NEW YORK CITY ALLIANCE

ALLIANCE FOR MINORITY PARTICIPATION IN SCIENCE, ENGINEERING AND MATHEMATICS

AMP has had a dynamic effect on the University. It has set new standards in a national effort to increase enrollment and degree production in the SMET disciplines and, in the process, moved CUNY to new levels of cohesion and effectiveness. The patterns of cooperation between its sixteen participating campuses will benefit many other programs in the years ahead. I appreciate the role that faculty mentors have played in these achievements. AMP has made mentoring an intrinsic part of teaching in SMET disciplines. That is an effort I heartily support. It is important that, as Phase II progresses, we offer due recognition for what these mentors have accomplished.

AMP's Phase II initiatives — creating a SMET pipeline from high school to graduate school and putting even greater emphasis on teacher preparation — are exciting. We must do all we can to promote the sciences among our minority as well as non-minority students. Introducing high school students to AMP research-based instruction is an excellent way of motivating them to further study, and building a cadre of teachers knowledgeable in their subject and able to communicate the excitement of laboratory-based projects is essential.

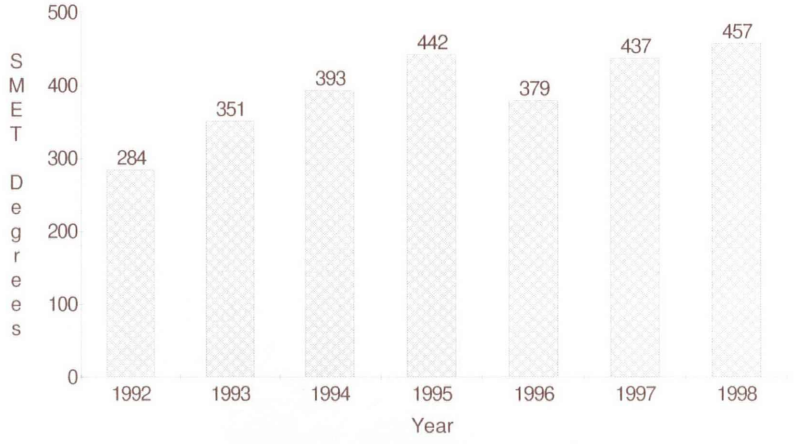
Christoph M. Kimmich
Interim Chancellor
The City University of New York

ANNUAL REPORT 1997-1998

NYC AMP Annual Report
Editor *Helena Leslie*
Graphs *Lima Desire*

NYC AMP Baseline Minority Enrollment 1992-1998

NYC AMP SMET Baseline Degrees 1992-1998



CUNY-Wide Minority SMET 1997-1998 BA/BS Degrees by Discipline	
Computer Sciences	229
Engineering	157
Biology/ Life Sciences	137
Mathematics	35
Chemistry	35
Geosciences	9
Physics/Astronomy	3
Other SMET	11

Photos: Front cover, The AMP team at the Sixth NSF/AMP Research Conference (from left to right): top row: Claude Brathwaite, Neville Parker, Leon Johnson; middle row: Louise Squitieri, Jerry Ianni, Lilian Garcia, JaimeLee Cohen, Elizabeth Galban; bottom row: David Cervetti, Shelly Ann Miller; missing: Melody Zevallos. Back cover, Top, (from left to right) Research scholars Linda Gomez, JaimeLee Cohen, Sandra Thomas, and Annette Beharry; Bottom, (from left to right) A poster presentation by research scholars Jibril Abdurrashid, Tamara Battle, and Linda Almoner.

The Alliance's Sixth Year.....

1997-1998 was the first year of Phase II of the New York City Alliance, a collaboration between sixteen senior and community colleges at the City University of New York (CUNY) and the CUNY Graduate School and University Center. Since its inception in 1992, the Alliance has worked to bring about and institutionalize reforms in science, engineering, mathematics and technology education at CUNY. These have led to improvements in the performance in SMET disciplines of both minority and majority students and to a significant increase in the number of minority students who obtain SMET baccalaureate degrees. The program is supported by a $5,000,000 grant from the National Science Foundation and matching funds from the university.

1. Adding Value to the Inter-Institutional Program

(a) The Alliance Course Restructuring of gatekeeper calculus, chemistry, and physics courses continues to promote collaborative learning, a non competitive approach to problem solving, and workshops conducted by specially-trained peer tutors. **Forty-four NYC AMP courses which incorporate these elements have been institutionalized. They enroll 7303 students. In addition, CUNY offers 14 experimental NYC AMP courses. These include eighty-nine restructured sections enrolling 2386 students. It is important to note that the entire mathematics sequences of LaGuardia Community College and Borough of Manhattan Community College have been restructured and are now institutionalized.**

(b) NYC AMP Science, Engineering and Mathematics Research Articulation Program (SEMRAP) has developed a cadre of senior college research faculty who undertake research projects with faculty from community colleges, who in turn engage their students in research. SEMRAP is building bridges across the University which enable talented SMET students to progress from community to senior colleges. SEMRAP provides the opportunity for mentors and students from community colleges to acquire and update expertise in research methods and to explore new research areas. **NYC AMP has made a total of fifteen SEMRAP awards, with eight in 1998. SEMRAP will be an integral part of developing the AMP mini-institutes, or faculty-student research clusters on CUNY campuses, which will be a hallmark of Phase II.**

(c) The NYC AMP Undergraduate Research Program continues to be central to the Alliance. It includes: pre-research courses for community college students, research experiences on or off CUNY campuses, research enrichment and career development, and research coordination. In keeping with the proposed expansion of the research component of NYC AMP in Phase II, 128 CUNY students conducted research during the academic year. There were 92 research scholars at senior colleges and 36 research scholars at community colleges. Fifty seven undergraduates participated in the program's 1998 summer component. Faculty participation increased to 82 CUNY faculty mentors. **The cumulative 1993-1998 totals for the NYC AMP Undergraduate Research Program are: 17 participating CUNY campuses (including the addition in 1997-1998 of the CUNY Graduate School and University Center) and 424 research scholars of whom 152 earned BA or BS degrees. In 1998, 128 research scholar positions were institutionalized. By the fall of 1998, there were 164 NYC AMP research and teacher preparation scholars on CUNY campuses guided by 104 faculty mentors.**

d) Science and Mathematics Learning Centers, which were established or solidified on each of the 16 partner campuses during Phase I, continue to serve as the hub of all Alliance activities, providing students with the "home base" which is often lacking in a commuter university. AMP learning centers play a significant role in providing the academic enrichment, peer tutoring, workshop instruction, and academic and career advising which SMET students receive at CUNY. **The AMP activity coordinator positions on participating campuses have been institutionalized. All activity coordinators are CUNY graduate students and therefore part of the CUNY SMET pipeline.** Twelve have undergraduate SMET degrees from CUNY; five have MS degrees from CUNY; seven are currently enrolled in Ph.D. programs; and nine are pursuing MS degrees. Ten of the sixteen activity coordinators were NYC AMP research scholars or peer tutors.

e) The Alliance Peer and Faculty Mentoring Program has created mentoring relationships throughout CUNY. Peer tutoring is one of the key elements in SMET reform. Mentoring by peers and faculty members is crucial to keeping students in SMET studies to the baccalaureate level, in helping them attain master's and doctoral degrees, and in encouraging them to pursue SMET careers. In the spring of 1998, CUNY presented the mentoring models it has developed to a national audience at the

"The opportunity which AMP has given me has helped me in my career path and has also helped my family.

Living in a poor neighborhood and being the first child in my household to attend college, I did not have great academic ambitions. This has changed since I have come to Queens College and participated in AMP. I love academics and learning, particularly in science. Through my words and actions, I have been able to show my three younger brothers a different part of life. I hope to inspire them the way AMP has inspired me. Financially, the AMP stipend has been a blessing in covering my traveling expenses and textbooks. The AMP project has been one of the best things that ever happened to me"

Steven Rodriguez, AMP Research Scholar, Queens College

"AMP helped me put my academic life in order and manage it more successfully. When I began working as the AMP activity coordinator at Queens College I transferred into the master's program at Queens College. I completed my master's in Chemistry (bringing my GPA up to 4.0), and reentered the Ph.D. program. AMP has broadened my understanding of research inside and outside of my field. It has provided me with opportunities and opened doors for me.

AMP instills in students the desire to pursue SMET studies and the means of achieving their goals. I enjoy being a catalyst who introduces them to research and teaching. I find it immensely gratifying to recruit students, give them opportunities and watch them succeed."

Sharon Lall, AMP Activity Coordinator, Queens College

National Science Foundation symposium ***Shaping the Future: Transforming Undergraduate Education in Science, Mathematics, Engineering and Technology,*** held at Borough of Manhattan Community College.

(f) The NASA GISS Institute on Climate and Planets (ICP), a three-year cooperative agreement (1994-1997) between the NASA Goddard Institute for Space Studies (GISS), NYC AMP, and CUNY was renewed for 1997-2000. It continues to break new ground in education and research. In a highly successful implementation of the SMET pipeline concept, the ICP involves students from NYC AMP, faculty from five CUNY campuses, and minority students and faculty from seven New York City high schools in research projects with NASA scientists. NASA data and multimedia courseware based on ICP research findings continue to be placed on the Internet for dissemination to all CUNY campuses and NYC high schools and for national distribution. Also on-going are three additional NASA grants which were spurred by the CUNY/NASA collaboration. They are: the Global Climate Variability (GCV) Project, Science and Technology Teachers for the Next Millennium (MASTAP), and Minority University Space Interdisciplinary Network (MUSPIN).

2. Promoting a Coherent Program Across the University

(a) AMP committees, established during Phase I, continue to foster CUNY-wide consistency. They include: the AMP Governing Board (chaired by Interim Chancellor Kimmich and including CUNY's Vice Chancellor for Academic Affairs, five CUNY college presidents, USI's PI, and industrial representatives), the AMP Steering Committee (made up of CUNY vice-presidents or deans), AMP Activity Coordinators' Committee, Course Restructuring Committees (in calculus, chemistry, and physics), Mathematics Department Chairs Committee, and individual campus AMP and course restructuring committees. **A hallmark of Phase II is the creation, at all participating colleges, of Campus Steering Committees, chaired by the CUNY AMP Steering Committee member and including chairs of SMET departments and the AMP activity coordinator.** Campus Steering Committees are a key element in the Phase II initiative to devolve responsibility for implementing the AMP program to the campuses, with the Project Directors and Administrator serving as resources, providing guidance, and ensuring accountability.

(b) CUNY-Wide Faculty Development Program. During Phase II, NYC AMP is pursuing its policy of sponsoring faculty development colloquia and short courses. The key event in 1997-1998 was the **CUNY sponsored colloquium, *CUNY Faculty Research, Mentoring of Undergraduate Research Scholars, and SMET Course Restructuring.*** SUNY AMP faculty and students took part in this colloquium.

(c) The CUNY Pipeline Program for Careers in College Teaching and Research, which is **sponsored by the Diamond Foundation**, includes a summer institute at CUNY's Graduate School and University Center and a three semester program which prepares students for graduate school. Participants receive a $1,000 summer stipend and a tuition waiver for CUNY's graduate school. **NYC AMP continues to be the major source of SMET majors participating in the CUNY Pipeline Program.**

(d) The Graduate School and University Center is now an integral part of the Alliance, with a seat on the AMP Steering Committee. Its addition completes the AMP SMET pipeline, since the Alliance now serves underrepresented minority students in SMET disciplines from the precollege level through the doctorate.

(e) Campus-Wide Coordination activities undertaken by the individual AMP Campus Steering Committees include: recruitment, summer enrichment, science and technology campus colloquia and conferences, and undergraduate research. The New York City AMP Central Office provided organizational support for two major conferences: the National Science Foundation-sponsored ***Shaping the Future: Transforming Undergraduate Education in Science, Mathematics, Engineering and Technology,*** and ***The Urban University: Pathway to Careers in Science for Minority Scientists and Engineers***, which took place at the CUNY Graduate School and University Center and brought together students from AMP, MARC, MBRS, Bridges to the Doctorate, and the Magnet Program.

(f) The NYC AMP Virtual Institute, part of the nationwide AMP Virtual Institute, will disseminate the work done at CUNY over the past six years to address issues in urban education and to pioneer new approaches to SMET teaching. It will be a key factor in integrating the NASA/CUNY collaboration, MASTAP, and MUSPIN into a working model for research, faculty and student development, outreach, dissemination, and access to excellence. It will also greatly enhance communication within the AMP community at CUNY.

3. Six Years of Increasing SMET Graduates and Enrollment

Tables 1 and 2 (following page) indicate the increase in minority SMET BA/BS degrees and enrollment from the baseline year (1992) through the sixth year of NYC AMP (1997-1998).

"Bringing the Graduate School and University Center into AMP strengthens the support which we at CUNY can give all of our students by creating a pipeline from the community colleges through the senior colleges to the graduate and post-doctoral levels. Incorporating the Graduate School into AMP is a logical progression and puts our considerable resources at the program's disposal.

Through our connection with AMP, the Graduate School and University Center seeks to extend opportunities for AMP students, as well as those from other funded programs, to present their research and network with each other. It is important for CUNY students to see themselves as part of a broad scientific community. It is our expectation that they will continue through the pipeline and complete their doctoral work here in CUNY. But even if they go elsewhere, we hope that they will always feel that they are welcome in CUNY and will come back to us as faculty. We do not want to lose them."

Dr. Gail Smith, Acting Associate Dean for Educational Opportunity and Diversity Programs, CUNY Graduate School and University Center

Table 1. SMET Degrees

	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
Baseline* Minority (BA/BS)	284	351	393	442	379	437	457
Expansion Minority (BA/BS)**	404	488	514	575	549	612	616
Baseline* Non-Minority (BA/BS)	442	461	536	443	509	510	515
ExpansionNon-Minority (BA/BS)**	775	821	863	803	884	959	933
Community College (AS)	110	98	156	96	176	186	195

Table 2. SMET Enrollment

	Fall 1992	Fall 1993	Fall 1994	Fall 1995	Fall 1996	Fall 1997	Fall 1998
Minority Enrollment	4216	4905	5335	5788	6290	6391	6619
Non-Minority Enrollment	3195	3357	3714	3612	3579	3588	4019

*Baseline: Brooklyn, City, Hunter, Lehman, Medgar Evers, and New York City Technical Colleges
**Expansion: Six Baseline Campuses and Baruch, Staten Island, Queens, and York Colleges

4. Enhancing Student Performance in SMET Disciplines

Tables 3 and 4 compare the performance at York College of AMP students enrolled in Calculus sections using Maple software versus non-AMP students.

York College Evaluation of the Use of Maple Software in AMP Calculus Sections versus Non-AMP Sections

Table 3. Performance in Calculus I by type of Calculus I class

CALCULUS I	A or B	C or D	F	W	Number of Students
Maple	50.0%	27.6%	15.5%	6.9%	116
Non-Maple	43.4%	28.9%	14.5%	13.3%	83

Table 4. Performance of students who took Calculus II within two semesters of completing Calculus I by type of Calculus I class

CALCULUS I	Passed Calculus II	Did Not Pass Calculus II	Number of Students
Maple	36.2%	63.8%	290
Non-Maple	30.7%	63.9%	270

"At AMP we have worked hard at making research synonymous with teaching and learning. It has been a priority for us to develop the widest possible assortment of research experiences for our students. This has included promoting opportunities in CUNY laboratories and developing collaborations with industrial and government research laboratories. Academic preparation and careers in the sciences are not distinct, they are a continuum. It is with pride that we have seen our AMP graduates progress successfully from one end of that continuum to the other.

Recently, one of our AMP students, Amerigo Segura of New York City Technical College, spoke about the worth of his CUNY experience at the Annual Brooklyn Borough Hearing. He said of AMP, 'The program has taught me to augment my classes with research, giving me a chance to learn by inquiry. This has opened my eyes to the world of advanced technology.' Amerigo singled out the summer internship he had just completed at Brookhaven National Laboratory as particularly significant in his development as a scientist."

Dr. Louise Squitieri, Dean for Research and Grants, New York City Technical College, AMP Project Co-Director

Clear statistical differences are seen in the percentage of students who go on to take Calculus II courses and in the 48% reduction in the withdrawal rate from Calculus I of students enrolled in the Maple section. Both indicators point to what can be interpreted as increased motivation and increased retention of students. Earlier studies conducted at New York City Technical College in calculus and chemistry (see 1996-1997 NYC AMP Annual Report) also showed decreases in withdrawal rates. Those studies did not address (as does the present study) the motivational aspects of restructured AMP courses. It is interesting to note that according to preliminary data, 50% of York's mathematics graduates were, or are at present, teaching at the K-12 level.

5. Strengthening the SMET Pipeline: High School and Community College Articulation Agreements

(a) The Transfer, Retention, and Achievement at City College (TRACC) Program improves retention in the City College School of Engineering through summer and academic year programs that ease the transition of community college students who enter from other CUNY campuses.

(b) The City College Academy for Professional Preparation at City College conducts New Student Seminars led by science faculty for science transfer students.

(c) The NASA GISS/CUNY/AMP Institute on Climate and Planets and the Global Climate Variability Project included students and faculty from high schools and community colleges in planetary research projects.

(d) The NASA/AMP lecture series presents scientific and mentoring workshops for community college and high school students and faculty.

(e) The CUNY on line transfer bulletin provides information for the transferring of credits from community to senior colleges.

(f) Proyecto Access New York Pre-Freshman Engineering Program (NYPFP) at **Hostos Community College** identifies high achieving students from middle and high schools with an interest in engineering and the science professions. It promotes problem solving skills and reinforces preparation in mathematics.

(g) The Queens College Freshman Year Initiative includes first year students in learning clusters of about forty students which promote academic success and retention.

(h) The articulation of pre-engineering programs between City College and Hostos Community College and Laguardia Community College and Borough of Manhattan Community College is nearing completion.

6. Supporting Students On Their Pathway Through CUNY

(a) Bridge Programs include the TRACC Program at City College (described in 5a), the CCAPP New Student Seminars for science students at City College (described in 5b), and the CUNY Pipeline Program at the CUNY Graduate School (described in 2c).

(b) Research Internships and Mentoring. The NYC AMP supported 128 research scholars and 82 faculty mentors who conduct research projects on CUNY campuses and at outside partner locations such as NASA/GISS, Brookhaven Laboratories, and AT&T Bell Laboratories. **Funding for 128 research scholars was institutionalized in the first year of Phase II.**

(c) Student Support Groups. As previously stated, the learning center at each of the 16 partner campuses is staffed with an activity coordinator and specially trained peer tutors who conduct collaborative learning workshops and provide peer mentoring.

(d) Tracking. One of the duties of the AMP activity coordinator is to track the academic and professional development of AMP students. The Activity Coordinator compiles statistics on the number of students who enter graduate school, in the CUNY system and elsewhere, go into industry and take teaching positions in the public schools.

"AMP is the mechanism that links students to students, faculty to students, staff to students, and students to high tech career opportunities. I have seen students encourage their friends to become research scholars, professors refer their students to the program, and students use their AMP research as a springboard to internships with prestigious companies.

During the summer, I worked in the TRACC program and met students who really wanted to achieve their goals. The program began at 9:00 o'clock in the morning, and at 8:00 AM they were already at City, working in teams to solve problems in mathematics, physics, or engineering design. A student from York College who participated in the program told me that every CUNY college should have a program like TRACC.

AMP is helping me in two ways: it is developing my communication skills and supporting me in pursuing a master's degree in engineering, which I will finish in June of 1999.

AMP is great. It enhances a student's ability to succeed. The earlier students can start doing research, the better."

Lima Desire, AMP Activity Coordinator,
City College School of Engineering

7. Academic Performance Indicators

NYC AMP's cooperative agreement with the NSF is to double the number of minority SMET BA/BS degrees. The following table indicates the increase in SMET degrees (baseline and expansion) by listing the percentage increase in SMET degrees during AMP's Phase I and the first year of Phase II.

Increases in NYC AMP Minority SMET Data

	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998
Baseline* BA/BS Degrees	23.6%	38.4%	55.6%	33.5%	53.9%	60.9%
Expansion BA/BS Degrees**	20.8%	27.2%	42.3%	35.9%	45.8%	52.5%
Community College AS Degrees	-10.9%	41.8%	-12.7%	60.0%	61.2%	77.3%

*Baseline: Brooklyn, City, Hunter, Lehman, Medgar Evers, and New York City Technical Colleges
**Expansion: Six Baseline Campuses and Baruch, Staten Island, Queens, and York Colleges

8. Institutionalizing AMP Initiatives

During Phase I, The NYC AMP Governing Board adopted an **Institutionalization Policy Commitment Statement,** and each of the 16 partner campuses adopted an **AMP Individual Campus Institutionalization Statement**. These have served as guides to incorporating AMP reforms into SMET education at CUNY. **During the first year of Phase II, the following Phase I structures and activities have been institutionalized: the AMP central office, the project administrator position, the campus activity coordinator positions, the campus learning centers, 128 research scholar positions, and over 150 peer tutoring positions throughout CUNY.**

9. Preparing Teachers in SMET Disciplines

The NYC AMP is now in the second year of its Teacher Preparation Initiative (TPI). The program provides AMP SMET majors with the opportunity and skills to become teachers of science and mathematics in an urban, multicultural environment. **During Phase II, AMP will continue to integrate the TPI program into its other activities and will emphasize making research experience an integral part of teacher preparation.** Continuing its role as a catalyst for reform in SMET education, NYC AMP will address the issue of teacher preparation in conjunction with the USI, CETP, NASA MASTAP and other CUNY programs such as the Science Teacher Career Ladder Program at Queens College and the Teaching Scholars Program at Lehman College.

10. Cost Sharing

	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999
CUNY (total support)	$1,165,249	$1,058,560	$1,121,429	$1,308,303	$1,479,207	$1,479,207
CUNY (tax levy funds)	(304,100)	(350,000)	(350,000)	(350,000)	(879,700)	(400,000)
NASA/GISS (ICP & GCV)	——	333,000	418,889	387,441	939,775	939,775
Outside Agencies	——	60,000	60,000	60,000	60,000	60,000
TOTAL	$1,165,249	$1,451,560	$1,600,318	$1,755,744	$2,478,982	$2,478,982

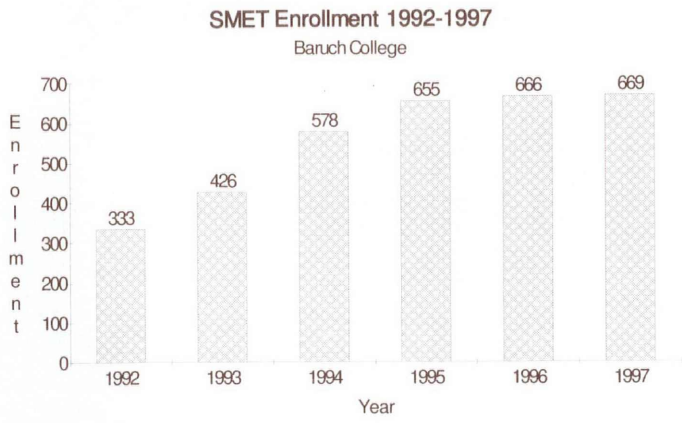
Thanks to the increased rate of institutionalization by CUNY during the first year of Phase II, NYC AMP will be able to devote $1,091,140 to direct student support during 1998-1999. This will allow continued expansion of NYC AMP in Phase II.

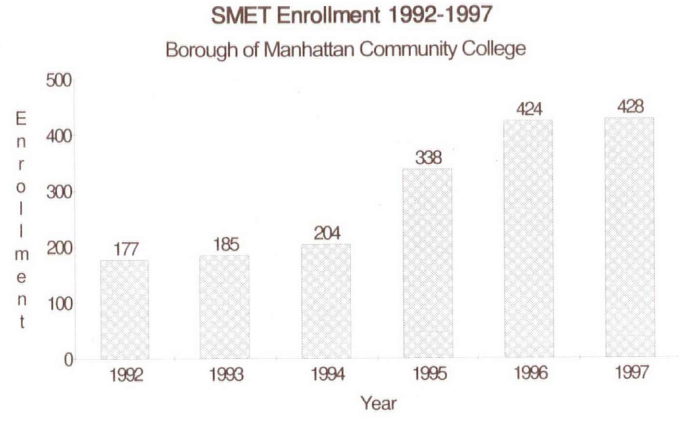
"During 1997-1998, we increased our emphasis on teacher preparation and our determination to make AMP research scholars aware of precollege teaching as a career option. The AMP Teacher Preparation Initiative (TPI) is working closely with MASTAP (Science and Technology Teachers for the Next Millennium) and MU-SPIN (Minority University Space Interdisciplinary Network) to reach as many students as possible and provide a rich and varied program.

During the summer of 1998, AMP TPI, MASTAP and MU-SPIN collaborated on programming for high school teachers which included an introduction to the Internet, a course on html authoring and its application to the classroom, and WeatherWatch, which taught use of the Internet though a series of weather-based applications. We intend to continue this partnership during the academic year with a view to enhancing the teacher preparation we offer CUNY SMET students through the technological expertise, innovative approach, and material resources of these two NASA-funded programs."

Dr. Leon Johnson, Professor of Physics, Medgar Evers College, AMP Project Co-Director

Alliance Accomplishments on CUNY Campuses.....





Baruch College

Located in the heart of New York's central business district, Baruch College has evolved from the School of Business and Civic Administration established in 1919 by the Trustees of City College. In 1968, the School was reorganized as a separate senior college in CUNY.

Baruch offers a combination of specialized and liberal arts and sciences studies providing high quality education for students who are preparing for careers in business, public service, and related fields. The City University programs leading to the Ph.D. in Business and in Industrial and Organizational Psychology are based at Baruch.

AMP Accomplishments

During 1997-1998, AMP institutionalized activities continued at Baruch. These included peer tutoring in mathematics, chemistry and physics and the interim (January) General Chemistry review program. These AMP initiatives are part of a college-wide network of student services.

During the year the directorship of AMP at Baruch was transferred from the Mathematics Department to the Natural Sciences Department. Plans for the future include consolidating the AMP structure on campus with particular attention to the roles of the steering committee and activity coordinator and to the recruitment of research scholars. The AMP Undergraduate Research Program at Baruch will profit from the College's emphasis on hiring research-oriented SMET faculty.

Borough of Manhattan Community College

BMCC was founded in 1963 as a primarily business-oriented community college whose programs were aimed at the midtown business community. Its original educational focus was to prepare students for business careers and to provide a general liberal arts education for those who wished to transfer to four-year colleges. Over the past thirty years the college has adapted to meet the needs of non-traditional students, and its offerings have become more diversified, responding to the emergence of new technologies and changes in business and industry.

Today, BMCC's wide range of degree programs prepares skilled workers for employment in business and health careers and students for transfer to four-year colleges. Its facilities include a multimillion dollar Media Center which is among the finest and most technically current in the country.

AMP Accomplishments

The AMP Undergraduate Research Program continued to thrive at BMCC. The number of research scholars grew from four to eight during the academic year and increased to thirteen during the summer . The number of AMP faculty mentors grew from two to five. AMP research scholars presented their work at the following prestigious events: the Sixth Annual NSF AMP Research Conference, the MU-SPIN Seventh Annual Users' Conference, and the CUNY Faculty Development Colloquium, *CUNY Faculty Research, Mentoring of Undergraduate Research Scholars and SMET Course Restructuring*. In addition, a BMCC mentor and seven AMP research scholars made a presentation at the NSF *Shaping the Future Conference*. Three BMCC students took part in the AMP Teacher Preparation Initiative, working in high schools and taking education classes at four-year colleges.

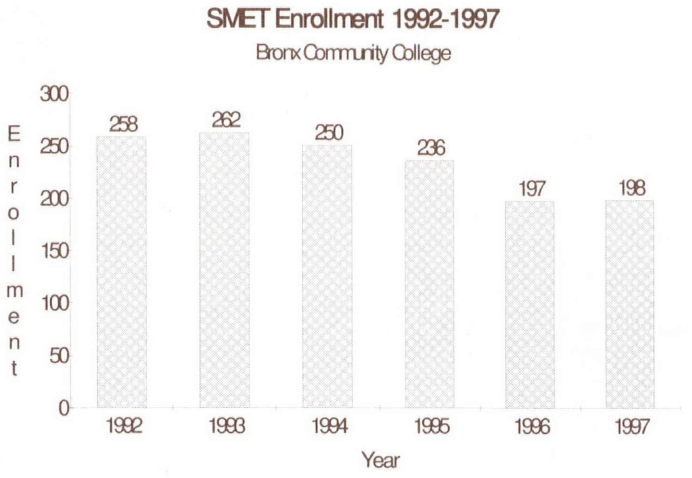
Course restructuring has taken place in all sections of Calculus I, II, and III, and peer tutoring was available in the Math Lab for students taking the pre-calculus and calculus sequence. Collaborative workshop sessions were offered in restructured sections of Chemistry I and II. Throughout the year, peer tutoring was offered in the science lab for students in Physics I and Physics II.

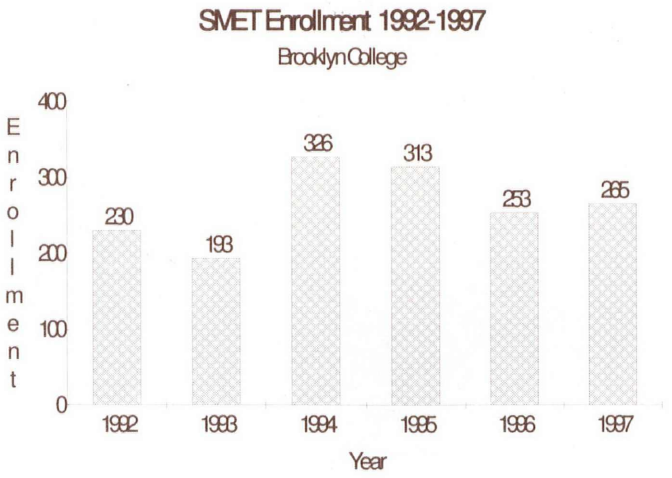
Two BMCC faculty members were selected to participate in the SEMRAP program in the summer of 1998.

BMCC was host to the CUNY Faculty Development Colloquium and the *Shaping the Future Conference* mentioned above.

Bronx Community College

Established in 1957, Bronx Community College (BCC) occupies a 50-acre campus overlooking the Harlem River. BCC provides a sound general education for all students; university parallel transfer education in the liberal arts and sciences; career education in business, health sciences, the technologies, and public service occupations; continuing education for students of all ages; and a comprehensive counseling program.





The college seeks to be responsive to community needs and is committed to aiding in the redevelopment of its borough and the development of a skilled workforce for the metropolitan region. Over the past two decades, BCC has intensified its outreach to New York City's economic, educational, and cultural institutions through partnerships with business and industry and collaborative programs with the Board of Education.

AMP Accomplishments

In the fall of 1997, an AMP Steering Committee was established on campus. In the spring of 1998, AMP held an open house which drew thirty-five students. Program applications were distributed, and a question and answer period allowed students to become familiar with AMP services and opportunities.

A Bronx student represented NYC AMP at the Fifth NSF AMP Research Conference in New Mexico. Another participated in a mini-semester at Brookhaven National Laboratory in January of 1998 and returned for the summer internship program. Brookhaven was so impressed with him that they have asked him to lead a group in the summer of 1999.

BCC has instituted an environmental science program which has been approved by CUNY. There are plans for articulating the program with the bachelor's program in environmental science at Medgar Evers College.

Brooklyn College

Located on a twenty-six acre campus in the Midwood section of Brooklyn, Brooklyn College was established in 1930 and became the first public coeducational liberal arts college in the City of New York. The college is committed to providing the highest quality education to an ethnically, religiously, and economically diverse student body.

Brooklyn College has an exceptionally distinguished faculty and has been praised by the National Endowment for the Humanities and the Carnegie Foundation for the Advancement of Teaching for its clear vision of what constitutes an educated person and its success in the realm of general education.

The college confers undergraduate and graduate degrees. Its Division of Graduate Studies offers more than seventy graduate and certificate programs and continues a long tradition of enabling qualified students of diverse backgrounds to acquire an advanced education of superior quality at a modest tuition.

AMP Accomplishments

AMP math and science tutoring and workshop activities continued to grow in importance during 1997-1998. AMP tutors provided 80% of the math and science tutoring offered in the Brooklyn College learning center, where their contribution is highly valued. More facilities are being secured in the science building to cope with the growing demand for AMP's services. Being at that location will further integrate AMP activities into the Brooklyn College science program.

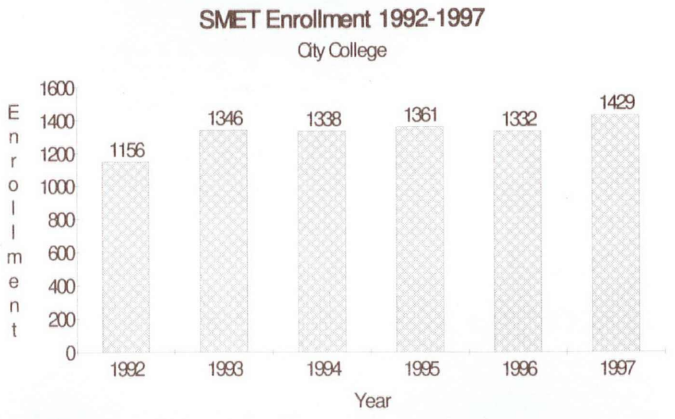
Brooklyn College students who participated in the AMP Undergraduate Research Program met with considerable success. A Brooklyn AMP research scholar took first prize for her poster presentation at the Sixth NSF AMP Research Conference in Montana, completed a summer internship at the Massachusetts General Hospital under Harvard auspices, published her third abstract in the magazine *Neuroscience,* and took part in the annual meeting of the Society of Neuroscience in Los Angeles.

City College

City College was founded in 1847, with a mandate to offer the best education possible to the children of the poor and to open to new immigrants the opportunities of America. It is located on a thirty-five acre site in the St. Nicholas Heights section of Manhattan.

City College offers a rich program of undergraduate and graduate study through its College of Liberal Arts and Science and five professional schools. It is a major center for research and scholarship whose distinguished faculty regularly attracts impressive grant support.

Throughout its history City College has stressed the dual goals of offering access to higher education combined with academic quality. It is the nation's fourth leading source of undergraduates who have gone on to earn doctorates; is among the top dozen schools in producing members of the National Academy of Sciences; counts eight Nobel Laureates among its graduates; and is one of the nation's leading sources of minority engineers and of African American graduates who are admitted to medical school.



AMP Accomplishments

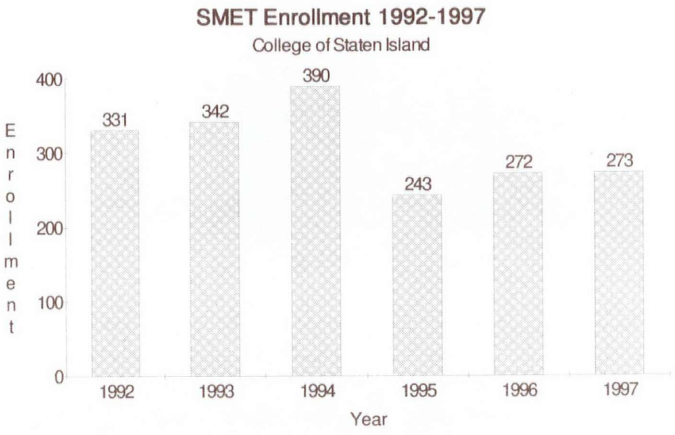
In the School of Engineering, the AMP learning center is providing comprehensive tutorial services in precalculus, calculus, differential equations, linear algebra, chemistry, physics, introductory and upper level engineering, and computer science to the three hundred level. Students have access to computer facilities which support their research projects, to the Internet, and to E-mail. Course restructuring continued in Calculus I and II and Chemistry I and II. The combined effect of AMP initiatives has been to reduce the dropout rate of freshmen and sophomores in engineering and to improve their integration into academic life. AMP has also had a positive effect on students' abilities to analyze academic and career options and make choices.

In the Division of Science, AMP supported and took part in CCAPP (City College Academy for Professional Preparation) initiatives which have had a major impact at City College. These include an advising model which was presented at the NSF-sponsored *Shaping the Future Conference*; tutorial workshops in Organismic Biology, Anatomy and Physiology, Cell and Molecular Biology, Biochemistry, the Dynamic Earth (EAS), and General Physics I & II; and workshops on graduate science programs, careers in science, making effective research presentations, and Internet usage for science students. CCAPP was active in recruiting students into the Division of Science and helped sponsor the CUNY-wide conference, *Pathways to Careers in Bio-Medical Research*, at the CUNY Graduate Center.

The City College administration is committed to coordinating undergraduate research activities to maximize opportunities for students. In 1997-1998, forty-one students from the School of Engineering and the Division of Science took part in the AMP Undergraduate Research Program. Sixteen did summer internships with companies such as Hughes Space Communication, Motorola, and AT&T. Of the twelve research scholars who graduated in 1998, nine were recruited by prestigious companies such as IBM and GE, and three went to graduate school. Through the efforts of the AMP School of Engineering activity coordinator, three students transferring from community colleges undertook research projects at City College. Over one third of the School of Engineering faculty is mentoring minority students in various research programs.

As in previous years, the CCNY PORT (Professional Opportunities for Research and Teaching) Scholars' Day provided a venue for AMP students to present their research and learn from their peers.

Cross-university collaborations continue to be important at City College. These include calculus articulation agreements with Borough of Manhattan Community College and Bronx Community College and participation by City faculty members in CUNY-wide mathematics committees and the Workshop Chemistry Initiative.



College of Staten Island

The College of Staten Island (CSI) was founded in 1976 through the union of two existing colleges - Staten Island Community College and Richmond College. It is the only public college on Staten Island and sits on a 204 acre campus which is the largest site for a college in New York City.

CSI is a comprehensive, four-year senior college which offers programs in the traditional liberal arts and sciences, professional studies, health sciences, and the technologies. It grants associate's and bachelor's degrees and, in selected courses, the master's. CSI's student population is heterogeneous, ranging widely in cultural background, aspirations, age, and academic skills. The college views the quality and success of its educational endeavor not in the qualifications of entering students but in the qualifications of those who receive degrees.

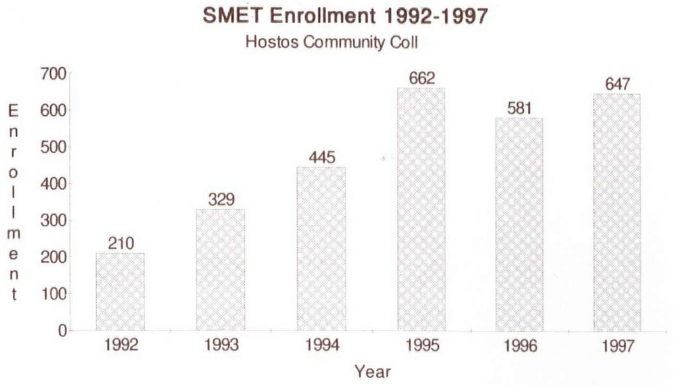
AMP Accomplishments

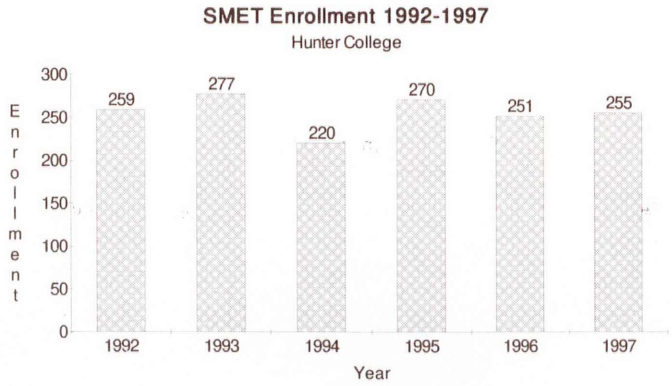
In the fall of 1997, their were eight AMP research scholars at CSI and nine faculty mentors. Students recorded their research activities in journals which they used as the basis for presentations at symposia held in the fall of 1997 and spring of 1998 under the auspices of CSI's Office of Science and Technology. Financial support from AMP provided research scholars with up to date computer facilities and research materials. In 1997-1998, AMP summer stipends were available to CSI research scholars for the first time. CSI AMP intends to implement the pipeline concept which is at the heart of Phase II by developing links to high schools and graduate schools.

In 1997-1998 AMP collaborated with the CSI Academic Support Center to provide tutoring on two evenings a week. The additional tutors were trained by the AMP activity coordinator in conjunction with directors of the other tutoring labs at CSI.

Hostos Community College

Hostos Community College was created in 1968 to serve the needs of the South Bronx. Its Grand Concourse campus has been enhanced through a $144 million building plan.





The college's mission is to provide "educational opportunities leading to social-economic mobility for first and second generation Hispanics, African-Americans, and other residents of New York City who have encountered significant barriers to higher education." Hostos is committed to fostering a total bilingual-multicultural environment in which students can develop proficiency in English, maintain and develop abilities in Spanish, and become more appreciative of the different cultural backgrounds of their peers.

AMP Accomplishments

In the fall of 1997, Hostos recruited its first AMP activity coordinator, who shares his office with Proyecto Access, a pre-engineering program which works with high achieving intermediate and high school students.

Two sections of Calculus I and five of Precalculus have been restructured. They emphasize use of the TI-92 graphing calculator and Maple software and include collaborative workshops led by AMP peer tutors.

In 1997-1998, six Hostos students participated in the AMP Undergraduate Research Program. Five worked with mentors from the Department of Natural Sciences and one with a mentor from the Department of Mathematics. Their projects included: doing research on the carotenoid biosynthetic pathway in maize and rice; developing techniques for separating DNA fragments into different sizes; studying the medicinal plant know as Stinging Nettle, and seeking proof of the mathematical theorem, the Higher-Order Derivative Test of a Relative Extrema of a Function.

A Hostos faculty member from the Department of Natural Sciences is taking part in the SEMRAP program and is engaging students from the college in her research.

In the summer of 1998, a Hostos student participated in the AMP Teacher Preparation Initiative. She completed the required educational psychology course at New York City Technical College and worked at Canarsie High School assisting a ninth grade mathematics teacher.

Hunter College

Founded in 1870 as the Normal College to educate young women who wished to be teachers, Hunter College is the second oldest college in the City University of New York. Coeducational since 1964, Hunter is located in Manhattan, and has an enrollment of over 19,500 students divided between degree, non-degree, and graduate programs.

The Hunter College Senate has stated the college's educational goals in the following terms, "While preparation for specific careers is actively encouraged in many programs, the fundamental aim of the college experience as a whole is to develop a student's rational, critical, and creative powers." Hunter's undergraduate programs provide students with skills to attain competence in a specialized field as well as a foundation of general knowledge. The college offers over forty master's degree programs in the arts and sciences, education, and the Schools of Health Sciences, Nursing and Social Work. Hunter College Elementary School and Hunter College High School serve as demonstration schools and research facilities for the teacher education program.

Hunter's faculty has included many distinguished scholars, educators, and creative artists. The college counts two female Nobel laureates among its graduates.

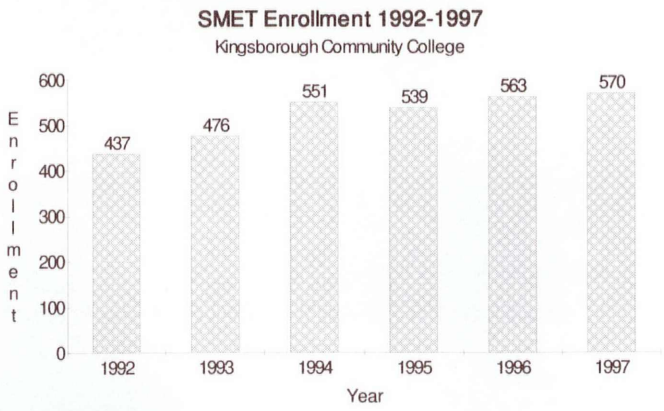
AMP Accomplishments

The renovation and expansion of the science learning center, completed in September of 1998, makes it an excellent place for students to study and socialize. It provides an ideal setting for individual and group tutoring. Its fifteen new Pentium workstations and two Macintoshes permit computer-based instruction and diagnostic testing. The center houses an excellent library of software dedicated to science and mathematics applications, as well as textbooks and supplemental course materials.

Restructured sections of Calculus I and II and of calculus-based General Physics continue to be offered, as do peer-led study groups in General Chemistry I and II. The chemistry tutors are pursuing research with a member of the Chemistry Department. A combined course in mathematics, chemistry and physics has been devised by three faculty members to accommodate students who are ready for precalculus but not calculus. It is serving as a laboratory for innovative pedagogy.

There were five AMP Research Scholars at Hunter in 1997-1998, and a sixth proposed for the fall of 1998. In addition, two students were proposed to become graduate research scholars in the fall of 1998, implementing the AMP SMET pipeline concept.

Hunter SMET faculty and staff are active in recruiting students from high schools and community colleges. Attracting more faculty mentors into the AMP program continues to be a priority.



Kingsborough Community College

Founded in 1963, Kingsborough is located on an attractive campus in Manhattan Beach, surrounded on three sides by the waters of Sheepshead Bay, Jamaica Bay, and the Atlantic Ocean. Appropriately, the college is home to the Center for Marine Development and Research.

Kingsborough grants associate's degrees in three areas, Arts, Science, and Applied Science. It focuses on liberal arts transfer programs as well as on career programs in business, human and public service, health and related services, and the fine and performing arts. It aims to provide programs that contribute to a balanced university educational system without duplicating needs already being met by other university units. The college is committed to meeting the needs of the dynamic urban area in which it is located. It introduces new programs and reexamines existing ones in light of shifting economic, social, occupational, and recreational requirements of the community.

AMP Accomplishments

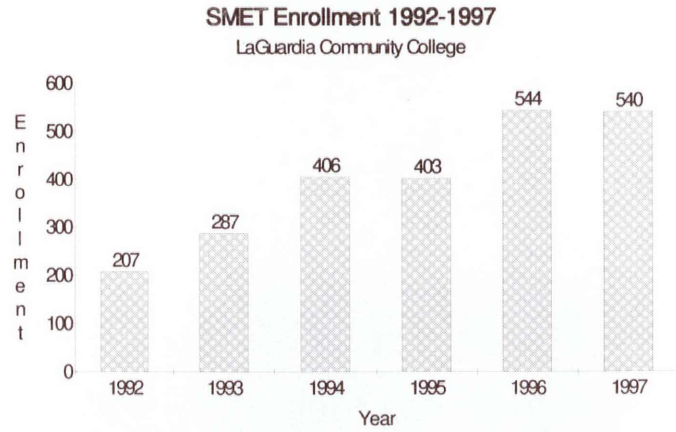
Kingsborough AMP has put in place a computerized system for scheduling tutoring appointments, facilitating access to tutoring in SMET disciplines and allowing more flexibility to accommodate students' busy schedules. Recruiting research scholars and faculty mentors is a high priority.

Cooperation between AMP and Kingsborough's marine technology program is growing, adding a new dimension to the AMP program on campus.

LaGuardia Community College

Located in Western Queens, LaGuardia was founded in 1970. It serves matriculated students through associate's degrees and certificate programs. Through its non-credit continuing education programs on and off campus, LaGuardia responds to the educational needs of groups such as the homeless, senior citizens, prisoners, deaf adults, recent immigrants, and the unemployed.

The college's twenty-nine academic majors meet the needs of students who want to transfer to four-year colleges as well as those who seek immediate employment. It offers innovative



English as a second language programs and developmental skills programs in reading, writing, speaking, critical thinking, and mathematics.

LaGuardia hosts two model high schools on its campus. Middle College High School serves students who are at risk of dropping out and International High School provides recent immigrants from numerous countries with a comprehensive secondary curriculum which develops their oral and written competence in English.

AMP Accomplishments

In 1997-1998, twenty LaGuardia students participated in the AMP Undergraduate Research Program pursuing projects in pure math, science, and computer science. A LaGuardia student represented CUNY AMP at the Sixth NSF AMP Research Conference in Montana and took second prize for her poster presentation in the Math/Computer Science Division. Over the summer, a LaGuardia AMP student took part in a collaborative research program at Brookhaven National Laboratory. LaGuardia AMP introduced Precollegiate Summer Research Assistantships and attracted two outstanding high school students who investigated matrix structures in statistical linear models. They are now pursuing bachelor's degrees at one of CUNY's senior colleges.

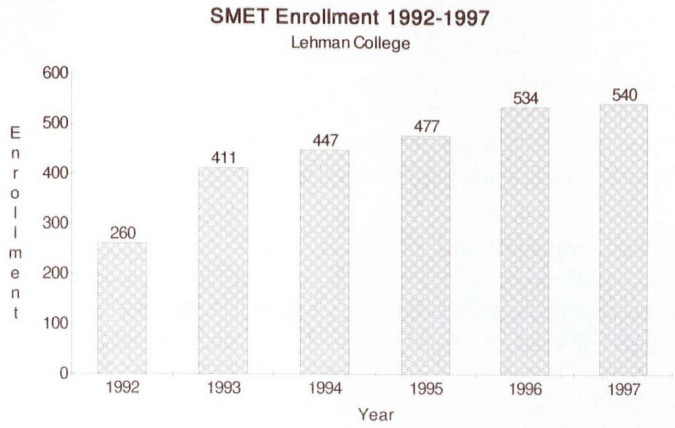
Lehman College

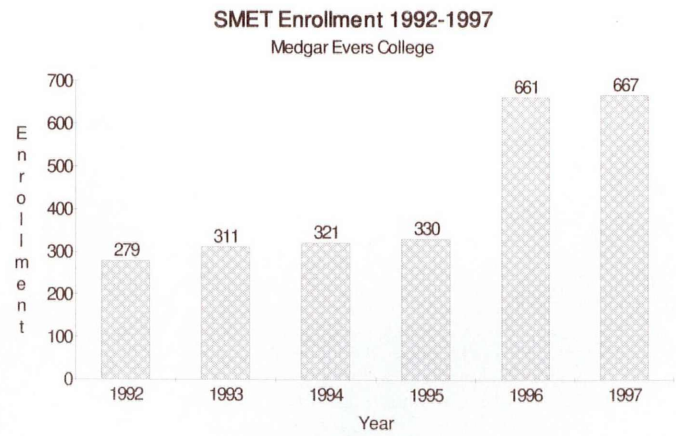
Established in 1968, Lehman College, is the only senior public college in the Bronx and serves a region that includes southern Westchester County. Its demanding curriculum seeks to build a strong background in the liberal arts and sciences and offers advanced and specialized study in professions such as teaching and nursing.

Lehman College collaborates with other institutions in the area, such as the New York Botanical Garden and Montefiore Medical Center, in offering programs that serve the needs of students and community members. It is in charge of the academic program and campus administration of CUNY's outpost in Japan, CUNY Lehman, near Hiroshima. Lehman is home to the Bronx Regional and Community History Institute and the Institute for Literacy Studies.

AMP Accomplishments

At Lehman, Calculus I Labs (MAT 155) and Calculus II Labs (MAT 156) are mandatory for all students taking the Calculus I and Calculus II lecture courses. One AMP chemistry workshop (CHE





166 section E01) was offered each semester. Interest in workshop chemistry generated by AMP has led to over fourteen chemistry workshops funded by the CUNY Workshop Chemistry Initiative.

The Science Learning Center offers tutoring for Calculus I and II, General Chemistry I and II, Physics I, and Introduction to Geology. Computer capability in the Center has been increased, making it easier for peer tutors to demonstrate solutions to problem sets. All of the AMP peer tutor and workshop leader positions have been institutionalized.

There were four AMP research scholars at Lehman in 1997-1998. Their work included projects in Quantum Physics and Dynamical Systems Theory and Fourier's Heat Equation. One of the students conducted research in Molecular Dynamics at Albert Einstein College of Medicine under the direction of a professor from Bronx Community College.

Close cooperation in physics continues with Hunter and Bronx Community College. Two Lehman peer tutors who graduated from BCC will receive their bachelor's degrees from Lehman in the spring of 1999. A four-year veteran of the Lehman AMP program, who studied physics at Hunter, has started his Ph.D. in physics at the CUNY Graduate Center.

Medgar Evers College

Named for the martyred civil rights leader Medgar Wylie Evers, the college was established in 1969 to meet the educational and social needs of Central Brooklyn.

Medgar Evers seeks to provide students with the knowledge and skills necessary for career advancement and professional mobility, maintaining flexibility in the incorporation of students' experiential resources as the building blocks for the discovery of new knowledge and excellence in achievement of academic skills. The college grants both baccalaureate and associate's degrees with articulation between its two- and four-year programs. Non- degree educational, social, economic, and cultural programs serve a broad population of community residents. These emphasize adult and continuing education, basic literacy and high school equivalency, and community advocacy.

AMP Accomplishments

AMP has served as a catalyst for NSF, NASA, and NYS GRTI grants permitting the creation of a state of the art information infrastructure at Medgar Evers College (MEC). The spaces which have been fully equipped and networked include the Advanced Computing Research Laboratory; the Environmental Science Lab; the MEC AMP Learning Center; the NSF AMP/NASA MASTAP Partnership Office; and faculty offices.

In 1997-1998 MEC AMP faculty received seven grants, totaling, over a million dollars, under the following auspices: NASA Partnership; NASA and Army CECOM Center (in conjunction with Hunter College); NASA MASTAP; NSF NYC AMP; NSF Instrumentation and Laboratory Improvement; New York State Department of Education Community College Science and Technology Fund; and the Brooklyn Borough President's Office.

The AMP Undergraduate Research Program at MEC has worked in conjunction with other grants to maximize opportunities for students. Research scholars have presented their work at a large number of scientific gatherings. On the national level these include the NASA MU-SPIN Seventh Annual User's Conference and the MARC/MBRS Conference. Within CUNY, scholars participated in the CUNY Faculty Development Colloquium, *CUNY Faculty Research, Mentoring of Undergraduate Research Scholars, and SMET Course Restructuring* at Borough of Manhattan Community College, and MEC's own Third Annual Research Day and Third Annual Environmental Issues Conference.

Eight students funded by NYC AMP took part in a summer research program which brought together Medgar Evers, the Remote Sensing Laboratory at City College, the Physics EPR Laboratory at Hunter College and the Astrophysical Observatory at the College of Staten Island. MEC AMP also collaborated on three courses with the Middle College High School under the Liberty Partnership Program.

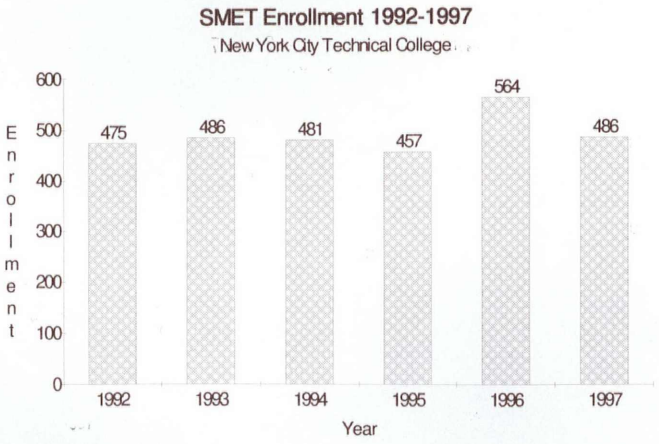
New York City Technical College

Located at the foot of the Brooklyn Bridge in the governmental, legal, and business center of the Borough of Brooklyn, New York City Technical College is the only technical college in the City University of New York.

City Tech's mission is to meet the needs for technical and career education of New York City's culturally diverse population. It offers thirty-six curricula leading to the associate's degree and five leading to the baccalaureate.

AMP Accomplishments

At City Tech, a strong AMP Campus Steering Committee including



key members of the faculty and administration provided the impetus for a highly productive year. Faculty members on the committee are active in other NSF and FIPSE grants and the AMP Teacher Preparation Initiative.

In 1997-1998, the work done in General Chemistry continued to be the model for course restructuring at City Tech. In the Mathematics Department, MA375.1 has been restructured to include a two-hour per week calculator laboratory. Students who participated in restructured sections of General Chemistry and in MA375.1 have gone on to become AMP workshop leaders and research scholars.

The number of AMP research scholars at City Tech rose form three to eleven in the course of the 1997-1998 academic year. A City Tech student was chosen to represent NYC AMP at the Sixth NSF AMP Research Conference in Pablo, Montana. Participation in the AMP Teacher Preparation Initiative grew from two students to five over the year.

Faculty participation in AMP activities has been committed and enthusiastic. Three faculty members were accepted into the SEMRAP program. New York City AMP and City Tech are each providing them with three hours of reassigned time so that they can pursue their research. In September, City Tech AMP organized a luncheon to recognize the contribution of faculty mentors.

Queens College

Established in 1937, Queens College sits on a seventy-six acre campus where it serves a student population of 18,000, including 3,000 graduate students. It is dedicated to the idea that a great education should be accessible to talented young people of all backgrounds. Its distinguished faculty is committed to both teaching and research. Involving undergraduates in research projects is a top priority at Queens. This allows them to gain important insights into potential career paths and to prepare for graduate training. Queens College students regularly receive prestigious fellowships and scholarships and go on to the country's leading graduate schools.

Queens College marries its commitment to the value of a strong liberal arts education with an awareness of its mission in the broader community. The two are well expressed by the college's motto, "We learn so that we may serve."

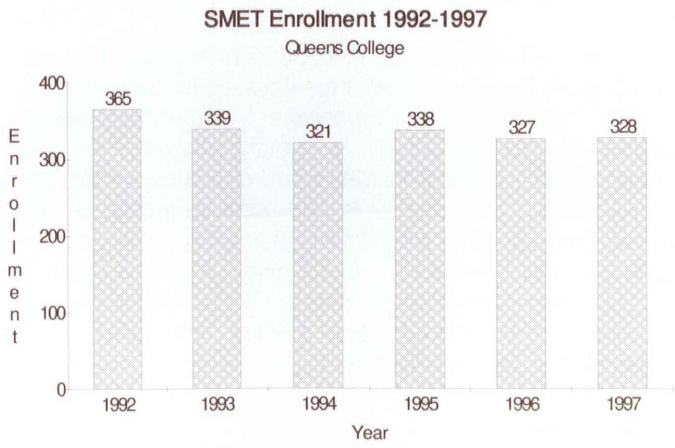
Special programs exist for honors students; students in pre-law, pre-med, and business; adults; "fresh start" students; and foreign language speakers. The college is home to a large number of distinguished centers dedicated to study, innovation, and implementation in areas as diverse as the Biology of Natural Systems, Jewish Studies, and Labor Resources.

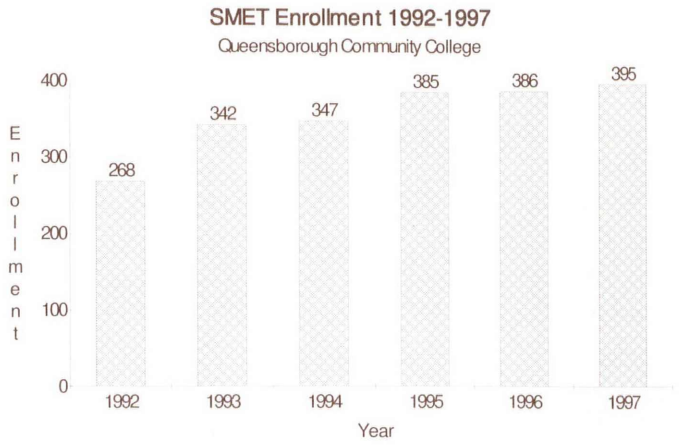
AMP Accomplishments

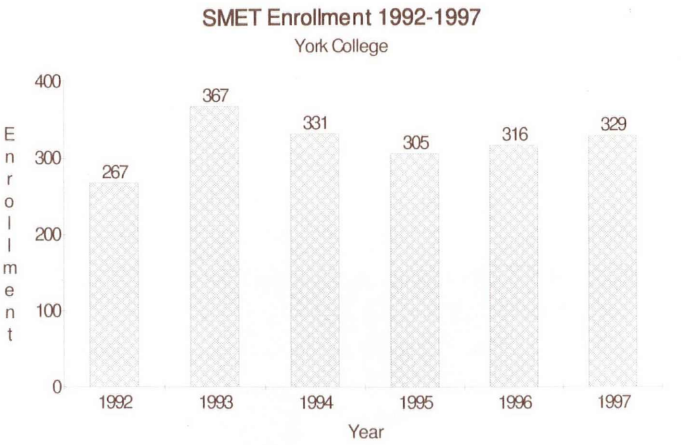
In 1997-1998, seven chemistry sections, six mathematics sections and ten physics sections were restructured thanks to AMP funding. Courses affected were Chemistry 113 (Introductory College Chemistry), Physics 121-122 (Introductory College Physics), Physics 001 (Conceptual Physics), Math 10 (Precalculus), Math 101-102 and Math 111-112 (Calculus). AMP tutors played a pivotal role in these restructured courses, helping students enhance their understanding and performance through one on one tutoring and by facilitating collaborative learning experiences.

In parallel with AMP activities, members of the Mathematics, Secondary Education, and Educational Psychology Departments are working under an NSF grant to develop an innovative way of presenting calculus. They are offering a five credit calculus course, including collaborative learning and exploratory laboratory sessions, in which all concepts are immediately applied to a realistic situation. In tandem, students take a Discreet Mathematics course which is taught traditionally. They also attend education classes in which they discuss their own reactions to the different teaching methods and analyze the way in which they learn mathematics.

Publicity about the AMP Undergraduate Research Program led to an increase in the number of Queens research scholars. Eight students participated in the program in the fall, thirteen in the spring, and two in the summer. A Queens student represented AMP at the 1998 NSF AMP Research Conference. She has already published papers on her work and is pursuing her doctorate in chemistry at the CUNY Graduate School. Two Queens students, one an AMP workshop leader and tutor, the other a research scholar, took part in the AMP Teacher Preparation Initiative over the summer. They found their time in the high school classroom valuable and felt that their performance was enhanced by their prior AMP experience.







Queensborough Community College

Located in Bayside, Queens, Queensborough Community College offers associate degree curricula in the liberal arts and sciences and in career and pre-professional areas as well as specialized certificate and non-credit community service programs. The college prepares its students for transfer to four-year institutions or for entry into the job market. It provides a network of developmental education and student support services designed to enable students to succeed in their studies.

Queensborough is committed to serving the community and enriching its cultural resources. The College Art Gallery is open to the public, and college departments sponsor performances in dance, music, and drama.

The college's Continuing Education Program provides a wide variety of noncredit remedial, vocational, recreational, and cultural courses for people of all ages. The Office of Continuing Education assists groups and organizations in developing programs, conferences, or courses of special interest.

AMP Accomplishments

All sections of calculus General Chemistry I continued to follow a restructured format using the workshop approach to collaborative learning. In calculus, the new, expanded computer classroom, opened in the fall of 1997, provided exceptional support for a program which uses graphing calculators and computer packages such as Derive and Maple to solve practical technical problems. In General Chemistry I and Calculus Physics I, II, and III, workshop leaders fulfilled their role in collaborative learning sessions and, in addition, attended class sessions as support for faculty instructors. The AMP learning center served as a venue for workshops and provided open tutoring for all mathematics, physics, and chemistry courses.

During 1997-1998, ten AMP research scholars worked under the guidance of five faculty mentors. Their projects covered topics in chemistry, mathematics, electrical engineering, computer technology, computer science, physics, and laser and fiber optics. They met regularly with their mentors and with the AMP activity coordinator and prepared year-end reports on their projects. Seminars on the use of graphing calculators, collaborative learning techniques, and research techniques were offered for research scholars and were open to workshop leaders and other interested students.

The QCC AMP Campus Steering Committee continued to oversee AMP activities. QCC faculty have been active participants on CUNY AMP chemistry, physics, and calculus restructuring committees.

York College

Established in 1966 and located on a 50-acre campus in Jamaica, Queens, York College offers over forty majors, conferring baccalaureate degrees in the liberal arts and in a broad range of career programs in the fields of accounting, business, computer studies, education, health, and social work.

The college welcomes students from the widest range of backgrounds and presents opportunities that maximize each student's intellectual, professional and personal growth. It provides a First Year Program for entering students, a Faculty Resource Center, and comprehensive Student Support Services.

York's Office of Continuing Education is committed to addressing the needs of the Jamaica community.

AMP Accomplishments

During 1997-1998, York AMP funded a computer lab dedicated to physics and astronomy. York SMET departments have identified the courses in which students experience the greatest difficulty. In response, the AMP learning center is concentrating its efforts on providing workshops to support students in those courses.

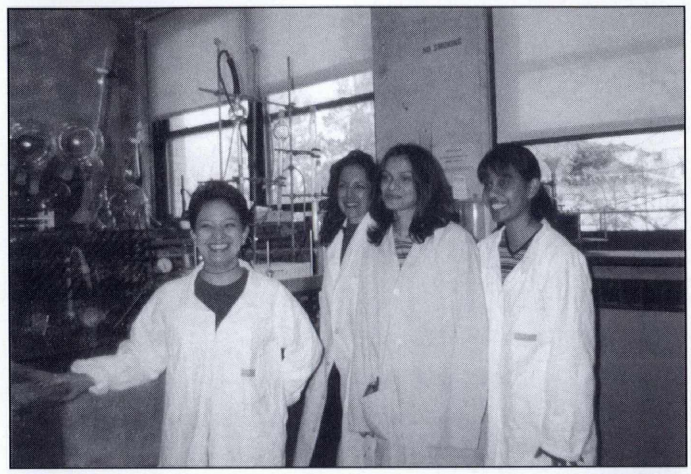
Restructuring took place in the following mathematics courses: Remedial 1 (Algebra and Trigonometry), Math 111 (Introduction to Probability and Statistics), Math 115 (Quantitative Methods for Decision Making), and Math 184 (Introduction to Calculus and Analytic Geometry).

Four York students participated in the AMP Undergraduate Research Program, one in mathematics, two in physics, and one in chemistry. The program gave them the opportunity to use York's state of the art scientific equipment to work on the following projects: attempting to prove the Weierstrass Theorem of a continuous function that is nowhere differentiable; seeking a mathematical forecast model in meteorology; and synthesizing and characterizing mixed metal transition metal polymers.

In 1997-1998 we entered AMP's second phase buoyed by our Phase I accomplishments. During our first five years, we brought about systemic change in science, mathematics, engineering, and technology education at CUNY and dramatically increased the number of minority students completing baccalaureate degrees in SMET disciplines. During the first year of Phase II, we used our new mandate from the National Science Foundation to solidify and build on our prior achievements.

Our initial responsibility was to ensure that AMP's Phase I reforms became part of the fabric of the University. In 1997-1998, the Alliance's central office, the activity coordinators on all sixteen campuses, and 128 research scholar positions were institutionalized. Next, we were determined that AMP activities should become campus driven. To this end, we established Campus Steering Committees at all sixteen undergraduate colleges. These are playing an increasingly dynamic and effective role in promoting the AMP mission and in tailoring it to the needs of individual campuses.

With the Alliance successfully integrated into the University, we sought to expand our vision. Research has always been at the center of AMP's educational philosophy, and in 1997-1998 we did three things to increase its role in SMET education. First, we enlarged the Undergraduate Research Program to include high school and graduate students, creating a research-based SMET pipeline at CUNY. Second, we developed the Teacher Preparation Initiative, which will send teachers whose undergraduate training includes scientific research into the nation's precollege classrooms. Third, we began the process of forming mini-institutes in which CUNY professors open their laboratories to groups of students from the SMET pipeline who work as teams on research projects.



In 1997-1998 we enhanced communication and cohesion through the creation of the NYC AMP Virtual Institute. This fulfills the need for a forum in which members of the AMP community, who are spread across New York City's five boroughs, can exchange information and ideas. It also serves as the Urban Education component of the nationwide AMP Virtual Institute, disseminating our activities and keeping us in touch with Alliances across the country.

The first year of Phase II has been invigorating and productive. Over the next four years we will continue to provide underrepresented minority students with a pathway to success in CUNY's SMET community. We plan to meet, and possibly exceed, the goals set for us by the National Science Foundation.

Neville A. Parker, Kayser Professor of Civil Engineering, City College of New York, AMP Principal Investigator