The first five years have demonstrated tremendous strides for FGAMP.

Since the NSF supported AMP project began, institutions have experienced an upward trend in enrollment. The number of minority students enrolling and matriculating in SEM areas on college campuses, particularly at FGAMP institutions, increased during the period between 1992-1997. During the same period, the number of minorities applying to and

entering graduate school and the workplace also increased. For example, the total number of SEM B.S. graduates at FGAMP institutions increased from 416 in 1991 to 1,112 in 1997. In comparison to national data, FGAMP's performance tripled the number of degrees conferred to minorities underrepresented in SEM areas. Using 1991 as the base line, there was a 41% increase nationwide versus a 123% increase for FGAMP in 1995. In 1997, the increase climbed to 167%. Total SEM enrollment at FGAMP institutions which offer the B.S. degree (9 of 12) rose from 20,497 in 1992 to 27,308 in 1996.



FGAMP Expo 1997, University of Florida, Gainesville, FL

Since 1992, total student enrollment at B.S. degree institutions increased by 16%; total SEM enrollment increased by 31%; and SEM minority enrollment increased by 40%.

This increase is largely in response to the dedication of FGAMP faculty and staff who are expert in their SEM fields and who have creatively implemented a variety of approaches, programs and activities to augment the students' FGAMP experience.

Each year, institutions receive a copy of the 'FGAMP Hourglass' which identifies progress toward attaining the established SEM B.S. goal. This information is also disseminated to all FGAMP partners. The 'FGAMP Hourglass Award' is presented to FGAMP institutions which meet or exceed their projected goal in a given year. During 1992-1997, seven of the nine B.S. granting institutions - Bethune Cookman, Clark-Atlanta, Florida A&M University, Florida International University, Florida State University, University of Florida and University of Central Florida - surpassed their projected five year goals for SEM student enrollment.

Guided by the established goals of FGAMP and the NSF, the project has realized the following additional major developments:

1. Since 1993, secured an average of \$641,000 per year from the Florida state legislature to support Florida institutions participating in the project. Appropriations are used to provide partial scholarships for FGAMP students, support for some FGAMP staff and support for SEM graduate mentors who serve as teacher assistants or otherwise contribute to the progression of SEM undergraduates;
2. Increased participation of undergraduate students as FGAMP scholars from 454 in 1993 to 700 in 1997;
3. Graduated 342 FGAMP supported scholars from four of the major undergraduate supporting institutions. At least 38% of these students are enrolled in graduate programs.
4. Secured more than 450 summer internships in 35 states, Canada and Germany since 1994;
5. Expanded partnerships with industry, government and academia involving more than 70 diversified entities throughout the United States, Canada and Germany;
6. Developed and distributed two major tools the FGAMP operational manual and the FGAMP Schematic Flowchart that are modeled throughout FGAMP institutions and can also be implemented nationwide;
7. Hosted two Regional Conferences, three Career EXPOs and collaborated in

the coordination of one NSF-AMP Student Research Conference; (The SEM Career EXPO is an annual event that is hosted by a different FGAMP institution each year. Oral and poster research presentations facilitate student interaction with industry and representatives from graduate school programs. More than 300 FGAMP scholars attend annually.)

8. Strengthened inter and intra-institution collaboration of effective teaching and learning strategies via the biennial conference; ( Each FGAMP institution has a turn to host the conference. The *FGAMP Briefs*, a bi-monthly newsletter produced by the FGAMP Central Office, also helps to solidify effective communication among AMPs nationwide.)

9. Established SEM student coalitions by providing leadership opportunities for SEM students via student organizations and student support programs;

(From the inception of the project, FGAMP student organizations have been established at Albany State University, Bethune Cookman College, Florida A&M University and Florida International University. Students plan and implement campus-based activities and assist in the coordination of the annual FGAMP EXPO and GRE Preparation Workshops both on campus and at the FGAMP EXPO. In

addition, students serve as mentors for their peers as well as provide outreach support for high school students.)

10. Established collaboration with the Graduate Feeder Program based at Florida A&M to assist students identify potential graduate programs and to complete related application forms; (A similar program, the National Minority Graduate Feeder Program, is being explored through the efforts of the National Association of State Colleges and Land Grant Colleges (NASULGC).)

12. Developed and implemented pre-matriculation bridge programs at Bethune Cookman and Florida A&M; (These five week residential institutes provide course work and enhancement activities in the SEM areas.)

13. Influenced the establishment of electronic classrooms at Florida A&M and Florida International (Supported with funds from the U.S. Department of Education, participants in the Prefreshman and Presophomore institutes take formal classes in computer application.) and

14. Established a homepage on the World Wide Web with active links to all FGAMP institutions and AMPs nationwide.

Involvement of these partners may be in the form of scholarship, summer internship or seminar presentation. The following entities represent a percentage of the network of partners who have supported FGAMP students as interns:

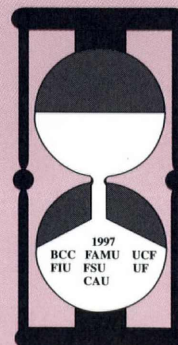
- Albany State University
- Allied Signal Engine
- American Express
- Amoco Chemical
- AT&T Bell Labs
- CENNaS
- Champion Intern'l
- Cigna Retirement
- CNA Insurance
- Delco Electronics
- Dept. of Agriculture
- Eli Lilly
- Florida A&M Univ.
- Florida State Univ.
- FAMU, Coll. of Pharm.
- Federal Express
- General Motors
- Harris Corporation
- Honeywell
- IBM
- Kennedy Space Center
- Langley Research Ctr.
- Lawrence Livermore
- Los Alamos Laboratory
- Lucent Technologies
- MARC Program
- Mead Corporation
- Michigan State Univ.
- Monsanto Chemical lab
- Motorola
- NASA
- Nat'l High Mag Lab
- National Institute of Science and Technology
- Nortel
- Pfizer
- Sandia Laboratory
- SBC Communications
- Timken Toyota
- UNCF/GTE
- University of Alabama
- University of Florida
- University of Georgia
- University of Miami
- Univ. of Minnesota
- Univ. of South Florida
- University of Toronto
- Westinghouse
- Xerox Corporation

## FLORIDA-GEORGIA ALLIANCE FOR MINORITY PARTICIPATION

Bachelor of Science degrees Awarded to Underrepresented  
Minority in SEM Areas

### Goal Attainment

<u>Institutions</u>	<u>START</u> <u>1991/</u>	<u>ACTUAL</u> <u>1997/</u>	<u>PROJECTED</u> <u>1997*</u>
Albany State College	19	36	57
Bethune-Cookman College	7	28	21
Florida A&M University	25	198	175
Florida International University	130	272	260
Clark-Atlanta University	25	87	75
Florida State University	36	90	76
University of Central Florida	27	102	81
University of Florida	100	207	200
University of South Florida	47	92	141
<b>TOTAL</b>	<b>416</b>	<b>1112</b>	<b>1086</b>



# PARTNERS: ENHANCING OUR WORLD



**T**HE FGAMP project represents a collaborative effort among institutions and individuals working together to bring about full community involvement and appreciation for the increasingly diverse scientific and technological environment in which we live.

The NSF, the State of Florida (supporting Florida institutions) and participating institutions provide structural and operational support. Business, industry and other graduate institutions provide an avenue for required internships which enhance

career exposure. Local, state and national leaders serve as mentors and funding sources. Parents and community members at-large assist in molding the total character of the student as well as empowering them with the stamina needed to achieve their goals.

This strengthening of partnerships among business, academia, and government meets the demands of business for productive professionals; provide support for students and enhance their experiences during their undergraduate years.

"Science cannot live by science alone. Research needs education, just as education thrives when it is conducted in an atmosphere of inquiry and discovery."

Neal Lane, Director,  
NSF

The FGAMP Program provides a support group of study partners, tutors and mentors to help you successfully matriculate through an undergraduate course of study in a challenging curriculum.

Leslie Porter,  
Mechanical Engineering  
Florida A&M University  
Spring 1996 Graduate

Working with FGAMP undergraduate students has been a source of tremendous excitement and accomplishment as I pursue my ultimate goal of becoming a university professor.

Mark Weatherspoon,  
Electrical Engineering  
University of  
South Florida  
FGAMP Fellow &  
Ph.D. candidate, 1999

Society as a whole benefits from the production of responsible citizens who contribute to an increase in the nation's scientific and technological capabilities.

Research indicates that a growing percentage of new entrants into the SEM workforce will consist of African Americans, Hispanics and Native Americans. The role of minorities in SEM careers can therefore no longer be viewed as solely an equity issue, but rather as one that forms an intrinsic link to our economic prosperity as a nation and a leader in the community of industrialized countries.

Partnerships with industry and other supporters are encouraged to further FGAMP students' endeavors and will be an expanded thrust in the Phase II operations of FGAMP. FGAMP recognizes that industry plays a key role in broadening the students' experiences in SEM areas. Financial considerations impact individual decisions on timely progression toward attaining the B.S. degree.

Since 1994, FGAMP has aggressively sought out support for summer internships from graduate programs, national laboratories and also business and industry sources. Since 1994, the Alliance has secured more than 450 summer internships for eligible FGAMP scholars. Support from these sources have amounted to more than \$350,000 per year. From 1994-1996 summer internship stipends were provided exclusively from external support. In 1997, however, the large number of students who were eligible for internships required that FGAMP support 32 students.

Avenues for new and continued partner support include:

1. Provision for summer internship opportunities in a supportive learning and investigating environment;

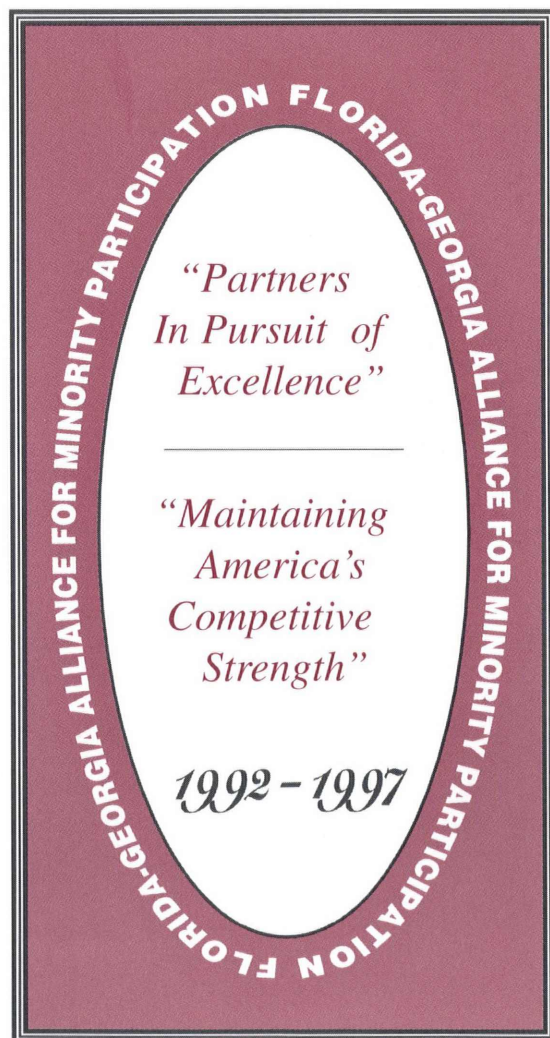
2. Financial support for FGAMP participants to include transportation costs, room and board and per diem;

3. Scholarship support;

4. Personnel who will serve as consultants to the program; and

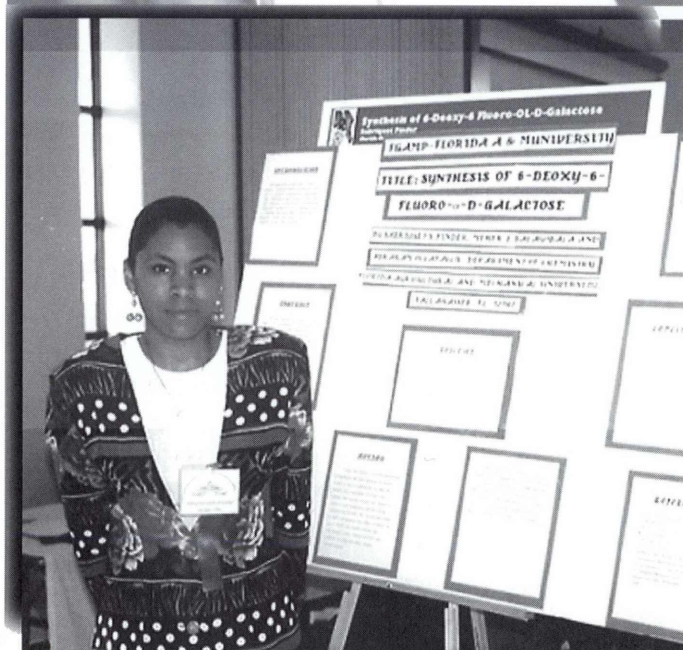
5. Materials for recruitment of FGAMP scholars.

The nation's wealth, and thereby quality of life, is increasingly dependent upon effective and sustained progress in addressing our existent scientific and technical challenges.





## THE STUDENT EXPERIENCE



**A**T FGAMP, students are our top priority. The FGAMP strategy is grounded in the Alliance's desire to identify and empower students for leadership in the SEM areas.

Students benefit from the holistic approach to education that takes into account the many factors associated with learning. Every activity and every facet of our program is designed to help students mature emotionally and socially, to develop positive self-concept and personal

social and leadership skills, to develop tenacity to overcome barriers.

Students experience learning in an environment in which they are motivated, guided and expected to succeed.

Mentorship is a key ingredient of the FGAMP strategy to reduce attrition and help ensure matriculation in the SEM field.



“FGAMP really has helped me to develop my leadership skills. I have benefited from the opportunities to network with other students and professionals.”

Jacari Witchard, Sr.,  
Computer Science  
Albany State Univ.

“The FGAMP internship that I participated in at the Argonne National Laboratory, Argonne, Illinois, was an excellent research experience for me. I met and interacted with many students from other institutions and performed interesting research.”

Connie  
Rivers, Sr.,  
Chemistry, Bethune  
Cookman College

“During the year, FGAMP offers an excellent support system that ensures higher levels of graduates within each major. Support includes tutors, study groups, and midterm grade checks. FGAMP also helps provide many research experiences and internships for students. An extensive file was created for this purpose. FGAMP also encourages higher education.”

Daphne Best,  
Graduate,  
Biology/Pre-Med,  
Florida A&M

Students may major in any of the five disciplines: biology, chemistry, computer science engineering, mathematics or physics. Curricula relative to the student's chosen major along with supplementary enhancement activities are coordinated by the FGAMP Central Office and the institutional academic coordinators at each institution.

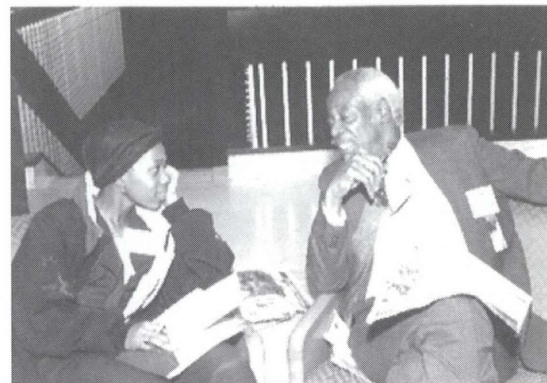
Students gain valuable insights into 1) scientific concepts and their significance to various professions; 2) career opportunities in high technology industries; 3) graduate program selection and application process; and 4) scholarship and financial aid opportunities.

All FGAMP students have access to Integrated Computerized Instructional Support System (ICISS), a computer software program that provides academic enhancement via topic review or pretests in the science and mathematics areas.

## SCHOLARSHIPS AND FINANCIAL AID

Students in the FGAMP project are required to maintain a minimum GPA of 2.70 in order to receive financial support. Students whose GPAs fall below this average for more than one semester do not receive financial support from the program but are entitled to all other tutorial and support services. As reported by the institutional coordinators, in 1997, more than 80 percent of FGAMP students had GPAs of 2.7 and above.

Students selected as FGAMP scholars receive a \$1,000 to \$2,000 stipend each semester to be applied toward tuition and fees. Individual institutions provide additional scholarships or comparable matching support to offset tuition costs for students who have grade point averages above 3.0. Students are expected to follow a prescribed curriculum and participate in FGAMP activities such as study



***FGAMP works with mentors who provide counseling and tutorial assistance throughout the students' critical transition from high school to college. Most importantly, FGAMP encourages parental, business and community participation. Such involvement empowers students to focus their knowledge and energy on goals not previously attainable.***

groups, professional seminars, and discipline-focused and standardized test preparation workshops.

To be considered an FGAMP Scholar in good standing, each student in the program must: 1) be enrolled in one of the SEM areas; 2) maintain a minimum grade point average of 2.70; 3) maintain and exhibit high academic performance; 4) participate in a minimum of two FGAMP academic activities (seminars, workshops, conferences, etc) per semester; 5) attend all FGAMP mandatory monthly meetings (a maximum of two mandatory meetings will be held per month); 6) participate in study groups (tutorial sessions) to maximize academic performance; and 7) submit Academic Progress Reports at mid-term of each semester (one for each course in which enrolled).

Students enrolled in the FGAMP-Teacher Preparation Program are awarded scholarships on a similar basis. The amount of the scholarships vary among individual Alliance members.

To be eligible, students must be fully admitted to the program. However, since eligibility requirements differ among universities, students interested in the program should contact their institutional coordinator for additional information.

Students at or above the junior level in Florida institutions are also encouraged to apply for the Florida Minority Teacher Foundation Scholarship Program, which is open to minority students who express an interest to teach in Florida public schools and meet the requirements for admission into an approved teacher education program.

Other sources for matching support available to FGAMP students are:

1. *Adopted High School* - awarded to a high school senior who has attained the honor of valedictorian or salutatorian of his/her graduating class.
2. *Distinguished Scholars Award* - awarded to high academic achiever who is also competing for national honors.
3. *Community College Scholarship* - awarded to high achieving community college graduates.
4. *Florida Bright Futures Scholarship* - awarded to any Florida high school graduate who merits recognition of high academic achievement and who enrolls in an eligible Florida public or private postsecondary educational institution within three years of graduation. In 1997, more than 43,000 of these scholarships were awarded.
5. *Florida Student Assistance Grants* - awarded based on financial need.
6. *Georgia's Hope Scholarship* - provides free tuition and fees and book allowance for eligible state of Georgia students.

## INTERNSHIPS

Internships are a rewarding experience for the FGAMP student. A few of the FGAMP participants engage in academic year research projects at their institutions. However, the majority of FGAMP scholars



***Research experience and training made available by internships provide students with an understanding of contributions they can make to improving the nation's scientific and technological capabilities.***

participate in research activities during the summer. All FGAMP participants are expected to complete one, preferably two, internship experiences during their tenure in the project. Generally, students express interest early in the fall semester and are provided the needed assistance by the project staff. Since 1994, the Alliance has been successful in providing 450 summer internship opportunities with more than 70 partners in 35 states, Canada and Germany since 1994. Internships provide valuable technical knowledge as well as enhancing professional and social skills.

"FGAMP is an organization that has helped me not only financially but also educationally. It has helped me economically by providing me with the financial aid that I needed in order to accomplish my career goals. Also, it has helped me educationally by providing counselors, mentors and graduate students to assist me in reaching my professional goals. If it were not for this scholarship, I would not have the benefit of being a full-time student at FIU."

William Rodelo,  
Freshman, Ind. Eng.,  
Florida International

"Before accepting the opportunity to experience the 5th Annual NSF AMP Research Conference, I was very unsure of my ability to present scientific research on a national level. Preparation poster presentations inspired me to become more self-confident and to view all new experiences as learning experiences. Thanks, FGAMP program for making this experience possible for me and many others."

Eugene Manselle, III  
University of Central  
Florida

The mission of the FGAMP Teacher Preparation, (FGAMP-TP) Component is to: 1) increase the number of minority teacher education graduates certified to teach science and mathematics; and 2) to provide a continuum whereby prospective science and mathematics teachers will receive early classroom exposure.

Activities of the FGAMP-TP include the Armed Services Transition to Education Program (ASTEP). This program seeks to steer discharging or retiring armed forces personnel into the teaching profession.

The Higher Education Consortium (HEC) for Mathematics and Science is another form of bridging involving the FGAMP-TP program. HEC represents a group of more than 500 individuals from community colleges, universities, and K-12 schools in the state of Florida.

Additionally, internships serve to retain and mentor students. Students gain an understanding of the contributions they can make to the nation and the body of knowledge in their SEM area. These experiential activities also help to develop critical thinking skills and leadership awareness.

Upon returning from summer internships, FGAMP summer interns are required to give oral and poster presentations at local, national and regional conferences.

The presentations offer opportunities for leadership development, self-confidence and other personal qualities.

## TEACHER PREPARATION COMPONENT

The mathematics and science standards have brought forth increased interest in the preparation teachers receive in their respective fields. In order to provide students a challenging learning environment and appropriate instruction for the development of valuable analytical skills, teachers themselves must have a firm grasp of powerful scientific and mathematical concepts.

FGAMP Teacher Preparation initiative is designed to increase the number of minority science and mathematics (S&M) teacher education graduates who are facilitators of the education of this nation's youth. The goal of FGAMP-TP is to add another dimension to the frame work of established teacher education programs at baccalaureate granting institution which already comprise the alliance. Conceptually, the FGAMP-TP component will facilitate early and substantial exposure of teaching elements into the training program. This development approach will enable TP students to become involved with established S&M teachers in classroom settings as early as the summer following the freshman year.

The overall goals of the program are to:

- 1) increase the number of minority students receiving mathematics and science baccalaureate degrees, and entering the teaching workforce;
- 2) collaborate with

- 3) science, mathematics, engineering and technology (SMET) educators to develop and implement strategies to systematically remove racial and discriminatory barriers;
- 4) develop new initiatives to attract students, particularly underrepresented minorities in science and mathematics teaching;
- 5) serve as a bridge between science and education faculty to ensure that pedagogy and curriculum content are implemented;
- 6) develop a database on the current status of the science and mathematics teacher workforce; and
- 6) serve as a clearinghouse for information on the program and its activities.

FGAMP-TP utilizes a three-tier approach to accomplish its mission.

**Student Enrichment Activities.** These activities encourage professional and personal development, leadership development and enhance instruction through seminars, mentoring, internships and coursework in mathematics and science, communication skills, and technical/scientific, and computer applications.

Additionally, students receive opportunities to develop critical thinking skills, college survival skills, interdisciplinary problem solving, and teacher shadowing.

**Bridging Activities.** Bridging activities are designed to promote early intervention, retention and communication at every rung on the education ladder. Bridges have been established within and among institutions of higher education, local school districts, national laboratories, and private businesses.

## LOOKING AHEAD:

Beginning with the 1997-98 academic year, Florida Memorial College and the University of Miami will join the FGAMP team. Additionally, due to the positive national trends in learning outcomes for minorities in SEM areas, Clark Atlanta University will leave the FGAMP and will be the lead institution of the Georgia-UNCF AMP which includes Morehouse, Morris Brown, Paine and Spelman Colleges and Georgia State University.

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