Status Report on Developments Since 1992

The next sections constitute a comprehensive description of changes that have occurred at NJIT since 1992. They fall under the following categories:

Significant Events Since 1992

Strengthened Leadership

Programmatic Developments

Grant-Funded Activities

Human Resource Development

Community Relations

Visibility

Significant Events Since 1992

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1. *A New Governance Structure for Higher Education in New Jersey (1994)*
2. *National Recognition of NJIT as a Research University: Designation by the Carnegie Foundation as a Doctoral University II (1994)*
3. *Recognition of NJIT as a Public Research University by the State of New Jersey (1994)*
4. *Legislation Reforming NJIT's Legal Status (1996)*

Since the Middle States visit in 1992 leading to NJIT's reaccreditation through 2002, four historic events have occurred. One profoundly altered the governmental and regulatory structure of higher education in New Jersey. Each of the other three represents a key milestone in the institutional development of NJIT and underscores its progress.

1. A New Governance Structure for Higher Education in New Jersey (1994)

The State of New Jersey has a new statutory framework for the governance of higher education. The Higher Education Restructuring Act of 1994 eliminated the State Department of Higher Education and divided its former functions among institutional governing boards, other agencies of state government, and a set of new coordinating arrangements. The new governance structure consists of three principal components:

- institutional boards of trustees responsible for fulfilling both the missions of their individual institutions and statewide goals in cooperation with other institutions and the state's coordinating structures;

- a New Jersey Presidents' Council responsible for reviewing, commenting, advising, and recommending on matters affecting higher education, including assistance in developing and updating a master plan for higher education; and

- a Commission on Higher Education responsible for policy, planning, and advocacy, including a specific mandate to conduct research on higher education and develop a comprehensive master plan.

The structure was designed in this fashion to eliminate unnecessary state oversight and to encourage creativity and innovation at the colleges and universities. The marriage of institutional autonomy with statewide coordination was intended to provide appropriate balance for the development of a dynamic system of higher education.

Within this context the Commission on Higher Education has undertaken the development of a master plan for New Jersey higher education in consultation with the Presidents' Council.

The proposed master plan focuses on the needs of students and society, emphasizing ways in which higher education can address those needs. The plan does not include highly specific recommendations. Instead, it offers a vision for the future of higher education in New Jersey and a set of broad policy recommendations to guide the strategic planning of the colleges and universities and of state policy-makers. Its fundamental purpose is to establish a correspondence between New Jersey's ambitions for its system of higher education and the resources it is willing to commit. Therefore, while the plan asserts the imperative that institutions pursue cost efficiencies and that the state make prudent choices so as to avoid the danger of spreading limited resources too thinly, the plan also highlights the need for additional resources to enhance the quality of the enterprise and to bring its vision for higher education to fruition.

It is probably still too early to render any definitive judgment as to the effectiveness of the new governance structure. A survey of key figures in higher education and state government conducted by a committee of the Commission on Higher Education showed that while opinions about the restructuring were mixed, positive views outnumbered negative views. Positive ratings were associated with questions on institutional flexibility in establishing new academic programs, institutional governing board decision making and accountability, timeliness in addressing issues and making decisions, and cooperation among all the constituent entities. Less favorable ratings were associated with advocacy and systemwide coordination, information on higher education, statewide coordination of academic programming and adequacy of their review, and the trustee appointment process. Although improvements in these areas were recommended, the report concluded that "it is too soon to determine whether any major structural changes should be considered."

2. *National Recognition of NJIT as a Research University: Designation by the Carnegie Foundation as a Doctoral University II (1994)*

In 1994, the Carnegie Foundation for the Advancement of Teaching reclassified NJIT as a "Doctoral University II," replacing its previous designation in the category of "Professional Schools and Specialized Institutions." In order to qualify as a Doctoral University II an institution must offer a range of baccalaureate programs and demonstrate that its mission includes a commitment to graduate education through the doctorate. It must annually award at least 10 doctoral degrees in three or more disciplines, or 20 or more doctoral degrees in one or more discipline(s).

The Carnegie redesignation, together with NJIT's acceptance of membership in the National Association of State Universities and Land Grant Colleges, symbolized the completion of the institution's transformation from Newark College of Engineering to a public research university with a mission spanning the full range of research and public service as well as instruction. The new Carnegie designation also led to NJIT's inclusion on *U.S. News and World Report's* list of "national universities" for the past three years.

3. *Recognition of NJIT as a Public Research University by the State of New Jersey (1994)*

As a result of its growth and evolution over the last quarter century, NJIT gradually came to be referred to as a "university" by state agencies including the former New Jersey Department of Higher Education. Later NJIT was described in official documents as a "research university." Ultimately, in the Higher Education Restructuring Act of 1994, the New Jersey Legislature included language that recognized NJIT's status as a "public research university." By granting NJIT this statutory designation alongside Rutgers University and the University of Medicine and Dentistry of New Jersey, the Legislature and the Governor ratified the institution's broadened mission in the areas of graduate education, research, and public service. Beyond its symbolic significance, this action set the stage for additional legislation -- enacted a year and a half later -- that defined the further implications of the institution's status.

4. *Legislation Reforming NJIT's Legal Status (1996)*

On January 10, 1996 the Governor of New Jersey signed into law the New Jersey Institute of Technology Act (Ch. 400, P.L. 1995). The legislation codifies NJIT's status as a New Jersey "public research university," similar to Rutgers University and the University of Medicine and Dentistry of New Jersey in its relationship to the state. The new law respects the spirit and letter of the Higher Education Restructuring Act of 1994, affording a high degree of autonomy to the university. Furthermore, it clearly asserts that the university's exercise of the powers conferred by the Act "shall be deemed to be public and essential governmental functions necessary for the welfare of the State and the people of New Jersey." Enactment of this legislation reflects a high level of trust and confidence on the part of the State Legislature and the Governor.

Established pursuant to an 1881 statute that authorized the creation of "Schools of Industrial Education," the institution later operated for more than 65 years under a contract to provide higher education services, a contract which had to be renegotiated with the State each year. The new legislation ended the need for a contract. It establishes NJIT as a body corporate and politic, with appropriations from the State to be allocated directly from the State Department of Treasury. Contracts and obligations entered into before the effective date are to continue in full force and effect.

The Act preserves the existing Board of Trustees, but it permits expansion of the board from its current size of 10 members to a maximum of 15. Both the Governor of New Jersey and the Mayor of Newark will continue serving as ex-officio members, but with the clarification that they serve without vote. New appointments to the board will be made by the Governor as before, but now with the advice and consent of the New Jersey State Senate.

The Act gives the Board of Trustees a broad range of authority and governing responsibilities, consistent with the purposes of the Higher Education Restructuring Act, as evidenced by language prescribing a liberal, enabling construction. The Board is empowered

to adjudicate "controversies and disputes concerning tenure, personnel matters, and other issues arising under Title 18A," covering all matters except for those controversies for which an applicable dispute resolution mechanism exists pursuant to a collective bargaining agreement or other governing policy. Thus, the Board serves as an administrative agency whose determinations (within its jurisdiction) are accorded great deference when legally challenged, subject only to the limited appeal of the Appellate Division of the Superior Court.

In addition to the full panoply of powers to manage its own business affairs, which include the power to purchase, lease, borrow, encumber, dispose of property, and exercise the right of eminent domain, the Act stipulates that the Board may adopt operating rules and procedures for the purchase of goods and services. These include rules and procedures for public competitive bidding for purchases that exceed a certain monetary threshold, which is to be adjusted annually. However, similar to the legislation governing the University for Medicine and Dentistry of New Jersey, the university is not rigidly bound to the strictures of the Local Public Contracts Law, or its State analogue, but is afforded a degree of flexibility in selecting the bid which is most responsive to the university's needs, considering not only price, but other factors as well.

Recognition of the changing role of the university as an incubator of research with commercial potential, and as a partner to industry, is another significant aspect of the Act. Its language specifically gives the university broad authority to participate in partnerships, subsidiary corporations, and joint ventures engaged in "development, manufacture, or marketing of products, technology, scientific information or services." These provisions pave the way for the university to engage fully in technology transfer and manufacturing extension programs.

To this end, the Act specifically permits investment by the university in both not-for-profit and for-profit entities created by the university, provided that the invested funds derive from grant-funded overhead recovery or income revenue realized from the commercial exploitation of intellectual property, and not from State-appropriated funds or revenue derived from academic programs (i.e., tuition or similarly generated funds). Employees of such jural entities created by the university are not, however, deemed public employees, nor are the entities deemed instrumentalities of the State. Thus, the State's interest in fostering economic development is advanced without encumbering public funds, leaving both risks and potential rewards in the hands of the university.

Recognizing existing practice, and consistent with the university's status as a senior public institution of higher education, the Act confirms NJIT's ability to retain independent counsel. Further, it recognizes the university's authority and concomitant responsibility to plan and direct the implementation of its short- and long-term labor relations culture, through negotiations under its auspices as a public employer, with the participation of, and in consultation with the Governor's Office of Employee Relations. Finally, the State Act on Conflicts of Interest, which did not formerly apply to NJIT, but which was honored in spirit and substance, is now specifically applicable to officers and employees of the university.

With regard to establishing academic programs, the Act grants the university a broad degree of latitude, provided that new programs are consistent with the university's programmatic mission as authorized by the governing State regulatory agency. This authority is not new, but incorporates and republishes the changes effected by the Higher Education Restructuring Act of 1994.

The Board of Trustees maintains the authority to establish tuition rates after appropriate public hearings; to grant diplomas, certificates or degrees; to develop an institutional plan; to determine the departments, programs, and degree levels to be offered by the university (consistent with its approved programmatic mission); and to advise the Governor, Commission on Higher Education, and President's Council regarding its needs for resources.

Passage of this Act formally validates NJIT's evolutionary development. Looking forward, it enables the university to utilize its resources fully toward the ends embodied in its mission.

Strengthened Leadership

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1. *The NJIT Board of Trustees*
2. *The NJIT Board of Overseers*
3. *The University Administration*

The five-year period since 1992 has been one of stability in the fiduciary and administrative leadership of the university. Incremental gains have occurred in each area, as described in the following sections.

1. The NJIT Board of Trustees

The Board of Trustees is the university's governing board with a broad range of statutory powers and fiduciary responsibilities. The Board meets monthly except for August.

A number of changes have occurred in the composition of NJIT's Board of Trustees since 1992 as members resigned and were replaced. (A list of the current Board members and their professional affiliations can be found in Appendix J.) The present intent is to gradually increase the size of the Board to fifteen members as permitted under the new statutory provisions of the NJIT Act of 1995 and as well qualified candidates are identified. The effort continues to constitute a Board with a representational composition reflective of NJIT's student body.

2. The NJIT Board of Overseers

The Foundation at NJIT was incorporated in 1959 to support and encourage research, and establish fellowships and chairs. Its current mission includes fund raising. The affairs of the Foundation are conducted by the NJIT Board of Overseers, a group of nearly fifty individuals, primarily executives of businesses in New Jersey and across the country. The Board meets four times annually. The members play a key role as advisors with respect to research initiatives, as reviewers of university benchmarking, and as advocates in securing necessary resources. Recent recruitment efforts have been directed toward inclusion of technological entrepreneurs who are currently running successful companies that they themselves founded. (See Appendix K for a current listing of members.)

Over the last four years, the standing committee structure of the board has been strengthened. The committees now include: Finance, Fund Raising, Research, Marketing, and Membership. In the past year, two new liaison/advisory groups of Overseers were established, one to the School of Management and the other to the Albert Dorman Honors College. Through its committees, the Board has made important contributions to numerous programs. Members' advice and assistance has been invaluable on such matters as

establishing the Hazardous Substance Management Research Center and the new Multi-Lifecycle Engineering Center, and in managing NJIT's endowment. Members of the Fund Raising Committee, together with others on the Board, have worked with the administration to develop contacts with prospective donors and have played an important role in "guiding" the capital campaign. The Marketing Committee, made up of representatives from Overseer companies, has made some valuable suggestions regarding the objective of increasing university visibility.

Over the last four years, individual Overseers have enabled NJIT to recruit nationally recognized faculty through the sponsorship of chairs in optoelectronics, applied mathematics, and computer science. Ten Overseers have come forward to establish their own endowed scholarships honoring their families or companies. Additionally, in 1994, the Board established an endowment for scholarships to be given to incoming students in the Albert Dorman Honors College who show exceptional leadership qualities. Four scholars now benefit from their support.

3. The University Administration

The administrative structure of NJIT is summarized in a functional organization chart that shows how key functions are grouped and a set of operational organization charts that show reporting relationships, both of which can be found in Appendix I.

Since the 1992 Middle States visit, the senior administration has been streamlined and reorganized. The key changes are fully described in the "General Overview" section on organizational structure (see p. 7).

Programmatic Developments

An addition has been made to the university's constituent units and important progress has occurred in each college and school since 1992. These are described in the sections that follow:

Albert Dorman Honors College

Newark College of Engineering

School of Architecture

School of Management

College of Sciences and Liberal Arts

Technology and Engineering Center

Continuing Professional Education

Intercollegiate Athletics

The Albert Dorman Honors College

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1. *Mission and Philosophy*
2. *History and Current Status*
3. *Visibility and Identity*
4. *Plans to 2002 and Beyond*

One of the most important developments at NJIT since the last Middle States team visit was the creation of the Albert Dorman Honors College in 1993 following a decade of successful operation of the NJIT Honors Program. The Dorman Honors College attracts exceptionally well prepared students who take honors courses, attend seminars, and undertake cultural activities in addition to majoring in degree programs offered by the other four colleges. NJIT's experience shows that these students, who take most of their courses with regularly admitted students, contribute to the overall intellectual climate at NJIT because they tend to challenge their teachers and spur on their classmates to higher achievements. Over the next four years, enrollment in the Honors College will expand to approximately 500 students. The Honors College Advisory Board (comprised of members of the business, professional, and government communities) provides valuable perspectives on employment opportunities, plans for the growth and further development of the College, and assists in fund raising efforts to secure an endowment target of $10 million.

1. Mission and Philosophy

The mission of the Albert Dorman Honors College is to attract exceedingly able and highly motivated students to NJIT, to match their potential by providing a rich and challenging educational experience, and to prepare them for positions of leadership. The College emphasizes the development of graduates who are independent life-long learners, good citizens, and productive members of society.

2. History and Current Status

In Fall 1985, NJIT started offering an Honors Program for high-achieving students with excellent academic and leadership potential who wanted a broad, stimulating intellectual experience within the framework of a technological university. The program started with 38 scholars who had high SAT's, class rank, and GPA's. By AY'92, the Honors Program was a well established program with over 160 scholars. The program had a clearly defined mission and a set of goals and objectives. Most of the original goals and objectives have been met, some earlier than projected.

In the current academic year, 353 scholars are enrolled in the College. (See attached statistics for the 10-year period since AY'86.) Entering students are required to have an SAT of 1250 (after recentering; 1200 before recentering), to be in the top 10-15% of their high school class, and once at NJIT to maintain a GPA of 3.0 during the freshman year and 3.2 thereafter. Academic requirements include taking at least 8 courses in honors sections of General University Requirement (GUR) courses in the first two years, taking two honors seminars (in Humanities and Science/Technology/Society) in the final two years, and attending an Honors Colloquium series. Starting with the fall 1995 cohort of freshmen, scholars are also required to take a senior honors capstone project/research/independent study course.

Among the benefits and incentives honors scholars receive are a merit award that covers at least half of their tuition, access to the facilities of the Honors Center, a special course of study, an honors freshman advisor, and certain guarantees of housing and admission to the BS/MS program. Throughout the years, course requirements, benefits and incentives have been increased and refined.

Over the history of the program, freshman honors scholars have enrolled in all majors at NJIT: engineering (63%), the sciences (22%), architecture (14%), and management (1%). Many have gone on to leadership positions in industry, and at least 60% of the 235 graduates have gone on to graduate schools and professional programs. The average GPA of graduating honors scholars has been 3.6 throughout the years.

In 1992, the visiting Middle States team suggested that "development" and "strengthening" of the NJIT Honors Program could be helpful to the regular programs. Since then, NJIT has committed resources to develop Honors, and academic requirements have been strengthened with the addition of a required senior capstone project/research/independent study course. Additional optional honors sections have been approved, and other honors courses are in the process of being approved. Additional honors sections of GUR courses have been added as needed to maintain small class size. "Trailer" courses of GUR courses are being added as needed since many honors freshmen come with Advanced Placement credit. The colloquium series has been strengthened, and students are now required to attend 22 colloquia over the course of their total program.

An important new benefit, starting with Fall 1996 honors scholars, is the guarantee that they will receive an award covering at least half of tuition. However, through additional scholarships from the university or external sources, most honors students actually receive full tuition coverage.

New recruitment strategies are in place including the addition of an admissions representative assigned to work part time with the College to improve administrative coordination between the offices. The Honors College has a branch at the new Mount Laurel campus (which had freshmen for first time in Fall 1996), and recruitment and program strategies are in progress.

There were 2 honors scholars at Mt. Laurel campus in fall 1996. Coordination between the two campuses is currently being worked out so that all honors scholars will have the same program requirements and benefits.

The honors administration moved into its own suite near the Honors Center in summer 1995, and a secretary/receptionist was hired. A new computer network was installed in the Honors Center in Spring 1995. The operational budget for FY'96 was increased to reflect the growth of the College and the move to its new quarters.

The NJIT Honors Council continues as an important forum for advice and consent and for coordination among the academic colleges and administrative departments. Faculty teaching honors courses meet once each semester to coordinate courses and discuss teaching honors sections.

3. Visibility and Identity

The visibility of the Honors College has increased through a number of initiatives including a handsome new brochure, upgraded handouts, increased publicity, promotion of the accelerated premedical program, participation in national and local National Collegiate Honors Council meetings, an annual Deans' Day brunch, new recruiting methods and extensive mailings, and collaboration with Rutgers-Newark in co-sponsorship of colloquia and community service projects.

Steps have been taken to enhance students' sense of fellowship and develop an esprit de corps associated with membership in the Honors College including activities in the Honors Center's lounge and computer room, formation of an Honors Student Council and committees, sponsorship of a Big Brother/Sister Program, a summer picnic for incoming honors freshmen, community service activities, a newsletter, social activities, and an annual Senior Dinner where seniors are presented with a College Recognition Certificate and a gift, and the Outstanding Senior is recognized. The development of a fuller sense of College identity remains a goal to be pursued.

4. Plans to 2002 and Beyond

The Honors College is in the process of developing long range goals and objectives to the year 2002 and beyond. In concert with this process, the College is reviewing and assessing its programs along with the success of its students. Its goals for the next five years follow.

a. <u>To extend the "Scholar-in-Residence" program</u>

From the time of its inception, the Honors College envisioned having a distinguished scholar who would provide intellectual leadership. The plan was to recruit such a person in a field important to the university for a limited term appointment. The individual could be a faculty member from one of the other colleges within NJIT or a visiting scholar from outside the

current university community. The first Scholar-in-Residence, Dr. John Opie, was appointed in 1996. A former chairman of NJIT's Department of Humanities and Social Sciences, and an authority in the field of public policy on environmental issues, Dr. Opie plans to invite honors students to join him in a major on-going research project. He will also deliver a public lecture series on important national and international issues.

b. To increase the size of the College another 40% to a total enrollment of 500 students by the year 2002 while maintaining standards, increasing women and minority students, and attracting students interested in all majors

It is the College's objective to enroll 500 high achieving scholars by the year 2002 with an average SAT-I of 1330 with the freshmen coming from the top 15% of their high school class. (See attached "Projected Number of Honors Scholars to 2002.") By that time the College wishes to attract 30% women to the honors program and 12% minority students. It will aim for students interested in majors in the following proportions: engineering 55%; science and liberal arts 25%; architecture 16%; and management 4%.

c. To develop new recruitment strategies by targeting additional student populations and strengthening the benefits and incentives available to students

New populations targeted will include: (1) additional students at the Mt. Laurel Campus (Honors students will constitute 10-15% of the Mount Laurel student body); (2) additional NJIT sophomores with high GPA's after freshman year; (3) increased numbers of qualified junior transfer students through articulation agreements with community college honors programs, or other special arrangements.

In order to meet the goals, new recruitment strategies and resources will be needed. Recruitment efforts that have been successful will continue to be used. The honors package of benefits and incentives will be strengthened. Special relationships will be developed with science and technology high schools in New Jersey and around the nation. An Honors Day will be initiated at NJIT where high school students can hear a lecture, visit a lab, meet with honors faculty, sit in a class, tour and talk with honors students, and stay overnight. Special programs will be established for gifted students, particularly during the summer months. And greater visibility will be sought through a variety of events and media.

d. To increase retention rates, strengthen the academic program and requirements, and provide additional academic enrichment

Innovative retention strategies will be used to increase the rate of graduation from the Honors College. The program will undergo continual assessment with the goal of intervening where necessary to increase retention rates. Other strategies will include advising, monitoring freshman and sophomore years, and developing additional methods of early intervention.

e. To strengthen the academic program and requirements, and provide additional academic enrichment

Within the next two years, a revised honors curriculum will be developed. Among the ideas under consideration are the following: (1) increasing the coherence of the freshman curriculum for honors students by integrating the core honors courses with other required courses; (2) offering a seminar course that emphasizes the role of professionalism and leadership in the modern world; (3) continuing to add optional honors sections in courses in the students' majors once a critical mass is present; (4) developing senior cross disciplinary projects; (5) cooperation with Rutgers-Newark in sponsoring colloquia and in community service programs; (6) encouraging honors scholars to attend study aboard programs (or out of NJIT programs) either in the summer or for a semester, and to attend graduate/ professional schools; and (7) assisting at least one or two honors scholars each year in applying for prestigious awards such as the Truman, Rhodes, Marshall, or NSF scholarships.

f. To develop a greater sense of identity for the College and its community of students

Plans include: (1) an enhanced and expanded honors center; (2) an "honors wing" which will foster a sense of place; (3) a freshman year academic program and honors senior projects as well as honors sections of courses throughout the students' programs; (4) an enhanced colloquium series; (5) community service projects, social activities, and a newsletter; (6) giving students more responsibility for their space; (7) a special honors orientation before classes begin; (8) mentors for the honors students drawn from alumni and the advisory board; and (9) publication and distribution of students' research and independent study papers.

g. To bring greater visibility to the College

This will be done through continual publicity about the excellence of the programs and the students, handsome publications and handouts, activities such as the Honors Deans' Day Brunch, Honors Day on campus; research publication, student and administrative newsletter.

h. To develop an active honors alumni group

The College wishes to strengthen its relationship with honors alumni/ae. We have already begun the process of setting up an Honors Alumni Advisory Board. An alumni/ae representative will be invited to join the Honors Advisory Board and on the Honors Council. Alumni/ae will also be invited to participate in a mentoring program with undergraduates and increase their contributions to the Honors College.

Albert Dorman Honors College

High School Rank - Honors First-Time Freshmen

Distribution	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total	%
Top 1%	6	9	12	4	4	10	4	2	10	11	10	13	95	15%
Top 2-5%	11	15	11	7	15	9	9	12	12	12	26	17	156	25%
Top 6-10%	9	10	4	12	7	7	13	16	11	9	14	19	131	21%
Top 11-15%	5	4	3	3	5	7	5	8	6	13	9	10	78	13%
Top 16-20%	0	0	2	4	4	3	4	1	6	5	5	8	42	7%
Over 20%	0	0	2	5	5	5	4	5	5	6	14	18	69	11%
Not Applicable	0	1	1	2	3	7	2	3	8	7	8	9	51	8%
Total	**31**	**39**	**35**	**37**	**43**	**48**	**41**	**47**	**58**	**63**	**86**	**94**	**622**	**100%**

AVERAGE SAT OF FIRST-TIME FRESHMEN: Fall 1996 SAT1: 1320(T) 696(M) 624(V)

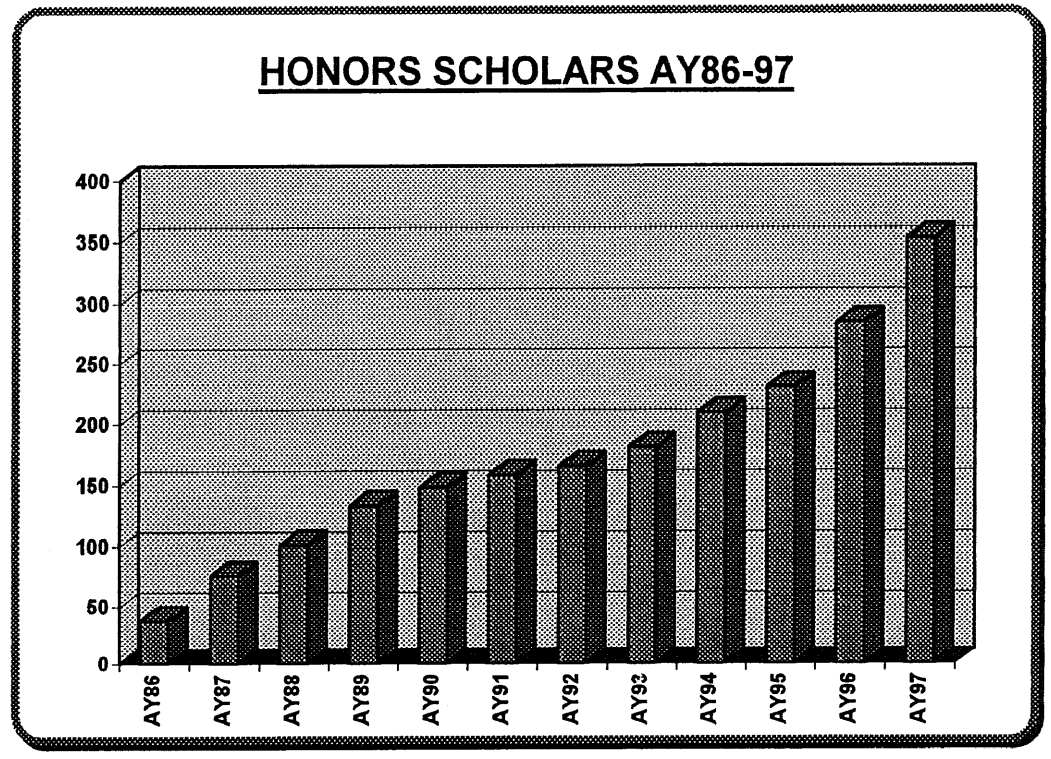
Majors - Honors First-Time Freshmen

Major	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Total	%
Applied Chemistry	0	0	1	0	1	0	0	0	0	1	1	0	4	1%
Applied Math					1	1	0	0	0	0	1	1	4	1%
Applied Physics	0	1	0	2	2	0	1	1	1	1	1	2	12	2%
Architecture	1	1	6	8	8	8	7	8	10	10	8	10	85	14%
Chemical Engineering	4	4	4	2	3	2	5	2	7	7	5	7	52	8%
Civil Engineering	2	3	1	0	1	0	0	2	1	1	1	4	16	3%
Computer Engineering	0	0	1	1	6	2	2	6	3	5	4	14	44	7%
Computer Science	1	9	5	5	7	6	3	4	5	11	21	11	88	14%
Electrical Engineering	10	9	9	8	5	9	3	5	4	3	7	6	78	13%
Eng(UND)					1	2	1	1	8	8	9	7	37	6%
ESC(PreMed)					1	9	9	8	11	11	18	18	85	14%
Industrial Engineering	2	1	1	0	0	0	1	3	0	0	1		9	1%
School of Industrial Mngt.	1	0	1	0	0	0	1	0	1	1	0		5	1%
Mnfg. Engineering					1	0	0	0	0	0	0		1	0%
Mechanical Engineering	9	6	5	9	2	4	4	3	5	3	8	11	69	11%
SAS(ACTS)	1	5	1	1	4	3	1	3	0	1	1		21	3%
STS	0	0	0	1	0	2	3	1	2	0	0	1	10	2%
CSLA(UND)												2	2	0%
Total	**31**	**39**	**35**	**37**	**43**	**48**	**41**	**47**	**58**	**63**	**86**	**94**	**622**	**100%**

Cumulative Majors By College for 10-Year Period: Arch: 14% CSLA: 22% NCE: 63% SIM: 1%

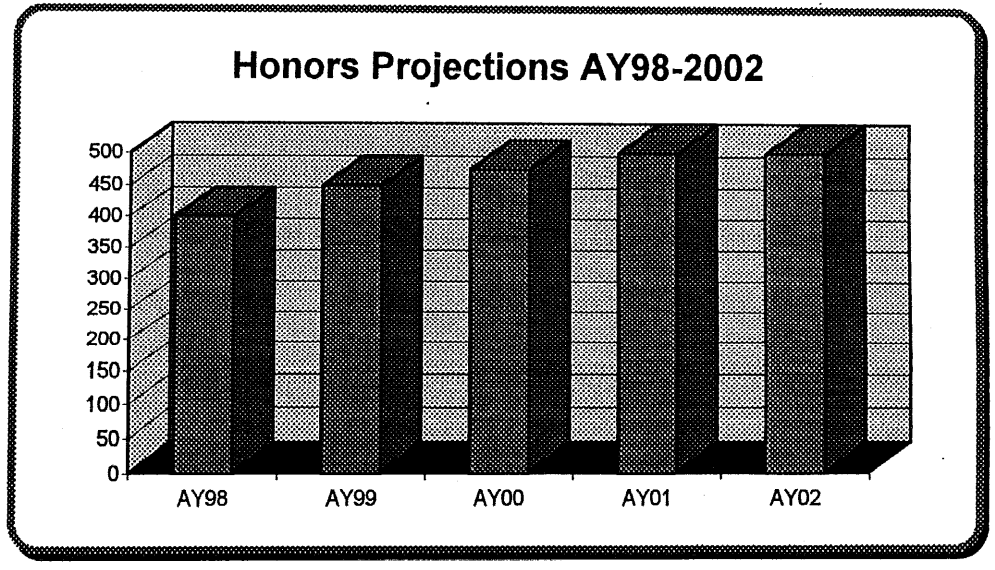
ENROLLMENT HISTORY

AY86	38
AY87	76
AY88	101
AY89	133
AY90	148
AY91	158
AY92	165
AY93	180
AY94	209
AY95	230
AY96	284
AY97	353



ENROLLMENT PLAN

AY98	400
AY99	450
AY00	475
AY01	500
AY02	500



Newark College of Engineering

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1. *Mission*
2. *Transformation of the Undergraduate Curriculum*
3. *Research and Economic Development Initiatives*
4. *Accreditation*
5. *Whither Engineering Education?*

As the largest single component of NJIT, NCE assumes a heavy responsibility for achieving the university's overall mission and goals. The College has welcomed the challenge. Over the past five years NCE has made important strides in reformulating its undergraduate curricula, expanding its interdisciplinary research applied to significant problems, and expanding its service to the state and the nation through economic development initiatives. For each of its academic departments and programs, NCE has an Advisory Committee to the NJIT Board of Trustees with members from the business, professional, and government communities who provide insights about the needs of external constituencies and useful information about current employment opportunities. In addition, NCE has an advisory committee which advises the dean on matters pertaining to the entire College.

1. Mission

The mission of Newark College of Engineering (NCE) is to educate students for a variety of professional careers and prepare them to assume leadership positions in technology-based organizations within the context of a global economy. Both undergraduate and graduate programs offered by the College are designed to fulfill this mission.

The College plays a leadership role in the education of underrepresented minorities and women for professional careers in engineering and engineering technology. The following table provides the demographic data on the NCE student body:

Category	Undergraduate Fall 1992 (percent)	Undergraduate Fall 1996 (percent)	Graduate Fall 1992 (percent)	Graduate Fall 1996 (percent)
Female	10.5	14.2	16.1	37.0
African American	11.1	13.3	3.5	8.8
Latino	12.7	15.0	3.4	7.5
Asian	17.6	17.7	12.0	6.6
Native American	0.1	0.1	0.2	0
International	4.3	4.3	37.5	10.2

2. *Transformation of the Undergraduate Curriculum*

At the core of NJIT's mission as a public, urban research university is a commitment to undergraduate education. The university's philosophy proceeds from the premise that the central purpose of undergraduate education at NJIT is to prepare students for careers as "complete professionals" with the potential for leadership in their chosen fields of endeavor. The rapid development of worldwide markets and restructuring of the U.S. economy that followed the end of the Cold War has created an environment that demands engineers with different sets of skills than were necessary only a few years ago. Technical knowledge has never been enough for a successful career in engineering; but today communication skills, the ability to work in and lead culturally and ethnically diverse teams, knowledge of environmentally conscious design and production, and an understanding of the commercialization process are more important than ever before.

At the time of the last Middle States team visit in 1992, NJIT, along with nine other institutions, became a member of the National Science Foundation's "Gateway Coalition." This was the result of a grant award from the NSF to improve undergraduate engineering education. Soon thereafter, in 1994, NJIT was one of six institutions in the nation to receive a comprehensive engineering education improvement grant through the Technology Reinvestment Program (TRP). NJIT proposed to introduce "manufacturing" as an integrating theme throughout the undergraduate curriculum, to re-focus engineering education by imbedding topics related to the cost effective design, manufacture, and commercialization of products in as many undergraduate courses as possible and by providing students the opportunity to gain direct experience of the world of work. In the same competition, NJIT's environmental program won a separate education grant to integrate environmentally conscious chemical plant design into the undergraduate curriculum. Since all three of these grants were complementary in nature, the work at NJIT was combined into an integrated set of related activities. As a result, the following reforms have been introduced into NCE's undergraduate engineering programs:

1. A new year-long freshman course introduces all engineering students to the complexity of engineering products and processes. Students, working in teams, use powerful workstations to complete design and production modules from each of the engineering disciplines. The basic communications course and the first social science sources have been "yoked" to this engineering course to explore the social aspects of production on society and to allow students to develop oral and written communications skills.

2. Two courses that have been part of the general university requirements for all students for many years, micro- and macro-economics and management, have been combined into a year-long course that takes students through the complete process of innovation of a product or process -- from concept to commercialization. Students learn the basic economic considerations that go into the development and production of a commercial product.

3. Environmentally conscious design of chemical plants has been made part of the freshman chemistry course required of all engineering students. This component of the course was made possible by a TRP grant to NJIT's environmental center.

4. An upper division elective course, Advanced Design Engineering Design Teams (ADEPT) allows junior and senior level students to undertake a design project with a local industry to achieve a specific commercial goal. Through this course, faculty and graduate and undergraduate students have succeeded in solving significant problems that have been fully implemented by the sponsoring industry.

5. A capstone project in the senior year is designed as a synthesis of the undergraduate experience.

6. A major component of the TRP program is to involve large numbers of junior engineering students in industry as interns. Through their internship, students learn more directly the complexities of product design and commercial production.

NJIT was also one of the few universities in the nation to receive two NSF Combined Research and Curriculum Development (CRCD) grants. These too have had a significant impact on undergraduate engineering education at NCE. The purpose of the NSF-CRCD program is to introduce new, emerging or neglected areas of industrial and technological importance into college curricula. The grants support efforts that are cross departmental and interdisciplinary in nature. They allow students to work on state-of-the-art research with faculty, exposing them to new ideas, concepts, and research results that have not yet been incorporated into textbooks. The CRCD curricula are created as concentrations within existing degree programs; they are not themselves degree programs.

NJIT's CRCD grant in Particle Technology led to the establishment of a three-course concentration in an area that is of vital importance to manufacturing competitiveness but that receives little attention in traditional engineering curricula. The second grant, in Optics, led to the development of a unified, multi-departmental optical science/engineering curriculum with an emphasis on courses that provide training in emerging areas of industrial and technological importance. This interdisciplinary specialty prepares students in a field that offers strong employment potential for new graduates.

While these initiatives are significant, NCE's curriculum must still be characterized as a "work in progress." The individual strands have yet to be woven together into a completely coherent fabric. Many faculty members and administrators continue to view the world from a traditional disciplinary perspective and, of course, the university rightly values academic freedom. Curricular reform must be achieved without compromising the "free market" of ideas, without sacrificing vigorous debate, and without stifling intellectual controversy. Therefore, more time will be needed before all faculty members have internalized the conceptual framework embodied in the new curriculum and are ready to capitalize fully on its pedagogical possibilities.

3. Research and Economic Development Initiatives

Total NJIT research expenditures rose to a new record of approximately $39 million in FY'96 of which $30 million was externally funded. Newark College of Engineering faculty are responsible for the largest share of NJIT's research enterprise, the interdisciplinary nature of which fits well with NCE's emphasis on curricular reform. Interdisciplinary research requires teamwork among the faculty and students involved. When faculty bring this type of research back to their classrooms, they deliver the message that teamwork is important and that most engineering projects are, in fact, interdisciplinary in nature. In the past five years, NCE has introduced a number of major research initiatives.

1. A Multi-lifecycle Engineering Research Center (MERC) was formally launched in April 1995. It involves interdisciplinary programs that cut across all the traditional engineering areas as well as architecture, economics and policy studies, management, and computer science. The primary mission of the Center is to turn environmental responsibility into a competitive advantage by developing innovative new materials that can be re-engineered from waste streams, by designing products for efficient de-manufacture as well as manufacture, and by employing agile production technologies that minimize waste and maximize flexibility and responsiveness. These concepts go well beyond today's ideas on recycling into a new realm of technologies and tools for sustainability. MERC combines the strengths of NCE's environmental engineering and science thrust with its manufacturing research program.

   Even though MERC's proposal did not win an NSF center grant in the most recent competition, it has garnered significant state and industrial support. Last year, the AT&T Foundation contributed approximately $1 million to support the research conducted in MERC. In addition, Panasonic created a $500,000 endowment to partially support a faculty chair in multi-lifecycle engineering. This year, MERC was awarded a grant of approximately $1 million per year for five years by the New Jersey Commission on Science and Technology. With this level of local support, NJIT plans to submit an improved Engineering Research Center (ERC) proposal to the NSF.

2. Furthermore, the faculty of the Center for Manufacturing Systems developed New Jersey's successful proposal for admission to the national program of manufacturing technical assistance run by the National Institute of Standards and Technology (NIST) of the U.S. Department of Commerce. Funded at a level of $4 million per year, half federal and half state support, the New Jersey Manufacturing Extension Partnership (MEP) will incorporate a number of existing NJIT resources. Five manufacturing sub-sectors were identified as both critical to the growth of the regional economy and at risk in the absence of assistance: metalworking and machinery, electronics and instrumentation, rubber and plastics, food processing, and textiles and apparel. A staff of between 20 and 30 MEP field engineers will be responsible for assisting small and medium-sized businesses adapt to changing regulations and business conditions by

bringing them into contact with existing sources of aid, and for refining the state's understanding of their needs.

3. NJIT's Center for Environmental Engineering and Science (CEES) is comprised of a number of component research centers. Within the overall framework of CEES, the Hazardous Substance Management Research Center (HSMRC) has developed a highly successful and comprehensive, multi-disciplinary, multi-university program that is nationally and internationally recognized for its contributions to the hazardous substance management science and technology base with funding from the New Jersey Commission on Science and Technology. Over the past five years, public agencies in the state have benefited from and relied upon the Center's expertise and studies, and New Jersey businesses have saved over $1 million from NJTAP assistance (Technical Assistance Program for Industrial Pollution Prevention). HSMRC's human resource development objectives for non-matriculated students span the range from vocational education students to specialists employed by the U.S. Environmental Protection Agency and the New Jersey Department of Environmental Protection. The Center has also participated in a number of programs to improve instruction in elementary and secondary schools.

4. NJIT's National Center for Transportation and Industrial Productivity is one of three national university centers funded under the U.S. Department of Transportation's "University Transportation Centers Program." The Center focuses on increasing productivity through transportation improvements, ranging from improving private and public carrier fleet productivity through better scheduling of activities and equipment management to improving personal productivity by reducing congestion and improving safety on the nation's highway and transit systems. The Center receives an annual federal grant of $1 million dollars which must be matched by non-federal sources. Several public and private affiliations have been developed and various studies have been conducted with TRANSCOM, the City of Newark, Maher Terminals, Parsons-Brinkerhoff, the New Jersey Department of Transportation (DOT), the North Jersey Transportation Planning Authority (NJTPA), and NJ Transit.

5. In 1992, the NSF awarded NJIT a $1 million grant to assist in the construction of a $2.6 million Geoenvironmental Research Laboratory. This facility provides instrumentation (ranging from a scanning electronic environmental microscope to x-ray fluorescence equipment) and experimental facilities for the conduct of geoenvironmental research projects, and it supports the new graduate program in Geoenvironmental Engineering. This is a rapidly evolving sub-discipline dedicated to development of environmentally sound solutions to geotechnical problems and to solving environmental engineering problems specific to soil and subsurface conditions. The facility was officially dedicated in September 1996.

6. During the academic year 1995, the NSF awarded NJIT a major instrumentation grant. Together with matching funds from NJIT, this award enabled NCE to purchase equipment for testing of high-performance concretes, essential ingredients that

determine the quality and durability of the public works infrastructure system. Research is proceeding on the development of concretes with very high strength and superior durability characteristics as a means of addressing the problems caused by a decaying infrastructure. Technology transfer from the university to industrial practice will be vigorously pursued. The instrumentation purchased by NJIT has been placed at the disposal of faculty, students, and researchers, not only for research but also for instructional programs in the Department of Civil and Environmental Engineering. Use of the facility has already been integrated into graduate curricula, providing experience and better comprehension of how high-performance cementitious composites behave.

7. Last year, NCE launched a new interdisciplinary effort in multimedia. Like MERC, the multimedia center is a partnership involving faculty from other universities, in this case Princeton University and Rensselaer Polytechnic Institute, as well as NJIT. The New Jersey Commission on Science and Technology awarded NJIT approximately $1 million per year for five years to partially fund the New Jersey Center for Multimedia Research (NJCMR). The NJCMR has already received a planning grant from the NSF for an Industry/University Cooperative Research Center. The research agenda of NJCMR has three thrusts: multimedia technology, collaborative hypermedia and the application of multimedia to education.

4. Accreditation

NJIT's accredited engineering and engineering technology programs successfully underwent re-accreditation review during this period. All the engineering technology programs are accredited by the Technology Accrediting Commission (TAC) of the Accrediting Board for Engineering and Technology (ABET) and will be reviewed again prior to the next Middle States team visit. The undergraduate programs in Mechanical, Electrical, Computer, Civil, Industrial, and Chemical Engineering are accredited by the Engineering Accrediting Commission (EAC) of ABET and will be reviewed during the same year as the next Middle States team visit.

5. Whither Engineering Education?

NCE aspires to play a leading role nationally in defining and delivering the best in engineering education as the twentieth century gives way to the twenty-first. In order to do so, the College is looking outward as well as inward as it plans ahead.

Instructive insights about educational leadership and reform often come from people outside the academic world -- people who have both personal experience and a stake in the outcome. NCE's alumni are products of higher education, and many of them are also employers of current college graduates. Their opinions about the current state of engineering education and what is needed in the future are generally frank, and the example set by their own career experiences holds important lessons. Likewise, people in business and industry, who assess the performance of college graduates they employ, are

in a good position to point out where improvements can be made in preparing students for the world of work.

Who are the alumni of NCE's engineering programs? It turns out that they are lawyers, teachers, managers of businesses large and small, policy analysts, financiers, researchers, physicians, and entrepreneurs as well as practicing engineering professionals. Obviously, the education they received went far beyond mere technical training. The study of engineering has always been and continues to be "good education," i.e., a rigorous course of study that develops students' intellectual capacities as well as their technological skills. The course of study uses the disciplines contained within engineering for the purpose of introducing students to various modes of thought and challenging them to be creative. The product of engineering education has been, and continues to be, an individual who can think in an integrative manner, a person who understands how to get things done, *not* a narrowly defined "expert" who knows only how to solve a limited set of problems. NCE therefore views engineering education as a liberating form of general education, a mind-growing experience that provides a firm foundation for virtually any field of career endeavor.

Second, what does industry have to say about engineering education? Executives and managers often express their need for college graduates who have three kinds of "perspective." Global perspective: people who understand the worldwide scope of today's business environment and can exploit the opportunities inherent in expanded markets and wider cultural contacts. Corporate perspective: people who understand the many -- often conflicting -- forces that impinge upon the life of a business enterprise and find ways to exhibit both keen competitiveness in the marketplace and socially responsible action as complementary values. Personal perspective: people who understand the importance of team effort, who have the confidence to adapt flexibly as changes occur, and who can communicate effectively.

NCE's goal, therefore, is to produce "complete professionals," people prepared to pursue whatever careers they may choose, including those that demand superb technical skills. The job has not been done if scientific and technological excellence are sacrificed. But engineering education has surely failed if the pursuit of science and technology precludes the development of broadly educated individuals who can continue to grow and learn throughout their professional lives. This is particularly important at the level of undergraduate education in an age of increasing academic specialization.

We intend to captivate students: literally *capture their imagination,* and then *hold their interest.* The key is to teach in context and give students a realistic preview of the roles they will be called upon to play as professionals. Recognizing the implications of corporate downsizing, the virtual corporation, technology-driven entrepreneurism, and multiple career paths, it is a responsibility of engineering education to make it clear to students that their career roles are likely to change a number of times over the course of a professional lifetime.

How is all this to be accomplished? There are no simple formulas for success. But it is certainly possible to name some factors that can contribute to the reform of engineering education. The introduction of new technologies to supplement traditional teaching techniques, the integration of research and professional practice into undergraduate teaching, and institutional recognition of faculty efforts in undergraduate education are among them. A broad integrative experience that demonstrates the comprehensive nature of engineering, and its relationship to the whole of the enterprise economy, should come at the very beginning of the undergraduate curriculum. This should include an introduction to the many forces that determine whether a product will be commercially viable: e.g., market demand, potential return on investment, product design, manufacturability, and environmental costs present and future. Other total design experiences and actual professional experiences are invaluable. Wherever possible, problem formulation should include a global dimension. Multi-disciplinary approaches to problem-solving should be introduced. As a means of encouraging cooperation and team-work, students should be organized into multi-faceted groups that draw upon individuals' varying strengths. And, because they must ultimately communicate concepts to a lay public, students should be required to write project reports that are to be graded not only by engineering faculty for technical content and feasibility but also by humanities faculty for style and clarity of expression.

Our success as a nation depends upon the extent to which the higher education enterprise can continually replenish the supply of people with the ability to serve as leaders in a global economy, keep American corporations at the cutting edge, start and develop new business enterprises, design and produce goods and employ materials in an environmentally benign way -- and do all these things with respect and appreciation for diversity. NCE has made a good start in this direction. Completion of the journey will be its mission for the foreseeable future.

The School of Architecture

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1. Summary

The practice of architecture unleashes creative talents to improve the quality of human life. It is an intellectual adventure that combines inspiration, judgment, and informed decision-making. The education of the architect involves a rigorous course of study that encourages each student to reach his or her full potential, to find personal challenges, and to create the preconditions for life-long growth. At NJIT, the study of architecture takes place in a setting that is like an extended family built upon direct and intensive contact between faculty and students and upon collegial collaboration.

Changes in society tend to be reflected in buildings and structures. As society transforms itself, much of the infrastructure and many structures will have to be changed and rebuilt. The School of Architecture (SOA) is committed to educating professionals capable of designing the building process of tomorrow.

Since 1992 a number of significant changes and improvements have taken place. The full implementation of a new curriculum, the addition of dual degree programs, and the introduction of the new master's program in Infrastructure Planning have all contributed to a vibrant and vital academic milieu. The SOA has expanded on its service role by engaging in projects designed to meet the needs of the local community. Its commitment to a leadership role in the area of computer-aided design continues unabated.

Faculty development has been encouraged by identifying creative professional opportunities and creating academic incentives such as special courses in CAD, faculty competitions, and released time for research.

The scope of opportunities for students has also been expanded. The summer program in Sienna and the mentoring program are now in their fourth year. The Super Jury gives a select number of students an opportunity to show their work to a larger audience. The lecture series and exhibition schedule introduces additional stimuli.

Recruiting, including the high school competition, is national in scope with the result that more students are drawn to NJIT from a wider geographic area.

In short, the state of the SOA is good and prospects for further development are excellent.

2. *Mission: the Pursuit of Excellence in Education, Research, Economic Development, and Service*

The School of Architecture is committed to the pursuit of excellence in education, research, economic development, and service. Its priorities and the allocation of its resources reflect these elements of the university's mission.

NJIT is the only public institution in New Jersey that offers a program in Architecture. The only other school of architecture in the state is at Princeton University. This underscores the importance of the SOA's commitment to public service and its involvement in local communities. Furthermore, the School of Architecture must measure itself against other schools of architecture nationally. Continuous critical self-evaluation has led to steady improvements in the quality of the educational program and heightened commitment on the part of the faculty.

Education

In the future, it is likely that a considerable number of graduates from accredited architecture programs will pursue careers in fields other than traditional architecture. The teaching of architecture, therefore, has to provide a superb professional education, while at the same time anticipating a much broader application of professional expertise. For many students, the study of architecture serves as a general education for a multiplicity of careers rather than solely for a narrowly defined role as a professional architect. This has a significant impact on what is being taught and, more particularly, how it is being taught.

The pedagogical conundrum posed by the need to offer architectural education that serves simultaneously as a general education and a professional education has been debated by the faculty over the last five years. It was concluded that an explicit statement of goals and objectives, as well as an explicit statement of what information the study of architecture imparted, are needed. Furthermore it is necessary to define how architecture serves to teach generalized skills and knowledge.

Another response to changing needs during the last five years was the establishment of dual degree programs at the graduate level. These programs allow a student to obtain a both a master's degree in architecture and a master's degree in a related field on an accelerated basis. The two cognate programs presently offered are the Master of Science in Management taught at the School of Management and the Master of Infrastructure Planning taught at the School of Architecture. Both of these programs augment the skills of an architect, thus introducing additional career options.

Excellence in architectural education relies heavily on the studio system, the most unique feature of an architect's education at NJIT. In the studio setting twelve to fifteen students meet with an instructor three times a week for half a day, enabling every student to pursue

a personal idea to its limits. The studio provides an intensive, intimate interaction between teacher and student with a high degree of accountability. It is the pedagogical mechanism that integrates the knowledge gained in all other courses. It provides a forum for analyzing problems and generating possible solutions. Students learn to have an idea, develop it, polish it, present it, and defend it effectively to their peers and professors. The studio is where students learn to love architecture and develop a passion for their work. It gives them a rare sense of accomplishment and fulfillment.

First rate teaching talent is essential. Proximity to New York City allows the School of Architecture the luxury of choosing from an large supply of inspired, talented professionals that includes a healthy mixture of full time academics, whose primary function is to further the field through academic pursuits, and adjunct faculty, whose contribution stems primarily from their work as practitioners. This staffing pattern is similar to the mix of experimental and clinical faculty found in medical schools. In the SOA, adjunct and full time members of the faculty act as equals and colleagues in all respects, producing an atmosphere of high professional expectations and healthy competition.

To foster a sense of competition and to set standards for studios, a faculty "super jury" convenes at the end of each semester. Its function is to choose six individual student projects from among approximately 180 potential submissions. The idea is to invite criticism from critics and professionals outside the School for some of the most interesting and challenging work done by a select group of students. They, in turn, have to present to a large audience of their peers and faculty. The super jury also forces the faculty to discuss in detail the pedagogical objectives of each studio by examining the work of their best students. Furthermore, it sets standards of design excellence for the School as a whole. This innovation, now five years old, has insured a uniformity of effort and expectations across the School.

The use of the computer in the design studio and elsewhere in the curriculum has had a profound impact on the ability of students to express themselves graphically; it has also opened many avenues for employment. The fact that each student is given a computer by the university at the beginning of the freshman year underscores NJIT's commitment to the use of the electronic media in studying, learning, and designing. The ubiquitous nature of the computer on campus has insured that by the time students graduate they have a high degree of computer literacy and expertise.

Research

The pursuit of excellence in research has been a fruitful undertaking in the School of Architecture. Research is generated both by the Center for Architecture and Building Science (ABS) and by individual faculty members.

The ABS Center has attracted interesting research projects and has built up a team of experienced researchers. Much of the research is carried out by graduate students who

augment their educational experience while earning some financial assistance for their efforts. The high caliber of the research and the many research opportunities create an atmosphere of inquiry that is healthy and engaging.

In addition, individual faculty members have obtained significant research grants. Two faculty members are engaged in a large scale research program for the federal Environmental Protection Agency in partnership and cooperation with faculty from other institutions of higher education and with the building industry. Its main purpose is to build a national network and to widely disseminate experiments that will foster the awareness of energy conservation techniques in the construction of houses.

Three other faculty members are engaged in research relating to the application of software in the area of computer-aided design. Some of these inquiries push the envelope of non-verbal communication and its role in distance learning.

There is also a fairly prolific output of books and articles dealing with theoretical subjects that express the particular views of faculty members. Graduate students are often involved in the formulation and execution of these projects.

The idea of all these various research programs is to establish an atmosphere of academic inquiry and to encourage students to participate. Research is not just an auxiliary activity; it is a way of thinking about problems. The analysis and systematic search for solutions is an important intellectual discipline. It introduces a rigorous format for inquiry that has wide applicability. The fact that much of this research is at the cutting edge of various fields gives students a taste of what is possible and whets their appetite to make their own contributions to the field.

Economic Development

The pursuit of excellence in economic development consists primarily of two thrusts. The first is concerned with the economic development of the area immediately adjoining the university. A plan for a Science Park was designed by the faculty and some students and was subsequently adopted. This plan dealt with the development of housing and a million square feet of research and development space as well as a parking structure. This project could spawn further economic development in the area and the region.

The second thrust involves commercialization of an invention that originated at the university. The School of Architecture is working on the constructive reuse of an industrial waste product. The research uses a new fly ash technology in an effort to produce new commercially viable building materials.

The involvement of students in these efforts not only provides employment opportunities but also engenders in them the idea that entrepreneurial ventures can be intellectually rewarding as well as profitable.

Service

The pursuit of excellence in service to local communities, the state, and the nation takes the form of projects that support the work of non-profit organizations and governmental bodies. At the request of communities or non-profit institutions the School selectively applies its skills and knowledge to develop solutions.

These projects provide opportunities for students to work on real problems with real clients. The experience also awakens the idea of an involved citizen and the notion of public responsibility, important in the development of an ethical and moral basis for professional activities.

3. Five-Year Review and Update

The School of Architecture serves a student body drawn from across the United States as well as other nations, and offers programs that feature advanced training in computer aided design. The following are some of the critical areas that have contributed to the School's progress over the past five years:

Strategic Planning

A changing world, in which new technologies and concern for the environment are high on the national agenda, mandates innovation and thoughtful planning. The School of Architecture mapped out a five year plan in 1991 to respond to the changes facing the profession and the challenges facing graduates.

The School then embarked upon a strenuous effort to gain national recognition and attract highly able students to the undergraduate and graduate programs. A multi-pronged approach was launched that examined every detail of the School's curriculum, delivery of services, recruitment process, degree requirements, service to the community, and technological proficiency.

Curriculum Changes

Reorganizing the delivery of the five year undergraduate program was one of the first priorities, especially setting the third year as a mandatory computer aided design year. Large lecture classes were introduced to improve efficiency without sacrificing pedagogical objectives. Organizing the studios to allow choice among some forty options during the student's last two years proved particularly successful.

The School developed a dual degree program with the School of Management. This unique degree program offers undergraduate students the option of investing an additional year in order to graduate with a B.Arch. and an M.S. in Management.

The School is also offering the first Master of Infrastructure Planning degree in the nation. It is designed to prepare students to confront the multitude of issues facing the rebuilding of America's cities. The M.I.P. program is directed at students with previous degrees in architecture, landscape architecture, urban planning or civil engineering. The necessary interdisciplinary teaching, research, and practice is made possible through the array of resources provided by the university.

Facilities

The SOA's attractiveness was improved by the renovation of Weston Hall, providing an additional eight studios, six seminar rooms, and faculty offices. The new Imaging Labs, three at first, nine today, quickly became recognized as state of the art teaching facilities. Over $1 million in donations of software has won beta site recognition for the labs and national publicity as the School is known as "one of the most computer intensive programs in the nation."

The old architecture library was woefully inadequate, seating only fourteen students in a noisy and cramped atmosphere. A new satellite library was opened on the fifth floor of Campbell providing seating for seventy five in a professional learning environment. Thousands of books have been added to the collection in response to identified needs. The university remains committed to annual purchases.

The School of Architecture is about to begin the most ambitious building program in its twenty year history. The university has committed the necessary funds to build a facility of approximately 105,000 square feet to house the School. The project, now underway, consists of a complete remodeling of Weston Hall, a new addition of thirty thousand square feet, and some additional space in Campbell Hall. The facility is being designed by Hillier Associates to respond to programmatic needs developed collectively by the faculty of the School of Architecture.

Accreditation

At the June 1992 meeting of the National Architectural Accrediting Board (NAAB), the board reviewed the visiting team report on the School of Architecture and formally extended accreditation of its professional programs for five years.

The visiting team stated that "the curriculum in both the undergraduate and graduate programs is responding to the ever-expanding responsibilities and complexities of today's architectural practice. The urban setting of the School provides a continuing challenge to both faculty and students to respond with architecture adapted to contemporary needs of the city. The faculty is diverse in its specialties and interests and is quite aware of the opportunities for an inner-city program to try to understand the particular needs of the day. The research program which the School is fortunate to have is both encouragement to faculty research and a source of new knowledge for students."

In 1996 the SOA completed a comprehensive self evaluation. In February 1997 an NAAB site visit took place, and the visiting team's exit interview with the president was positive. A formal decision by the NAAB on reaccreditation of the SOA is expected shortly.

Diversity

The School of Architecture actively promotes diversity within its student and faculty ranks. The following table provides demographic data on the School's student body:

Category	Undergraduate Fall 1992 (percent)	Undergraduate Fall 1996 (percent)	Graduate Fall 1992 (percent)	Graduate Fall 1996 (percent)
Female	24.1	25.3	41.9	34.1
African American	24.5	5.2	0	2.3
Latino	12.6	15.6	4.8	14.1
Asian	9.9	7.3	1.6	2.3
Native American	0	0.2	0	0
International	4.7	4.6	9.7	14.1

Faculty and Student Interaction with the Administration

The Dean's office has found several ways to encourage interaction with faculty and students.

Students and faculty members are afforded convenient access. A variety of meetings are held throughout each semester to learn about faculty concerns and student problems, and to focus on "ideas." Whether it is a day long faculty colloquium to discuss the future teaching of architecture or "Pizza with the Dean," healthy dialogue takes place about the present and future.

As the School approached approval of a building program the faculty devoted two days, including a Saturday, to reviewing plans, and making suggestions about facilities that will benefit the delivery of our program. Lecture series, awards assemblies, teaching excellence awards, gallery shows, and publication of a school magazine all serve to create a cohesive School of Architecture community.

The National High School Design Competition

Since 1990 the School of Architecture has sponsored a design competition for high school students. At first it was restricted to New Jersey high school students. In 1993 the competition became the first national architectural design competition for high school students. The competition has attracted growing interest; in 1996 a thousand students from every state in the continental United States sent in registration forms, and 101 project submissions were received. Out-of-state enrollment in the School has more than doubled, largely as a result of the interest generated by the competition.

Faculty and Student Competitions

A cross section of non-profit, government, and corporate sponsors have offered financial support for five specific design solutions. Over $70,000 in prizes have been won by School faculty members and students. Faculty participated in competitions to design a homeless shelter in Paterson, housing prototypes in Atlantic City, and the Hazell Center at NJIT. Student competitions included a Jersey City waterfront site and a redevelopment site in Bloomfield.

The competition concept further links the School of Architecture's resources with numerous groups in search of outstanding design solutions.

Community Service

Woven throughout the fabric of NJIT is the concept of community service. The School of Architecture has strongly embraced this commitment and has been involved in thirty five community based projects including the following:

- Atlantic City Competition
- Paterson Homeless Shelter
- Montclair Museum
- Jersey City project in conjunction with PSE&G
- Model for Giant Stadium and Science Center
- Hazell Center
- TriBeca Ballfield and Housing Project Design
- Bloomfield Mixed-Use of old Westinghouse site
- Newark Performing Arts Signage Program
- Newark Tomorrow--Six Projects at the Newark Museum
- Nyack Waterfront
- Head Start Prototype Conference

The following projects represent some of the Newark based projects in which the SOA has either been directly involved or entered into a collaborative arrangement with a Newark-based non-profit group:

- Homeless shelter, City of Newark
- Halsey Street Design
- Renaissance Newark
- Renovation of Old Newark Jail
- Essex Club Adaptive Re-Use for Historical Society
- Newark Waterfront Design
- Renovations to the Performing Arts Center Area
- Science Park Model
- New School of Architecture

- Hazell Center
- Civic Design and the Performing Arts Center
- AIDS Housing for Children
- NAIOP Conference on Urban--Suburban Conflict
- Housing Conference, Newark and Affordability
- Theater at the Newark Museum
- Housing studios and projects with New Community, Habitat for Humanity, and other groups

The newest initiative is a career discovery program that will focus on gifted and talented students in grades K-8 in the Newark School District. A faculty member has been assigned to the program, and planning sessions have been held with the Newark Deputy Superintendent and twelve teachers assigned to gifted and talented students.

Mentoring

In 1992 it was decided that a mentoring program involving regional professionals with our upper level students would be beneficial. Every year since twelve to fifteen professionals are teamed with SOA students for a year long partnership.

Siena

Four years ago the School set up a summer abroad program to provide cultural and academic enrichment for students. The self-supporting program attracts approximately ten students every summer. The requirements include an Italian culture course, Italian history, a sketching course, and a studio. Students are provided with an outstanding opportunity to engage in weekend travel throughout Europe. Financial aid is available for participants.

The Professional Advisory Board

Critical to the fulfillment of the School of Architecture's goals is the support of the business community. During the past five years the Professional Advisory Board has evolved into a strong partner. Comprised of corporate officers and professionals, the members are individuals who are committed to improving their community, their state, and their nation.

Endowment

Endowment income is important to the School's future plans for recruiting undergraduate and graduate students. Over the past five years the faculty, friends, and staff of the SOA have worked to increase scholarship endowment funds, and have succeeded in raising over $100,000. The University's major fund-raising campaign is targeting endowment as one of its primary objectives. The School of Architecture, along with other constituent units

of NJIT, will benefit from the ability to offer more scholarships funded by the increased endowment.

4. Strategies for the Next Five Years

The last five years has been an exciting period of rapid development in many respects. The litany of achievements, however, does not address the most profound development, a newly found confidence and unanimity of purpose that has given rise to a series of further innovate initiatives. As a consequence, morale is high and the School of Architecture is dreaming about what further could be.

NJIT provides an educational setting consisting primarily of undergraduate professional degrees. It is therefore imperative that all its educational programs provide professional skills and knowledge. However, it is equally important to broaden professional education through liberal arts. Critical thinking, sound habits of mind, the ability to generate and communicate ideas, and the development of sound judgment should be the hallmarks of a successful undergraduate education.

The SOA has therefore embarked on a bold course of action which includes the following:

- A more intensive use of the computer will be expected in all segments of a student's education. Each student will have a powerful lap-top computer which will be used for design as well as support courses.

- The School will shift to interactive information (handled through the library) which will dispense learning aids, lecture notes, assignments, and review material. The student will be able to download and input information throughout campus or via modem from home.

- The development of autodidactic modules, using computer technology, will allow students to learn introductory materials and tutorials at their own pace. This will not replace but augment traditional classroom teaching.

- The design studio projects will be changed to create the "need to know." Thus each studio project will include another dimension as an integral part of the design process such as the calculation of the structural frame or the calculation of the main HVAC systems or establishment of the economic viability of a project through a pro forma.

- Radically new academic programs will allow an architecture student to change majors and end up with an unaccredited four-year B. Arch. with a concentration in Construction Management, Infrastructure Planning, CAD animation, or Architectural Science. All of these unaccredited degrees can lead to graduate degrees in their respective academic areas; they also provide the student with the possibility of a graduate degree in architecture. This broadening of offerings should attract additional students and increase the educational choices for students of architecture.

- The development of proprietary knowledge and products will allow students and faculty to create intellectual property. The development of proprietary ideas will be a partnership between the university, the department, and individual faculty members and students. It is anticipated that some of these efforts will prove to be commercially viable.

- Finally, a new building will be built which will fully accommodate the special needs of the School of Architecture. The building also has some symbolic significance: it recognizes the contribution of the School of Architecture to NJIT and to the community at large.

The School has a good deal of momentum led by highly motivated faculty. It is anticipated that the pace of change will accelerate over the next five years and that the School of Architecture will gain in prominence with a regional or even national framework. Enrollment is likely to increase incrementally while at the same time maintaining or increasing its degree of selectivity.

The School of Management

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1. Mission

The mission of the School of Management (SOM) is to educate students as professional managers and prepare them to assume leadership positions in technology-based organizations and in the service sector. Undergraduate and graduate programs offered by the School of Management are designed to fulfill this mission.

2. Undergraduate Programs

Major Programs

The curriculum of the Bachelor of Science in Management program features two major thrusts: information systems management and management of technology. The first focuses on the design of information systems that improve business effectiveness. Course work is cross-disciplinary and features applications of information technology to business problems with an emphasis on improving productivity and competitiveness. The second offers opportunities to learn about various functional areas of management and to develop the skills necessary for entry level positions.

The SOM faculty has undertaken major revisions of the curriculum not only to respond to current needs but also to changes in the country's economic position. The revised curriculum has been built around two pedagogical principles: interfunctional integration and experiential learning. The traditional distinct specializations corresponding to functional areas of a typical business enterprise (e.g., marketing, human resources management) have been replaced with a general management specialization that emphasizes relationships among management functions. Experiential learning ensures a high level of technological literacy by exposing students, first hand, to technologies used in business. A capstone information management systems course captures both pedagogical objectives in that students are required to design an information system working in cross-functional, semi-autonomous project teams. Thus the School is assuming a proactive role in adapting business curricula to present and future conditions in the business world.

Minor Program

SOM also offers a minor in Management for non-Management undergraduate majors. Students from various departments and disciplines have the opportunity to study the fundamental functional areas of management through the minor program. This broadens their educational experience, improves their employability, and prepares them better for graduate study in business and management. The minor in Management has grown rapidly, enrolling 201 students in Fall 1996.

3. Master's Programs

The Master of Science in Management program offers opportunities to specialize in various functional and interdisciplinary areas. The courses in functional areas are geared to students who are interested in management of technological organizations and technology. For example, in the area of marketing, the emphasis is on activities related to implementing and commercializing new technologies in various forms. Similarly, the specialization in finance deals with financing of technological organizations.

SOM has developed a joint degree with the School of Architecture which provides an opportunity to get a degree in Architecture and an M.S. in Management in five and a half years. Other interdisciplinary areas involve environmental management, transportation management, and information systems management. SOM is one of the few schools of management offering a degree that combines auditing and information systems.

Another component of SOM's mission is to provide educational opportunities for people at any stage of their professional careers. To fulfill one aspect of this mission, SOM has developed an Executive Program for people at the mid level of their careers. This intensive program focuses on management of information in a global context. It is a fourteen month long program leading to the degree of Master of Science in Management.

4. Ph.D. Program

Although SOM does not offer the Ph.D. in Management, SOM faculty participate in the Ph.D. program offered by Rutgers University. Ten SOM faculty members hold five-year, renewable appointments as members of the Rutgers graduate faculty and have full privileges including access to Rutgers' computing facilities, library, and databases. SOM faculty teach courses in the program, evaluate students, attend seminars, supervise dissertations, serve on examination committees, and are invited to sit on curriculum committees. Program graduates receive their degrees from Rutgers. Selected examples of recently completed and current dissertations are:

> "Technological learning, organizational strategy and performance of pharmaceutical firms" (thesis completed by Paul Bierly under the supervision of Dean Chakrabarti)

"Resource orientation, entrepreneurial orientation and growth: How the perception of resource availability affects small firm growth" (thesis completed by Terrence Brown under the supervision of Dr. Kirchhoff)

"Innovation speed: Antecedent conditions and outcomes" (thesis completed by Eric Kessler under the supervision of Dean Chakrabarti)

"University - industry relationship in technology development and utilization" (thesis of Michael Santora underway under the supervision of Dean Chakrabarti)

5. Accreditation

The faculty and administration have been fully committed to the goal of achieving accreditation. When the American Assembly of the Collegiate Schools of Business (AACSB) created the new category of "Candidacy" for institutions wishing to seek accreditation, SOM applied. In October 1993 SOM was one of the first fifteen schools in the U.S. to receive "Candidacy" status. In 1996 SOM completed a comprehensive self evaluation, an AACSB site visit took place, and the visiting team made a positive recommendation. In March 1997 NJIT received a letter announcing that the AACSB's Business Accreditation Committee concurred with the team's recommendation, and that the Board of Directors had ratified the decision. With this achievement NJIT joins Rutgers University, Seton Hall University, and Rider University as the only New Jersey institutions with AACSB accredited business programs.

6. Role within a Publicly Supported Urban University

As part of a publicly supported urban institution, SOM assumes a special role in promoting economic development and providing educational access. SOM faculty and graduate students work on many projects related to entrepreneurship and small business development. SOM faculty and students work in cooperation with the staff of NJIT's research centers who play a key role in technology transfer and assistance to business. The Office of Community Service works with SOM faculty and students in various projects which assist not-for-profit organizations and social service organizations in their management problems. Students have also accepted internships at various organizations as part of their educational preparation.

A graduate capstone course, Entrepreneurial Strategy, provides students with the opportunity to work on a case study conducted for a small business. Students select a project from a list of real firms which have requested assistance on some aspect of their business, and a final written report of the students' work is delivered to the client. In the area of cooperative education and internships, SOM students have analyzed the real estate budget for MCI International, provided support in the development and implementation of a new cost accounting system for Ortho-McNeil Pharmaceuticals, supervised the installation of telecommunication equipment for AT&T, and assisted in survey-development and the analysis of shipping companies for the Port Authority of New York

and New Jersey. Community service projects have included the design of e-mail/Internet and Wide Area Network system for the New Jersey Performing Arts Center, participation in the Teen Business Camp on the NJIT campus (developed by a Merrill Lynch executive and featured in the "Entrepreneur" column of *Black Enterprise* magazine), and participation of students in projects for the Newark Museum, AmVets, Cities in Schools, and the Carter G. Woodson Foundation.

SOM actively promotes diversity within its student and faculty ranks. The faculty includes people of many national and ethnic origins. It also attempts to maintain diversity in terms of gender. Its student body is also quite diverse. The following table provides the demographic data on the SOM student body:

Category	Undergraduate Fall 1992 (percent)	Undergraduate Fall 1996 (percent)	Graduate Fall 1992 (percent)	Graduate Fall 1996 (percent)
Female	24.1	23.1	39.4	37.0
African American	24.5	26.2	9.1	8.8
Latino	12.6	9.5	4.2	7.5
Asian	9.9	18.1	8.2	6.6
Native American	0	0	0.3	0
International	4.7	7.7	9.1	10.2

SOM offers courses leading to the Master of Science in Management degree at two off-campus locations in New Jersey: Drew University in Madison and Ramapo College in Mahwah. The courses offered at both locations are equivalent to those offered on the Newark Campus and are delivered by SOM's full-time faculty. Students at extension site locations have access to the libraries and computing facilities of the host institutions as well as those of NJIT's main campus.

The SOM Advisory Committee is comprised of leaders from the business, professional, and government communities. The Committee serves to establish a direct link between the School and two of its important constituencies, providing valuable input to the faculty and administration.

7. Growth

Growth of the School of Management has taken place at the graduate level, as evidenced by the number of degrees awarded over the past five years:

Year	No. of Bachelor's Degrees	No. of Master's Degrees
1995-96	32	160
1994-95	41	138
1993-94	36	142
1992-93	27	90
1991-92	40	35

The growth of the Executive Program is reflected in the following table:

Year	No. of Students Enrolled in Executive Management Program
1995-96	49
1994-95	47
1993-94	22
1992-93	18
1991-92	15

The College of Science and Liberal Arts (CSLA)

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1. Mission

The mission of the College of Science and Liberal Arts (CSLA) is to provide the scientific and cultural underpinnings of a first-rate technological university education; such a mission demands excellence in teaching and research. The CSLA's programs are designed to provide the knowledge and experience needed to compete and succeed in the global economy. As the world becomes increasingly complex, the solutions to technical problems require attention to economic, political, and ethical considerations. The College provides linkage between the diverse scientific and humanistic areas through its own programs and in coordination with the other colleges at NJIT.

2. Overview

The College of Science and Liberal Arts (CSLA) is comprised of five departments: Computer and Information Science, Humanities and Social Sciences, Physics, Mathematics, and Aerospace Studies. With the exception of Aerospace Studies, each department offers both undergraduate and graduate degree programs. The History and Physics faculties are "federated" with Rutgers-Newark as described below. The five departments have a combined faculty of 133, representing approximately 38% of the total NJIT faculty. Undergraduate teaching makes up a sizable part of the College's workload. The faculty's contract research for FY 1995-96 exceeded $7,300,000.

CSLA provides a strong academic foundation for all NJIT students. In addition to developing professional expertise in computer and information science, the disciplines within CSLA offer students the social, cognitive, and personal skills to work and communicate effectively within a diverse and global professional environment.

While the need for knowledge in specific areas remains essential, the need for problem-solving, critical-thinking, and decision-making skills has intensified. The 48 required credits of undergraduate course work that constitute the "General University Requirements" (GUR) are distributed across the fields of English, mathematics, natural science, computing, history, social sciences, humanities, management, and technology. This course work seeks to ensure that graduates have a thorough understanding of themselves and the way their professional knowledge fits into their overall development. Additionally, all NJIT undergraduates are

encouraged to take academic minors, programs that usually require 15-18 credits of course work in specific areas of study. The minor programs are designed to broaden students' knowledge in areas that would otherwise be touched upon only in a peripheral manner.

Increased awareness of and access to computer courses and facilities in elementary and secondary schools, and the high demand for computing professionals in the job market, have resulted in a dramatic increase in the number of applications, undergraduate and graduate, in the CSLA's computer and information science programs. While enrollments in such programs have increased nation-wide, the increases at NJIT have been higher than the state and national average. The recruiting efforts of the Department of Computer and Information Science focus on establishing relationships with high schools through visits, direct mailing, and telephone contacts. The department also offers a yearly conference on computer science education to secondary school teachers and a summer program for high school students.

The university requires the formation of an advisory committee (comprised of members of the business, professional, and government communities) to the Board of Trustees for each academic discipline. For the CSLA this has proved an excellent means of broadening perspective and enriching the educational environment by bringing the faculty into closer contact with the business and government communities.

As is true of all academic units at NJIT, the CSLA actively promotes diversity. The following table provides the demographic data on the CSLA student body:

Category	Undergraduate Fall 1992 (percent)	Undergraduate Fall 1996 (percent)	Graduate Fall 1992 (percent)	Graduate Fall 1996 (percent)
Female	21.0	24.6	24.5	30.3
African American	9.1	10.6	2.0	3.0
Latino	7.3	9.8	1.1	3.0
Asian	24.1	24.3	16.1	14.6
Native American	0.2	0.1	0	0.1
International	7.7	5.3	44.3	38.2

3. New Programs

Since 1992 several new programs have been established and are now offered.

The Master of Science in Environmental Policy Studies is an interdisciplinary program for professionals whose careers require mastery of the politics, economics, history, philosophy, rhetoric, and ethics of environmental protection, waste reduction, and recycling strategies.

The Master of Science in Professional and Technical Communications is designed to prepare students with skills needed for careers in the field of technical communications. In a scholarly and professional manner, students develop their abilities in writing, research, editing, collaboration, and visual design. Undergraduates can earn a Bachelor of Arts or Bachelor of Science degree in Professional and Technical Communication. The degrees prepare students

to work in the expanding and rapidly transforming field of high tech communications (e.g. the World Wide Web). Each degree track readies a student to enter any one of a number of professional fields. Communication specialists are required in a wide range of positions in business, industry, government, journalism, as well as, generally, in technological, scientific, humanistic and artistic communities. In response to the rapid growth of sophistication in the use of electronic modes of communication, students are expected to acquire an understanding of new communication technologies and media in the program's modern computer laboratory.

The Bachelor of Science in Nursing, offered jointly by NJIT and the University of Medicine and Dentistry of New Jersey in cooperation with Burlington County College at the Technology and Engineering Center at Mt. Laurel, is designed to give practicing nurses an opportunity to develop additional professional education at the baccalaureate level. This takes the form of courses devoted to clinical decision making, nursing informatics, community health nursing, and pathophysiology and related pharmacology. In order to fulfill the General University Requirements, students take a minor in Technology, Gender, and Diversity. This minor allows nursing students to understand how society and technology interact and helps students to prepare for successful employment and leadership through courses such as Managing Diversity and Women in Technological Cultures. In March 1997 an accreditation team for the National League for Nursing (NLN) recommended full accreditation for the Bachelor of Science in Nursing degree program. The accreditation team found that the program fully met each of the twenty applicable criteria for structure and governance, as well as each of the five outcomes criteria delineated by the National League of Nursing Council of Baccalaureate and Higher Degree Programs. A final decision on accreditation is expected by early summer.

The NJIT-Rutgers Federated History Department is offering a new Master's concentration in history of technology, environment, and medicine -- the only one of its kind in the region, and one of only a handful of history programs nationally that offer this specialization. Students take small seminars in such areas as environmental history, the history of public health, gender and technology, and the history of communications. NJIT also offers a joint Bachelor of Arts degree in History with Rutgers-Newark, which parallels the Master of Arts degree in that history majors at NJIT will do a concentration in history of technology, environment and medicine.

The interdisciplinary Ph.D. program in Biomedical Informatics is offered jointly by the Department of Computer and Information Science at NJIT and faculty of the University of Medicine and Dentistry of New Jersey in Newark.

The new Ph.D. program in Mathematical Sciences was approved and is offered jointly with faculty at Rutgers/Newark. NJIT students may take graduate mathematics courses at Rutgers/Newark and have the credits accumulated in these courses applied to the NJIT degree. The mathematics programs at NJIT and Rutgers/Newark are essentially different, i.e., the Ph.D. program at Rutgers is essentially a program in pure mathematics while that at NJIT is in applied mathematics. The distinctive emphases of NJIT and Rutgers are complementary and mutually reinforcing. Although the departments are autonomous, there is a joint executive committee which coordinates course offerings in the interest of facilitating

students' progress. For example, the Rutgers department taught analysis during AY'96-96, and students from both institutions were enrolled. Similar reciprocity will occur in subsequent years in analysis and other areas.

New programs at the M.S. and Ph.D. levels have been initiated in Materials Science and Engineering (MSE). Interdisciplinary by their very nature, these programs combine NJIT's strengths in physics and most of the traditional engineering disciplines. MSE is of special importance to NJIT because the field lies at the core of so much of the contemporary research infrastructure, both in academe and in industry. These programs will prepare students for the enormous research and business challenges inherent in a burgeoning field.

A new Ph.D. program in Applied Physics has also been approved. NJIT's Physics Department is in the process of forming a federated department with the Physics Department of Rutgers/Newark. While the faculties of both departments have approved the concept, the NJIT Faculty Handbook and the Rutgers Faculty of Arts and Sciences Bylaws must still be modified to fully accommodate the federation concept. It is anticipated that a federated department will be created in the near future. The two departments will then function as a single department under the following guidelines:

a. The department will have a single chairperson. A joint search has already been carried out, and it is agreed that Dr. Anthony Johnson (currently chair of the NJIT Physics Department) will be the federated chair. The chair will report to the deans of the respective colleges at both NJIT and Rutgers/Newark.

b. The federated department will have a single budget with funds coming from both institutions.

c. Individual physics courses will continue to be integrated into the various curricula of the two institutions. Courses are to be denoted simply as physics courses open to students of both institutions. They are taught by faculty of what will be the federated physics department, and students from both universities will enroll in them.

In terms of the degree programs (B.S., M.S., and Ph.D.) students presently proceed as though the physics departments were already federated. Course offerings are not duplicated. Cross-registration in any of the physics offerings has been available to students from both universities for several years. Research programs are also coordinated.

4. New Educational and Research Initiatives

Significant developments have taken place within the educational and research infrastructure of CSLA. Principal among these are:

Optical Sciences

In 1996, the National Science Foundation awarded NJIT a Combined Research Curriculum Development (CRCD) grant to develop multi-disciplinary Optical Science and Engineering courses at NJIT under the direction of Drs. John Federici and Anthony Johnson. As part of this effort, faculty from the departments of Physics, Electrical and Computer Engineering, and Chemical Engineering, are developing complementary applied optical sciences and engineering courses which will provide a unified, multidepartmental optical science/engineering curriculum and emphasize optics courses which will provide laboratory and classroom training to undergraduate and graduate students in emerging areas of industrial and national importance.

In particular, our efforts are focused on the collective strengths of the applied physics and engineering programs: environmental monitoring and detection of pollutants, industrial process monitoring, optoelectronics, and ultrafast optics and optoelectronics. This multidisciplinary program focuses on optical science and technology as an enabling technology -- a technology with applications to many different engineering and scientific disciplines and the potential for significant contributions to those disciplines. In addition to its "enabling" aspects, optics technology represents viable employment potential for new graduates.

An interdisciplinary team of five professors representing applied physics, chemical engineering, and electrical engineering have developed a unified optics program at NJIT consisting of three courses with integrated laboratory components. The three courses cover introductory optics principles, optics applications in applied physics, and environmental, industrial, and electrical engineering, as well as advanced graduate level research topics.

Ultrafast Optics and Optoelectronics Laboratory

Under the leadership of Dr. Anthony Johnson, Chairperson of the Department of Physics, a state-of-the-art Ultrafast Optics and Optoelectronics Laboratory is now located at NJIT. The laboratory is capable of generating ultrashort laser pulses of duration 100 femtoseconds (one tenth of one trillionth of a second) tunable over a wavelength span from 250-nm to 2100-nm (ultraviolet to the infrared). The laboratory will be used for interdisciplinary collaborative work and is being prepared to perform its first set of experiments on the ultrafast nonlinear optical properties of silicon nanoclusters.

Big Bear Solar Observatory

Through a national competition, NJIT researchers Drs. Phil Goode and Haimin Wang have been asked to assume the management of two world class solar observatories which will provide additional support for the research efforts of NJIT faculty members and add to NJIT's national and international recognition and prestige. It will also create opportunities for New Jersey companies to expand their business in infrared sensors and other optoelectronic devices.

For nearly a quarter of a century, Big Bear Solar Observatory (BBSO) has been recognized as the premier university-based solar observatory in the world. The observatory was sited on Big Bear Lake after an exhaustive two-year survey. The lake is at a high altitude, and the water itself stabilizes the air above it. Many surveys have shown that this site is the best in the world for daytime astronomy. This is true, in part, because BBSO avoids a significant problem for daytime observatories -- the heating of the ground by the sun.

Over the years, the observatory has been updated and expanded. In addition, a second solar observatory was added -- a solar array of radio dishes at Caltech's Owens Valley Radio Observatory (OVRO). The combined observatories have the unique capacity to simultaneously study the sun and its extended magnetic atmosphere. Magnetic storms on the sun can have a direct and deleterious impact on satellites, the earth's upper atmosphere, and electric power grids. Currently, both BBSO and OVRO are the sole property of Caltech.

Leading these observatories will place NJIT center stage worldwide in solar astronomy, which is an active and vibrant discipline around the world. We will be identified with the finest university-based solar observatory in the world. Further we will be leading a team of the country's finest institutions. These institutions are particularly strong in astrophysics. Initial members of the consortium include Caltech, University of California-Berkeley, Stanford, Harvard, and Montana State.

Electronic Enterprise Engineering

Professor Murat Tanik is director of the Electronic Enterprise Engineering (EEE) program, an interdisciplinary program including Computer Science, Engineering, and Management. The program consists of three major aspects: an academic curriculum offering B.S., M.S., and Ph.D. degree programs; a research program that is characterized by the integration of process engineering, coordination and collaborative technology, system/software engineering, and modern management theory and practices; and a commercialization program that works with industry to co-develop new technology or products, and the formation of industry specific consortia to facilitate rapid technology transfer from laboratory to practice. Getting in on the ground floor of this new program will give companies access to faculty and student researchers.

5. Awards

Four CSLA faculty members, Kenneth Farmer, Haimin Wang, Bonnie Ray, and Marvin Nakayama, were awarded the prestigious National Science Foundation CAREER Award -- two in the Department of Physics and one each from the Departments of Mathematics and Computer & Information Science.

Anthony Johnson, Chairperson of the Department of Physics, was elected a Fellow in the American Physical Society and was also awarded its Edward A. Bouchet Award. He was also made a Fellow of the AAAS (American Association for the Advancement of Science) at the Fellows Forum of the AAAS Annual Meeting.

Gregory Kriegsmann, Distinguished Professor in the Department of Mathematics, was appointed to the Editorial Board of the Institute of Mathematics and Its Applications (U.K.).

Zoi-Heleni Michalopoulou, Assistant Professor in the Department of Mathematics, has been selected to receive full support under the Office of Naval Research Young Investigator Program. Only 29 out of 300 proposals submitted were chosen to receive support.

The Alfred P. Sloan Foundation, one of the largest private foundations in the United States, has been making a number of grants to support Asynchronous (or anytime/anywhere) Learning Networks (ALN) which use the World Wide Web and related technologies to conduct classes online. Previously the Foundation awarded over $700,000 to NJIT for a project directed by Distinguished Professor Dr. Starr Roxanne Hiltz to initiate its program of research and educational delivery in this area. In December 1996, it awarded $450,000 for a new three year project, entitled "From Virtual Classroom to Virtual University." The objective of the new project is to institutionalize this innovation by creating a complete, coherent full-service ALN "university" at NJIT, which has the critical mass to achieve national prominence and to sustain growth in enrollments, quality of educational delivery, and revenues.

Drs. Geller and Perl's $1,050,000 contract to design the Object-Oriented Healthcare Vocabulary Server (OOHVR) was extended for four years. The contract is from the National Institute for Standards and Technology (NIST) Advanced Technology Program (ATP). It is part of the Healthcare Open Systems and Trials consortium. Papers were presented at the COOPIS, AMIA, and CIKM conferences.

Professor Jason Wang is principal investigator on a grant from the National Science Foundation for a joint project with the National Cancer Institute and New York University, which extends from July 1996 to July 1999.

6. Plans for the Future

As evidenced by the growth in enrollments and front-running research, CSLA is assuming a pivotal role at NJIT. The demand for the core disciplines such as the arts and letters, mathematics and physics are as strong as ever but the growth in computer and information science is remarkable. The changing role of CSLA demands a new vision for the future and this task is now being tackled by the new Dean and the faculty.

John M. Poate has been appointed Dean of the College of Science and Liberal Arts and Distinguished Professor of Physics (see under "Key Appointments Since 1992", pp. 97-98). Under Dr. Poate's leadership, the emphasis of the College's strategy will be not only to maintain its current core strengths but also to focus on those disciplines which will be key to NJIT's success in the future. The computer related sciences are a vital component, and teaching and research will grow in these areas. Another area of great importance where NJIT does not as yet have high visibility is that of the biological and life sciences. A strategy is

being charted to give NJIT a key presence in these areas which are synergistic with the university's existing strengths.

Technology and Engineering Center: A Branch Campus at Mount Laurel

In September 1995, NJIT and Burlington County College (BCC) began operations at a branch campus in Mt. Laurel, New Jersey. Known as the Technology and Engineering Center (TEC), this three-story, 63,000 sq. ft. building is a high tech academic facility containing classrooms, library, cafeteria, computer laboratories, and faculty and staff offices. It has ISDN and T1 connections, downlink capabilities, and ITFS for transmitting and receiving teleconferencing and telecourses.

Site acquisition, building construction, and equipment for the TEC were supported by a combination of fund sources including the Board of Chosen Freeholders of Burlington County, State of New Jersey bond issues authorized by the Jobs, Science and Technology (JST) Bond Act and the Jobs, Education and Competitiveness (JEC) Bond Act, as well as institutional commitments, at a total cost of approximately $15.5 million.

The TEC was conceived in the early 1980's in response to a regional need for programs in engineering and technology in the southern sector of the state, a need which had long been expressed by local businesses in that region. The then president of Burlington County College, Dr. Harmon Pierce, approached NJIT and proposed that the two institutions explore the feasibility of a partnership to meet the needs of business, recognizing that NJIT was already offering an M.S. program in Computer Science at a site in Moorestown. In the course of the ensuing discussions, the concept of a new branch campus where BCC would offer lower division courses and NJIT would offer upper division and graduate courses developed. After several years of analysis and negotiations with local and state officials, it was decided to construct a new facility for a southern branch campus. Burlington County was selected as the site because of the county's large size, the presence there of more than 60 engineering-based firms employing close to 13,000 employees, and the eagerness of BCC's current president, Dr. Robert Messina, and the county government to enter into a long-term partnership.

The TEC offers courses and programs consistent with the mission of each partnering institution. NJIT offers only upper division and graduate courses and programs for students from southern New Jersey. BCC continues to emphasize lower division courses and programs for county residents.

NJIT currently offers eight Bachelor of Science degree programs at the TEC: Computer Science, Computer Engineering, Electrical Engineering, Engineering Technology (Electrical option), Engineering Science, Nursing (jointly with UMDNJ), Science Technology and Society, and Technical Writing. In addition it offers a Bachelor of Arts degree program in Information Systems. It offers four Master of Science degree programs: Computer Science, Information Systems, Management, and Engineering Management. Two graduate certificate programs, Object Oriented Design and Project Management, are also being offered. Plans for Fall 1997 include offering courses leading

to Bachelors of Science degree programs in Management, Civil Engineering, and Industrial Engineering.

BCC offers courses leading to eight Associate degree programs at the TEC, from computer integrated manufacturing to surveying. BCC faculty teach all lower division, one- and two-hundred level courses for potential transfer students, jointly admitted students (AS/BS), and for any students in need of a bridge program leading to a NJIT baccalaureate degree.

NJIT is also seeking cooperative relationships with other colleges in response to the needs of New Jersey's southern region. Since the TEC opened, one such relationship has been established: UMDNJ and NJIT, in cooperation with BCC, are offering a Bachelor of Science in Nursing.

The Fall 1995 enrollment at the TEC was 127 students. For Fall 1996, the total NJIT enrollment was 289 students. For Fall 1997, the enrollment is projected to be 390 students. The 1990 Master Plan for the TEC projected NJIT's enrollment to be approximately 750 students by the sixth year of operation. The enrollment is being developed through high school and corporate site visits, mailings of printed materials, print and non-print media advertising, and open houses. The Albert Dorman Honors College program is also offered at the TEC, and scholarships are available. Freshmen students were recruited for the first time for Fall 1996 and 14 full-time students have enrolled, including two Honors College students.

In anticipation of increasing BCC and NJIT enrollments at the TEC and the economic development needs of southern New Jersey, a 1990 Master Plan for the branch described the eventual development of a campus of 13 buildings for varying uses, including the facility already completed. Two additional buildings are presently being planned. While Burlington County holds title to the land, NJIT has retained the right to erect a building on the site for its purposes if and when the need arises.

The first building currently planned is a 40,000 sq. ft. Economic Development Center including interactive teleconferencing rooms, video production facilities, meeting and training rooms, exhibit and conference space. The facility will be an electronic interactive "Hub" for a seven college consortium to serve 22,000 businesses in four of the southern counties (Burlington, Cumberland, Ocean, and Salem), approximately one third of the state, geographically. The partners in the consortium include NJIT, BCC, and three other county colleges (Cumberland, Ocean, and Salem), the University of Medicine and Dentistry of New Jersey, and a small private school, Georgian Court College. The Mt. Laurel facility is projected to cost $8,000,000 and is being funded through the New Jersey Higher Education Facilities Trust Fund. It is scheduled to open in Winter 1998.

A second 20,000 sq. ft. building will be a high technology regional business incubator that will provide space, shared resources, and technical assistance to emerging business. It will be administered by BCC. Funding for this facility is being provided through a federal

grant under the Economic Development Administration of the Department of Commerce. It is scheduled to open Fall of 1999.

The TEC is managed by a Dean of Engineering and Technology who is employed jointly by NJIT and BCC. Planning, program development, and marketing of the NJIT programs are performed by a team including BCC and NJIT personnel. Policy and operational issues are resolved as necessary through meetings of the senior administration of the two institutions. The TEC's academic programs and courses benefit from the input of an advisory committee of business/industry representatives.

In addition to supporting the Dean's position, NJIT has also employed a coordinator of enrollment and student services, a coordinator of technical services, and a customer service representative. Computer Science, Electrical Engineering, Humanities and Social Science faculty are available at the TEC for academic advising.

On-site student orientation sessions are convened each semester, and full-time freshman students are invited to participate in activities on the Newark campus. In addition, regular teleconference meetings are convened by NJIT's Dean of Freshman Studies for full-time freshmen in order to advise and solve individual problems. Each semester students are surveyed for feedback about instruction and services. The student responses have been used to make changes and improvements in the delivery of programs and services.

Continuing Professional Education

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1. *Overview*
2. *Access/NJIT: NJIT's Distance Learning Program*
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6. *Professional Development and License Review*
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1. Overview

In response to a recommendation of the 1992 Middle States visiting team, NJIT's Division of Continuing Professional Education (CPE) was reorganized as a coordinated unit offering five major educational programs (including a new one inaugurated in 1994). In addition, the Office of Media Services was added to the division in 1995.

Each educational program provides a distinctly different career-long learning opportunity. The five programs fall into two major categories:

- Academic Credit Learning (Degree and Certificate Programs)
  - Access/NJIT Distance Learning Program
  - Graduate Certificate Program
  - Extension Programs
- Non-Credit Learning (Continuing Education)
  - Corporate Customized Training
  - Professional Development and License Reviews

2. Access/NJIT Distance Learning: the "Virtual University"

Until recently, many individuals wishing to pursue advanced education have been frustrated by such circumstantial barriers as time, geography, and physical challenges. With telecommunications acting as an equalizer, college education is now accessible to anyone with a television set, video cassette recorder, personal computer, modem, telephone, and the necessary motivation. Via distance learning, ACCESS/NJIT offers full undergraduate and graduate degree programs, graduate certificates, and individual college courses using these now commonplace electronic devices.

Following standard protocols for matriculation, the NJIT Office of Admissions is responsible for processing all matriculated students studying either on a full- or part-time basis. Non-matriculated students use straightforward application forms, first

reviewed by Continuing Professional Education and then transmitted to the Office of Admission. The NJIT academic departments in whose fields distance learning courses are available are responsible for all academic aspects of the course delivery. ACCESS/NJIT staff orchestrate the program in a distance delivery format. Courses are available three times a year in the standard NJIT Fall and Spring semesters and in a 10-week Summer Session.

Each ACCESS/NJIT course consists of two components: (1) a tele-lecture conducted by an NJIT faculty member or by a distinguished outside expert and (2) an electronic discussion through which students conduct dialogue with a mentor and other classmates at any time of the day or night. Depending on the particular class, the electronic discussion may take place via: (1) NJIT e-mail, (2) NJIT Virtual Classroom® (VC), a computer conferencing system, (3) fax machines, (4) voice mail systems, or (5) the telephone. Thus, ACCESS/NJIT students can go to "class" at any time of day or night. And they can stay as long as they wish by viewing tapes or logging on the computer. Further, they can view the video tele-lectures and recall computer-based electronic discussions repeatedly until the content is fully understood. Even relocation during the course of the semester is no obstacle to course completion since video cassette players and computers are transportable or accessible nearly everywhere today.

Each ACCESS/NJIT course involves satisfactory completion of homework assignments based both on textbook readings and on the content of the tele-lecture and electronic discussion components, as well as satisfactory performance on quizzes, examinations, and projects.

Students who are in a position to reach the university's Newark campus, its TEC branch campus, or any of its public access extension sites are asked to take examinations in these locations. However, with departmental approval, ACCESS/NJIT students may take examinations locally by nominating a proctor who meets NJIT requirements, typically a school principal, teacher, librarian, personnel director, or military education officer. A form of pictorial identification, preferably a driver's license, is required at the time of the examination.

When a student registers for an ACCESS/NJIT course, the following materials are sent:

- information on directly contacting a tape duplication service via a toll-free telephone number to arrange for lease of a set of video-based tele-lectures;
- an on-line self-registration procedure for accessing the NJIT computer, along with a book distributor's toll-free number for ordering a Starter's Guide, if the electronic discussion component of the course involves use of the Virtual Classroom®;
- a course syllabus including detailed assignments, deadlines and required projects;

- information on directly contacting a book supplier via a toll-free number to arrange for receipt of a "shrink-wrapped" kit of all required texts, workbooks, and software;
- the name of the individual's course mentor including phone and fax numbers and e-mail/computer conferencing address.

In addition to offering students the opportunity to lease the tele-lectures, a master set of tele-lectures for each ACCESS/NJIT course is available for viewing at the NJIT main campus. Additional sets, matched to the academic programs being offered, are sent to the TEC branch campus and Extension sites. As a further option, New Jersey students taking undergraduate ACCESS/NJIT courses may tune their television sets to a local cable station where the same video materials are aired as regularly scheduled programs. Permission is granted to record these airings on tape for later in-home viewing throughout, but no longer than, the semester.

In order to engage in most forms of the electronic discussion component of an ACCESS/NJIT course, it is necessary to have an appropriate computer equipped with a modem and communications software, plus a connection via telephone or some other network to NJIT's computer system. As part of the array of ACCESS/NJIT student services, advice is available on hardware selections. Recommended minimum specifications include:

- 486 DX100 personal computer with 8 megabytes of memory;
- modem of at least a 2400 baud rate;
- VGA monitor;
- "PC Plus for Windows" communications software.

All students are invited to make use of computer terminals at either NJIT's Newark campus or the NJIT/Burlington County College Technology and Engineering Center in Mt. Laurel, New Jersey.

Students can access NJIT's computer through a variety of dial-up options from any location. While, direct dial is always possible, this can be costly. Therefore, for a course that involves an electronic discussion component, e-mail or the Virtual Classroom® are made available through INTERNET services which are standard features of commercial networks such as America On-line, CompuServe, and Prodigy.

NJIT students registering for one or more ACCESS/NJIT courses are assessed the same tuition and fees as their counterparts who come to campus. However, distance learners must also pay charges exclusive to them. They pay a per semester distance learning fee to NJIT, $34/semester for one or more ACCESS/NJIT courses in FY'97. They pay a tape leasing and shipment fee to a tape duplication house. And they pay their monthly bills to their local telephone company.

During the year of the last Middle States review a total of 707 course enrollments were recorded. In AY'95-96 total ACCESS/NJIT course enrollments approached 2,500.

Comparable to the growth in population served is growth in the ACCESS/NJIT tele-lecture or "telecourse" inventory. At the time of the last Middle States review, the total number of telecourses produced in-house numbered twenty eight (21 undergraduate and 7 graduate) with another six telecourses licensed from external producers. At the end of AY'96-96, the ACCESS/NJIT inventory totaled 94 courses (produced in-house) in nineteen different academic disciplines which have been delivered through different combinations of media. Over 50 NJIT faculty have originated courseware for ACCESS/NJIT and over 65 instructors have mentored ACCESS/NJIT classes. Twenty percent of the inventory has been revised because the content had become out-dated. In any given semester, students can register from an array of more than 50 ACCESS/NJIT courses.

A significant factor in the growth that has taken place since 1992 was a three-year $700,000 Alfred P. Sloan Foundation grant for development of two undergraduate degree programs which are fully accessible through distance learning, the Bachelor of Arts in Information Systems and the Bachelor of Science in Computer Science. ACCESS/NJIT has added 2 full distance learning graduate degrees (M.S. in Engineering Management and M.S. in Information Systems), and 4 credit-bearing graduate certificates. (A credit-bearing undergraduate certificate is also available, but only to National Technology University subscribers.)

Further, in response to the 1992 Middle States Review, Distance Learning has begun a transition away from telecourses toward multimedia delivery with methodologies which couple computerized conferencing either with cable/satellite transmission (one-way video/two way audio) and videotaped circulation, and methodologies which use two-way video simulcast (ITV) in a media rich classroom equipped with a personal computer for display of PowerPoint presentation materials and shared graphics, a World Wide Web connection, a VCR, a fax machine, and multiple cameras.

In AY'97 1996-97, the number of ITV classes will quadruple. Increased ITV activity is directly linked to the growth of enrollments at NJIT's southern TEC branch campus and its expanded extension site locations (public and corporate) within the tri-state area. It is anticipated that ITV will prove to be an effective delivery strategy that maximizes scarce faculty resources in critical subject areas.

Although NJIT is proud of its accomplishments in this area thus far, the program is by no means perfect. Remote learners have occasionally been inconvenienced by technical failures due to mishaps with external telecommunications partners and by network infrastructure failures. In some cases they have been dropped erroneously from classes because of imprecise record keeping. NJIT will continue to address

these problems and other challenging questions about the role of electronic education in the future.

3. The Graduate Certificate Program

Structural changes in the economy have caused many individuals in technological and managerial specialties to feel insecure about their jobs. Others see reduced opportunities for advancement in their current careers. For many, education is the key to career transition, but earning a master's degree is not always necessary or appropriate. The NJIT Graduate Certificate Program, introduced in Fall, 1994, is designed to facilitate a return to formal advanced education for people whose schedules are too busy to enroll in a more traditional program.

Key features of the Graduate Certificate Program include the following:

- Graduate certificates, each representing 12 credits of graduate work, are milestones in their own right or springboards to M.S. degrees at NJIT or elsewhere.

- Certificates are offered in fields of study designated by outside authorities as likely to offer employment opportunities over the next decade.

- Program duration is one calendar year.

- Study is possible through video/electronic media that are neither time- nor location-bound, or by coming to a campus.

- Entry is open to applicants with a B.A./B.S. degree with a satisfactory average.

The fields of study offered in Academic Year 1996-1997 are the following:

Construction Management
Continuous Process Improvement
Environmental Infrastructure and Management
Environmental Site Remediation
Geographic Information Systems and Environmental Problems
Health Care Information Systems
Object-Oriented Design (C++)
Practice of Technical Communications
Programming Environment Tools
Project Management
Telecommunications Networking

Each Graduate Certificate is in a professional field externally validated as "fast growing" with employment opportunities through the year 2005. Critical to the conduct of each Graduate Certificate is the philosophy that the required NJIT

coursework can be completed in one calendar year in tandem with other demanding endeavors such as full-time employment, job searching, and family/childcare responsibilities.

Students can complete some graduate certificates in whole and others in part through classes conducted via electronic communications that demand equal effort but which do not require formal classroom attendance (see ACCESS/NJIT). To accommodate busy schedules, students can also attend one or two 3-hour class(es) per week on weeknights and Saturdays at NJIT's Newark campus, and on occasion either at the TEC branch campus or at off-campus Extension locations.

The following are the requirements for admission to the Graduate Certificate Program:

1. Documentation by transcript(s) of completion of an undergraduate degree from an accredited college or university with a Grade Point Average that meets NJIT academic department standards for regular admission as a M.S. degree candidate. In general, an acceptable Grade Point Average is no lower than 2.8 on a 4.0 scale.

2. Submission to Continuing Professional Education of an application form seeking admission in the Certificate Program in the non-degree (non-matriculated) NJIT admission classification.

3. At the determination of academic departmental chairs or designees, completion of ancillary (bridge) course(s) which may be required to facilitate the student's academic performance.

To earn a Graduate Certificate, a student must complete 12 NJIT graduate credits in the four pre-selected courses which define the Certificate and maintain a 3.0 Grade Point Average. Graduate Certificate enrollees are assessed the same tuition and fees due from part-time NJIT graduate students enrolled in fewer than 12 credits per semester.

The program had 203 course enrollments in Fall 1996. While it is expected that approximately 10 different Certificates will be available in any one academic year, program changes will occur since high demand employment tracks change over time. Indeed, the program began in Fall 1994 with 4 offerings, increased to 7 in Fall 1995; and increased again to 11 in Fall 1996. One certificate from the original array has been eliminated from the selection. It has become clear that the most popular certificates are those available in their entirety in a distance format. It should be noted that among the 57% of Graduate Certificate students who expressed interest in continuing on toward an NJIT M.S. degree were some who already held either Master's or higher degrees.

4. Extension Programs

Demographic fluctuations in the workforce, including increased work hours and two-income families, have created a greater need for part-time programs that are sensitive to students' needs for reduced travel time and bureaucratic red-tape. Convenience has become a high priority for the working student.

Through the Office of Extension Programs, NJIT courses and programs are made accessible to part-time, evening students who prefer not to attend courses on the main campus. The extension program began in 1974 when courses in Computer and Information Science were offered at Drew University. Today, Extension Programs has 14 sites in 8 counties of New Jersey (including one site in Maryland electronically connected to New Jersey), totaling 23 program offerings. From Fall 1992 to Fall 1996, Extension Program registrations grew 32% from 763 to 1010. Two sites (Drew University and the Technology and Engineering Center at Mt. Laurel) serve as branch campuses where students may complete an entire NJIT degree program.

Off-campus classrooms are located either at public access or corporate sites. Public access extension sites serve qualified New Jersey residents at sister colleges in space provided as part of collegiate partnerships or in space provided on a rental basis at other colleges and high schools. Corporate extension sites serve qualified employees of host corporations on their company's premises. The public access sites are strategically located to target specific employment segments of the population, while the corporate sites allow for greater customization of curricula to better meet the needs of the host corporation. In both cases, early evening classes offer professionals the convenience required for part-time advanced study.

Locations of public access extension sites in AY'96-97 are the following:

Atlantic County at the Federal Aviation Technical Center:
- courses leading to M.S. in Computer Science
- courses leading to M.S. in Information Systems

Bergen County (at locations noted below):

Ramapo College:
- courses leading to M.S. in Computer Science
- courses leading to M.S. in Information Systems
- courses leading to M.S. in Management

Bergen Community College:
- courses leading to M.S. in Engineering Management

Burlington County at the Technology and Engineering Center (TEC):
- M.S. in Computer Science
- M.S. in Engineering Management
- M.S. in Information Systems

Mercer County (at locations noted below):

Hightstown High School:
- courses leading to M.S. in Engineering Management

Trenton (Department of Environmental Protection):
courses leading to M.S. in Environmental Science
Trenton (Department of Transportation):
courses leading to M.S. in Transportation
Mercer County Community College
courses leading to B.S. in Construction and Contracting Engineering Technology
Morris County at Drew University:
M.S. in Computer Science
M.S. in Information Systems
M.S. in Management
Somerset County at Raritan Valley Community College
courses leading to M.S. in Management

Locations of corporate extension sites in AY'97-97 are the following:
Middlesex County at AT&T
courses leading to M.S. in Computer Science
Mercer County at Merrill Lynch Site
courses leading to M.S. in Computer Science
Monmouth County at Bell Atlantic
courses leading to M.S. in Computer Science
courses leading to M.S. in Management*

*Bell Atlantic employees at this site in this academic program are linked electronically with their colleagues at a Bell Atlantic site in Silver Spring, Maryland and with their NJIT professors at Newark.

The courses offered through Extension Programs are identical to those offered on NJIT's Newark campus; the only difference is geographic location. Program admission and academic standards; course content, requirements, and professors; and measures of achievement are all the same as those used in Newark. Responsibility for all academic aspects of Extension Program operation reside with the academic department through which the courses are offered.

In Fall, 1994, Extension Programs prepared a three-year Strategic Plan in which the following goals were outlined:

1. Make NJIT education more accessible throughout the state by introducing new public access and corporate extension sites for graduate study.
2. Take into account the fit between the academic program being offered and the employment profile of the geographic area served.
3. Forge new relationships with community colleges for upper level undergraduate study and for continuing credit and credit-free education for employees of companies.

4. Enhance classroom-based learning experience with new telecommunications-based classes.
5. Introduce new credit-bearing Graduate Certificates that are conducted in classrooms and through distance learning at select existing and new sites, and at host corporations.

Two new initiatives are currently being pursued. First, Extension Programs is working with NJIT Library Services to ensure that off-campus students have the opportunity to access the same resources as students on the Newark campus. At present, off-campus students can link into the Library's homepage by modem in order to access periodical and text catalogs, and they can link into NJIT's homepage in order to access the NJIT graduate and undergraduate catalogues.

Second, Extension Programs and Distance Learning continue to work hand-in-hand to offer off-campus students a fuller array of educational opportunities. An example of this coupling between Extension Programs and Distance Learning is a new program that began in the summer of 1996. Bell Atlantic employees at two locations (Freehold, NJ and Silver Spring, MD) are pursuing courses leading to a Master of Science Degree in Management with a specialization in Information Systems Management. The program is delivered to the locations simultaneously through an Interactive Television (I-TV) link offering two-way audio, two-way video transmission. Extension Programs is responsible for the customer service of the Bell Atlantic employees, while Distance Learning and Media Services supervise management of the connection between the sites.

5. Corporate Customized Training

For over 50 years, NJIT has been designing and conducting customized non-credit courses that meet technology-based organizations' needs for high quality, lifelong workforce education. Representing the arm of NJIT which brings the university's areas of academic specialization into the workplace, this unit has developed particularly close relations with the New Jersey Department of Labor (DOL). The DOL's Office of Customized Training implements aspects of the New Jersey Workforce Development Partnership Program through which eligible New Jersey companies can receive state subsidization for 60% of the cost of initiating on-site training programs. These are overseen by qualified educational providers such as NJIT's Corporate Customized Training Program.

From FY'92 to the present, Corporate Customized Training executed training contracts with some 40 companies affecting over 2,000 individuals per year learning at their workplaces. During the five year period between 1990 and 1995, the unit received $1,607,800 from the DOL from 35 different Workforce Development Partnership Training contracts.

In February, 1996, staff launched a "Corporate Outreach Program" the objective of which is to forge lasting relationships with New Jersey-based corporations by increasing their awareness of NJIT's expertise. Prospective clients were informed of the services that NJIT provides through Customized Corporate Training and asked to outline their current and future training needs. During the first month of implementation a customized training contract was concluded with Simon and Schuster. In addition, the outreach effort has produced opportunities at Ford Motor Company, Dendrite, Quality Graphics, and Air Cruisers.

6. Professional Development and License Review

The Professional Development and License Review Program offers short courses, certificates, and license reviews that do not bear credit. Some lead to the award of Continuing Education Units (CEU's). Individual classes begin at various times throughout the year and meet at NJIT or at training facilities throughout the state. A typical professional development class lasts one to five days, while certificates and license reviews often span several months. From 1993 to 1996 an average of 33 courses enrolling 500 students were conducted annually. A 90-hour non-credit Webmaster Certificate Program launched in Fall 1996 was particularly successful.

7. South Jersey Economic Development Network

In 1996 the New Jersey Commission on Higher Education approved a $10 million grant from the New Jersey Higher Education Facilities Trust Fund for the development of a Southern New Jersey Economic Development Network. Partners in the project are Burlington County College, Cumberland County College, Georgian Court College, New Jersey Institute of Technology, Ocean County College, Salem Community College, and the University of Medicine and Dentistry of New Jersey.

The purpose of the grant is to stimulate regional economic development by providing underserved constituencies in Burlington, Cumberland, Ocean, and Salem Counties with academic instruction, workforce training, and interactive video-conferencing. The primary focus will be on residents of the four counties who have never participated in higher education and small and medium size businesses that do not currently have access to communications technology and training.

The central facility funded by the grant will be a $6.5 million technology training center and distance learning network hub to be built adjacent to the Burlington County College/NJIT Technology and Engineering Center in Mt. Laurel. The hub building will be shared by BCC, NJIT, and UMDNJ. Special features will include a Center for Excellence in Distance Learning, where teachers and business trainers will learn how to use advanced instructional technology, and collaborative research space for product development and communications production.

The project will enable South Jersey firms to pursue new product development, tele-engineering activities, and marketing via state-of-the-art communications technology, in an effort to enhance their competitiveness in the global marketplace.

Intercollegiate Athletics:
NCAA Division II Membership

As of September 1997, NJIT will officially become a member of the National Collegiate Athletic Association's Division II, replacing its current Division III membership.

NJIT has been a member of the NCAA since it left the National Association of Intercollegiate Athletics (NAIA) some thirty years ago. With the current move, NJIT's men's and women's varsity teams will gain the chance to compete against teams at the Division II level. In addition, the university will seek scheduling opportunities to compete against the teams of highly visible Division I institutions. NJIT has already applied to and been admitted to the New York Collegiate Athletic Conference (NYCAC), one of the top Division II conferences in the nation. Membership in the NYCAC will be effective as of September 1997, and the process of scheduling intercollegiate contests is proceeding accordingly.

The move to Division II was a direct result of a ten-year study. Using the university's long and short term goals regarding enhanced recruitment, expanded marketing, wider visibility, and national recognition as the focus, the experience of similar institutions that had completed the transition from Division III to Division II was analyzed. It became evident that intercollegiate athletics could contribute materially to the achievement of NJIT's goals. At the same time, the quality of student life on campus and the general sense of school spirit could be improved.

In the course of internal discussion of the potential benefits and costs of NCAA reclassification, concern was expressed that a move to Division II would not fully benefit the university unless NJIT's teams could achieve a degree of competitive success. Therefore, upon receiving notification of acceptance into the NYCAC, it was decided that the university would fund a limited number of athletic scholarships, based on unmet tuition need, in order to recruit high level student athletes. As a result, seventeen tuition scholarships will be available in the Fall of 1997, to be used to supplement the unmet tuition need of student athletes identified by the athletic administration. The total allocated for this purpose will be $85,000 in FY'98. The Director of Athletics expects to attract highly qualified student athletes whose academic and athletic skills will benefit the university as we move into the highly competitive and visible ranks of Division II athletics.

The Division of Physical Education and Athletics has begun and will continue to take all necessary actions to comply with the policies and procedures of NCAA Division II, and is prepared to fully document these activities.

NJIT looks forward eagerly to September 1997, its first year as a full member of the NCAA's Division II.

Human Resource Development

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1. *Key Appointments Since 1992*
2. *Employee Relations*
3. *Compliance with Workplace Regulations*

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1. Key Appointments Since 1992

As is to be expected in any university, positions that were vacant at the time of the last Middle States site visit have been filled and others are now vacant.

Shortly after the 1992 team visit, the Dean of Newark College of Engineering announced his intention to step down. A search was organized, and in September 1994 Dr. William Swart was appointed. Since taking office, Dean Swart has led the selection of the chairpersons of the Department of Electrical and Computer Engineering, the Department of Chemical Engineering, Chemistry, and Environmental Science, and the newly constituted Department of Industrial and Manufacturing Engineering which is made up of faculty from several other engineering departments. Further, the industrial engineering faculty members were moved into the new department from the Department of Mechanical and Industrial Engineering and the name of the latter was changed to the Department of Mechanical Engineering. Dean Swart will complete his term this year; a national search is currently underway to identify his successor.

Two associate deans have been appointed at NCE. Dr. Daniel Davis is responsible for graduate and undergraduate student recruitment and advising, student organizations, and scholarships and fellowships. He also administers the undergraduate and graduate degree programs in Engineering Science, and acts as liaison with government agencies and industry for NCE research and education programs. Dr. Stephen Tricamo is playing a key role in the reform of NCE's engineering curricula. He leads many of the curriculum development committees and teaches one of the critical new courses developed as part of the Technology Reinvestment Program grant.

At the time of the 1992 team visit, the College of Science and Liberal Arts was headed by Acting Dean Dr. Leon Buteau. In January, 1997, a new permanent dean, Dr. John Poate, took office. Prior to coming to NJIT, Dr. Poate headed the Silicon Processing Research Department at Lucent Technologies. His area of research concerns the defect properties of silicon. He has also aided in the development of ion beam techniques for the analysis and modification of near-surface properties of matter. Poate has written over 250 scientific papers, monographs, and conference proceedings. He received his B.S. and M.S. degrees at Melbourne University and his Ph.D. from the Australian National University. He is a former president of the Material Research Society, Fellow of the

American Physical Society, and Editor of the Applied Physics Review.. The College is poised to make rapid strides under Dean Poate's leadership. Dr. Buteau will serve as Associate Dean.

Several major changes in departmental structure and two changes in departmental leadership have taken place in the College of Science and Liberal Arts. Several departments have been engaged in an innovative experiment to share resources and expand opportunity for students and faculty by forming "federated" departments with corresponding groups of faculty at Rutgers University - Newark.

The NJIT Department of Physics agreed to "federate" with the corresponding department at Rutgers. After a national search involving a search committee composed of faculty members from both NJIT and Rutgers, a distinguished scientist from Bell Laboratories, Dr. Anthony Johnson, was appointed to the faculty of NJIT and serves as chairperson of the federated department.

A second "federated" department has been working for the past several years. The federated history department consists of the faculty from the Rutgers' History Department and faculty from NJIT's Department of Humanities and Social Science. The federated history department is headed by an NJIT faculty person, Dr. Lauren Benton.

At the time of the site visit, there were two departments comprising the faculties in the humanities and social science disciplines. All of these faculty members have been reorganized into a single Department of Humanities and Social Sciences. The newly organized department's first chairperson was Dr. John Opie who had been the chairperson of the Department of Social Science and Policy Studies. In January 1996 Dr. Opie resigned as chairperson. After a national search, Dr. Norbert Elliot has been appointed to fill that position.

At the beginning of the 1995-96 academic year, Dr. Gregory Kriegsmann indicated his desire to step down as chairperson of the Department of Mathematics. A search committee was organized and a national search initiated. Dr. Daljit Ahluwalia has agreed to serve as chairperson until the new chairperson is identified.

Since 1992, 58 faculty members (approximately 19% of the entire faculty) have been appointed. Of this number, 13 (22%) are women and 3 (5%) are Blacks. While these numbers are small, the newly added women and minority faculty members make a significant impact on the representation of these groups within the faculty.

There have been important changes in other parts of the university as well. In 1992, Dr. Robert Pfeffer was appointed Vice President for Research and Graduate Studies. He brings much valuable experience to NJIT after many years at City University of New York, including several years as that university's Provost.

The library has had two strong University Librarians since the 1992 Middle States team visit. Anne Buck (1992-1995), previously with Bellcore, provided leadership in completing the new library building, and reorganizing and improving professional services. She left to accept the position of University Librarian at California Institute of Technology. NJIT recruited Richard Sweeney (1995-present), formerly Dean of Libraries at Polytechnic University in Brooklyn, as her replacement. He is a recognized leader in developing new service paradigms and implementing service oriented team structures.

In 1994, Dr. Eida Berrio was appointed Dean of Student Services. After serving at Princeton University as Associate Dean of Student Services, Dr. Berrio rejoined NJIT where she had worked for many years previously in various positions. Dean Berrio has appointed two associate deans of student services, Leroy Thomas and Ralph Arend. In addition, the Educational Opportunity Program, NJIT's program of academic and financial support for students from backgrounds of economic and educational disadvantage, was added to the Dean of Student Services' responsibilities.

2. Employee Relations

NJIT's employee relations program reflects the university's maturation and strategic direction. Policies and procedures are established in partnership with a number of unionized constituencies and in consultation with the university's Senior Staff. The objective is to achieve a forward-thinking, fiscally prudent relationship with the university's employees within the bounds of the parameters prescribed by law. A well-informed, accountable, participatory faculty and staff, exhibiting leadership and self governance in pursuit of the university's vision and mission is the desired outcome.

The university's labor, legal and human resources operations have been restructured and now operate under the direction of the university's General Counsel. Human Resources is comprised of the Division of Human Resource Development and the Division of Human Resource Systems & Records. The legal and labor relations programs operate as the Office of Legal and Employment Affairs. Together these operations are responsible for employee relations and training, collective bargaining with the university's union affiliates, dispute resolution including litigation, employment policy development and administration, and legal counsel and services endemic to the public research university.

This restructured format has yielded a number of important initiatives.

1. A new evaluation and performance management program has been developed and implemented. It focuses on individualized performance characteristics and their contribution to the advancement of the university's strategic and operational objectives. This program is in place for all nonunionized employees. It is under final consideration for full adoption by the university's clerical/technical union, representing approximately a quarter of the employee population, and it is under active consideration by the unionized professional staff of the university. An evaluation component has for the first time been

formally adopted as part of the recently negotiated collective agreement with our plant and technicians staff as a prerequisite to employment security and advancement.

2. A new performance driven salary administration program has been developed and implemented for all nonunionized staff, and the movement toward performance driven compensation programs for unionized employees continues. Faculty, police superior officers, and both unionized and nonunionized professional/administrative staff participate in recently enhanced merit pay compensation systems.

3. A revised sexual harassment policy and procedures, cognizant of and fully responsive to the changing legal standards and the volatility of social standards, has been developed, implemented, and successfully utilized in a number of cases.

4. A family leave policy and procedure that integrates the university's extant leave policies with state and federal laws has been developed and implemented.

Collective bargaining is the responsibility of the restructured employee relations operation under the leadership of the university's General Counsel who serves as chief negotiator. The collective bargaining and contract administration process provides the opportunity for a full and frank exchange of views, education of both management and unionized staff covering the full array of topics under discussion, and codification of policies and procedures. Employee training is provided as a follow-up to the conclusion of collective bargaining agreements.

The favored mode of dispute resolution at NJIT is to stay ahead of the complaint curve. Negotiated and mutually agreed upon employment severances, performance rehabilitation tracts, and employment pacts have replaced a significant fraction of the expensive, counterproductive formal claims lodged by disgruntled employees and/or their labor representatives. The dispute resolution forum is used to sensitize the community to the factors that lead to unacceptable conduct in order to avoid unnecessary and contentious disputes in the future.

Formal claims resolution is largely handled in-house by the professional staff of the Office of Legal and Employment Affairs. It includes arbitration of individual and union grievances, defense of unfair labor practice claims, scope of negotiations petitions relative to the university's managerial prerogatives, defense of discrimination claims registered before state or federal regulatory agencies, and traditional litigation as a defendant or plaintiff.

Here as elsewhere, while there has been significant, tangible progress toward the realization of objectives, a formidable task lies ahead as the university's employee relations program continues to mature.

3. Compliance with Workplace Regulations

As a public research institution the university is confronted with a vast body of regulatory controls. NJIT has taken the necessary steps to ensure that it is in full compliance with state and federal regulations as they apply to a public entity with respect to a range of issues including workplace safety, sexual harassment policy and education, employees and students with working disabilities, distance learning, technology transfer, and cyberspace law.

The university currently engages in education and training, policy analysis and development, and individualized counseling specifically designed to embrace workplace regulation. The university views these activities as an opportunity for improvement and as a mature response to new and evolving standards for workplace conduct.

The offices reporting to the Senior Vice President for Administration and Treasurer, with appropriate counsel from the Office of Legal and Employment Affairs, ensure compliance with law and governmental regulations pertaining to construction, physical structures, safety, property acquisition and disposal, and financial administration.

Community Relations

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1. *Alumni, Students, and Parents*
    - *Alumni Relations*
    - *Noel-Levitz Student Satisfaction Inventory*
    - *Diversity Committee*
    - *Early Warning System for Sophomores*
    - *Greek Relationship Statement*
    - *Parents Advisory Council (PAC)*
    - *Parents Newsletter*
    - *Other efforts*
2. *Creating a More Hospitable Environment for Women*
3. *NJIT's Urban Agenda*
    - *Student Enrollments*
    - *Programs of Instruction*
    - *Pre-College Programs*
    - *Community Service Activities*
    - *Economic Development Strategies*
    - *Partnerships*

NJIT has redoubled its efforts to improve the services it renders to both internal and external constituencies. Described below are three aspects of community relations that have received focused attention since 1992.

1. Alumni, Students, and Parents

Alumni Relations

The president of NJIT plays an active role in establishing and maintaining good rapport with alumni/ae. For example, he hosts a series of alumni breakfasts on campus and travels cross country to meet with alumni groups from California to Florida, Massachusetts, New York, and New Jersey.

The Alumni Association of NJIT is currently celebrating its 50th anniversary. From its inception, the Association has been a semi-autonomous, non-profit organization with a separately incorporated board and a staff funded through the university. Its general mission is to cultivate good relations with NJIT alumni/ae and to provide them a number of social, cultural, and educational services (e.g., a World Wide Web home page that includes an online bulletin board for networking purposes). It is currently planning to set up chapters throughout the nation which will be instrumental in establishing a job bank for alumni/ae seeking career changes. It organizes and sponsors a mentor program which pairs students

and alumni/ae. The Association administers roughly $2 million in endowment funds, the income from which is used for university scholarship purposes.

A number of new initiatives have been implemented by the office of the Dean of Student Services to increase communication with and improve services to the university community, particularly students and parents. A special effort has been made to identify specific needs and to increase coordination of services and resources.

Noel-Levitz Student Satisfaction Inventory

The Student Satisfaction Inventory is designed to assess satisfaction by measuring the gap between student expectations (weighted according student perception of how important each campus service is) and how well each campus service has performed in meeting their expectations. The smaller the gap, the more satisfactory the performance. In the effort to continuously improve services to students, the inventory was administered in Fall 1995 to over 1,200 students representing all disciplines and cohorts.

Students identified academic reputation and cost as the top two reasons for deciding to enroll at NJIT. Financial aid and personalized attention prior to enrollment were also important factors. Other strengths frequently identified by students were:

- Helpful and approachable library staff
- Opportunity to experience intellectual growth
- Visible, courteous, accessible, and reliable security staff

In general, students felt that their tuition dollars are well spent. However, they perceived the climate as being not exceptionally student-centered in certain areas. Some of the satisfaction "gaps" were in the following areas:

- Difficulty in registering for classes because of schedule conflicts
- Delays in receipt of financial aid
- Quality of instruction outside the major (particular concern over classes taught by GA's)
- Billing policies
- Narrowness of choice in selection of food
- Availability of parking

Focus groups comprised of students, faculty and administrators have been formed to identify specific strategies that could be implemented to significantly reduce the gap scores. Members of the groups will also assist, as possible, in the implementation of these strategies. Discussion will also stress the importance of defining reasonable expectations.

A Steering Committee has been constituted and charged to review the reports of the various focus groups and assist in prioritizing recommendations, propose additional recommendations, and identify resources that might be reallocated to address significant priorities.

One particularly significant finding is that students seem uninformed about many of the initiatives currently in place to address their needs and about the services available to them. Remarks on the lack of sufficient communication were common. Consequently, the Steering Committee and focus groups are exploring ways to improve and enhance communication with students and ways of conveying information more effectively.

Diversity Committee

With a grant from the Philip Morris Co., an ad-hoc committee comprised of students, faculty and administrators will develop a calendar of activities consisting of workshops and lectures designed to enhance the university's diversity training program and explore strategies that might lead to increased understanding and appreciation of the rich diversity of our campus community. A concerted effort will be made to encourage the participation of faculty and senior staff in the various events.

Early Warning System for Sophomores

In efforts to improve retention of sophomore students, an early warning system is being implemented similar to the process currently in place for freshman students. Students in sophomore courses who are identified by faculty members as having academic difficulty and/or excessive absences will be contacted by the Dean of Student Services. They will be encouraged to develop a plan of action aimed at successful completion of the course(s) in question and will be assisted in identifying appropriate academic support services.

Greek Relationship Statement

During AY'94 a series of meetings took place concerning relations between the university and the Greek Letter community, and how to improve them. A committee was formed and charged to recommend an official definition of the relationship that should obtain between Greek organizations, NJIT students, and the university.

The resulting Greek Relationship Statement formalizes the relationship between NJIT, the Greek organizations, and the students who participate in the activities of fraternities and sororities. It clearly states the university's expectations and standards, and outlines responsibilities, rights, and privileges of all concerned. Areas addressed include the recognition process for Greek chapters, University/Greek relations, public relations, scholarship, leadership development, Associate Member education, and the NJIT Greek Award of Excellence.

Parents Advisory Council (PAC)

The PAC was established in the Fall 1995 Semester as a direct response to the interest expressed by a number of parents in more involvement and opportunities to provide input to the university's administration. The first general meeting was held in the Spring 1996 semester at which the following mission statement for the PAC was adopted:

> *The Parents Advisory Council's mission is to assist NJIT in its efforts to continuously improve the educational programs and services to its students by:*
>
> - *Presenting feedback to the NJIT administration*
> - *Offering ideas and strategies*
> - *Communicating to parents of prospective students*
> - *Increasing public awareness/support of NJIT*
> - *Fundraising for student programming and scholarships*
>
> *The PAC meets twice annually and conducts its work through sub-committees.*

The Council consists of four committees which will address the following areas of interest: Campus Life, Public Relations, Teaching/Curriculum, and Fundraising/Development. The PAC will meet once each semester and conduct most of its work through the sub-committees. They will also be active participants in university events such a Dean's Day, and Open Houses.

Parents Newsletter

Also in response to inquiries from parents and their expressed desire to be better informed of events at the university we have initiated *Interconnections*, a newsletter for parents which will be published each semester. Regular features of the newsletter

will be: dates to remember, key telephone numbers, PAC events, special student recognition events, message from the President and/or other senior level administrators. The newsletter will be mailed to the parents of all full-time undergraduate students.

Other efforts

A number of additional actions were taken in an effort to better serve students or improve communication and collaboration. These included:

- Location of an Associate Dean's office in the Hazell Student Center and expansion of Dean of Student Services' hours at the Hazell Center desk
- Planning and coordination of special celebrations (e.g., Asian Heritage, African Heritage, Hispanic Heritage, Women's History)
- Placement of a monthly column by the Dean of Student Services in the Vector, the student newspaper
- Holding of monthly open forums by the Dean of Student Services
- Appointment of a full-time counseling psychologist at the Counseling Center
- Regularly scheduled breakfast or luncheon meetings of student leaders with the Dean of Student Services and the two Associate Deans
- Institution of a student leadership recognition awards ceremony
- Planning of the fourth residence hall (now under construction) and a new facility to house student services functions
- Participation in new external student recognition development programs (e.g., State Advisory Board, USA All Academic Team)
- Institution of joint meetings with staff from various key offices (e.g., Public Safety, Bursar, Financial Aid)
- Provision of periodic updates to collegiate deans and other administrative offices regarding Dean of Student Services initiatives and events

2. *Creating a More Hospitable Environment for Women*

One of the goals highlighted in NJIT's 1992 Self-Study and Strategic Plan was "to increase the number of full-time enrolled women undergraduate students" at NJIT. In Fall 1992,

15.5% of all full-time undergraduates were women and 12.1% of all NCE undergraduates were women. Our stated objective was "to achieve a female enrollment of 20% of all full-time undergraduate students and 15% of Newark College of Engineering (NCE) undergraduate students by 1997." As of Fall 1996, women constitute 19.2% of full-time undergraduate enrollment and 16.2% of the enrollment in the undergraduate engineering programs.

Some of the proposed strategies included increased visits to high schools and community colleges; summer research opportunities for female high school students; specialized recruitment materials directed specifically at women; targeted scholarship programs; and organizing a team of alumnae to serve as mentors and role models for enrolled women students. Many of these have been implemented successfully.

A special effort in recent years has focused on improving the campus climate for women. In furtherance of NJIT's long standing commitment to make the campus inviting and hospitable to women, the Constance A. Murray Women's Center was officially opened in March 1996.

Conveniently located on the upper level of NJIT's Hazell Student Center, the Center is designed to meet the needs of women faculty, staff, and students at a technological university by sponsoring a variety of programs and events that facilitate mentoring and career networking among women. It serves as a clearinghouse for research about women and technology, encourages the continued integration of gender-sensitive material into the curriculum, and provides an open forum for women to discuss matters of mutual interest and concern. It offers a wide range of resources, including a multi-media library, computer workstations, and access to a World Wide Web database about women in technology. Designed by an NJIT School of Architecture alumna, Barbara Vincentsen '81, the Center provides comfortable space for small group meetings, study, tutoring, and research. It is open to all members of the NJIT community.

Another important objective of the Women's Center is to sustain the momentum in recruiting and retaining women students at NJIT. A new brochure has been published to inform students about the facility and programs. The Center is working closely with various student organizations and clubs to encourage participation in programs and activities such as: Big Sister/Little Sister; Women's History Month programming; recognition of the accomplishments of women students, faculty, and staff; establishment of scholarships for women; and building stronger connections among women students, faculty, and staff.

It is important to provide women in science and engineering majors role models and mentors with whom they can identify. Through these relationships, women students can gain the confidence and perspective necessary to function successfully as professionals within a global and multicultural workforce. To this end, the Women's Center is currently in the process of recruiting alumnae and corporate friends to participate in a mentoring program. The Center will facilitate the matching of mentors and students; provide opportunities for mentors and students to meet on a regular basis; encourage mentors to provide students with access to the

professional community; expand students' networking opportunities; and evaluate the program through regular feedback from mentors and students.

The creation of the Center is only the most recent initiative designed to increase the representation of women on campus. In 1992, President Saul K. Fenster declared the 1990's the "Decade of the Woman at NJIT." In 1994, the university established the Committee on Women's Issues, and one of its first initiatives was to propose the establishment of a Women's Center at NJIT. A major addition to the gymnasium included facilities to accommodate the needs of NJIT's increased cohort of women. The growth of NJIT's residence halls and enhancements in the university's security systems have also improved the environment for women.

3. NJIT's Urban Agenda

New Jersey Institute of Technology has a long history of commitment and service to Newark, the surrounding metropolitan area, and other urban centers throughout the State. As an integral part of the urban community, NJIT contributes by its very location to the city's growth and development. By offering a wide array of carefully designed, comprehensive outreach initiatives such as pre-college programs, technical assistance centers, applied research projects, and participation in local organizations, the university has become a full community partner. Following is a summary of NJIT's key urban development efforts:

Student Enrollments

The university enrolls a large number of African Americans and Latinos, most of whom come from urban communities. These minorities, groups that are typically underrepresented in scientific and technological fields, comprised 26.5 percent of the undergraduate population in Fall 1996, an increase of three percentage points over the last five years. NJIT is successful in retaining underrepresented minorities, as well. Newark College of Engineering ranks among the top ten percent of engineering schools in the nation with respect to the number of baccalaureate degrees awarded annually in the field to African Americans and Latinos.

Programs of Instruction

NJIT's strong record of minority enrollment is the result of a comprehensive effort that serves the educational continuum from pre-college through graduate school. In addition to special scholarship programs for Newark and other urban students, the university offers the following key programs of instruction and academic support:

- *Educational Opportunity Program (EOP)*
  Established in 1968 as the Engineering Opportunity Program, this was one of the earliest such programs in the nation. Designed for educationally and economically disadvantaged students, and partially funded by the state, EOP offers financial assistance and a number of support programs, including an intensive, pre-freshman summer residency program.

- *Project CAP*
  This program offers scholarships and an array of career services to African Americans, Latinos, and women who occupy the middle ground economically and academically and, therefore, tend to "fall through the cracks" because they do not qualify for any special programs. The centerpiece of the program is job preparation and co-op placement.

- *Student Support Services Program (SSSP)*
  This is a federally supported program that provides tutoring, counseling, cultural activities, and graduate school preparation for very needy students.

- *Undergraduate Research Experience*
  This program assists minority students gain admission to graduate schools. It supports students working with faculty on research projects throughout the year, as well as a Science Immersion Program offered during the winter intersession and summer.

Through various curricular initiatives such as the following, the university also serves as a vehicle for achieving a greater understanding of urban issues and for developing solutions to the problems inherent in those issues:

- *Service Learning*
  A number of courses incorporate community service projects as part of their credit requirements. Student volunteer activities are directly linked to course material.

- *Architecture Projects*
  NJIT's School of Architecture uses the New York/New Jersey metropolitan area as a laboratory where students can work with communities in solving real problems. Efforts are focused especially on devising a more efficient urban infrastructure, increasing productivity through advanced manufacturing methods, and finding new forms for the built environment particularly in service to communities in need. Among the many student and faculty projects undertaken over the past several years were a homeless shelter for Paterson, the Montclair Museum, the Jersey City Trestle Project, the New Jersey Performing Arts Center Signage Program (Newark), and a Housing Project for Children with AIDS.

Pre-College Programs

NJIT has been offering pre-college programs for more than twenty-five years and presently serves approximately over 4,500 students and their teachers annually, most from urban school districts. The Center for Pre-College Programs serves elementary and secondary students, primarily from Newark and its environs, in more than two dozen programs throughout the

year. The five described below are specifically identified as urban outreach programs, but essentially all of the Center's programs serve urban students:

- *Urban Engineering*
  High school students are introduced to the engineering approach to urban problem solving and are introduced to issues that affect the quality of urban life. The students work with faculty members on special projects designed to elicit potential solutions to such problems. The program includes laboratory sessions, seminars, and field trips as well as career counseling.

- *Elementary Science Outreach*
  NJIT staff, faculty and students work with students and their teachers in elementary school classrooms in Newark to help them incorporate supplemental science activities into their lessons. The program is designed to improve the elementary school curriculum, providing students with hands-on science lessons. A unique dimension to this program is the participation of minority NJIT graduate students who serve as role models to the elementary school students.

- *Summer Science Camp*
  The program is directed at low income, educationally disadvantaged Newark students. It provides math and science instruction, oral and written communication skills, and a series of field trips to marine science locations. Students also receive financial aid, career counseling and exposure to role models.

- *Experimental Math, Science and Communication Program*
  This program for post-seventh grade Newark students integrates math, science, and language activities to improve critical thinking, problem solving, and communication skills.

- *PCCI*
  In cooperation with the Protestant Community Center, Inc., this program offers third, fourth, and fifth grade Newark students academic year and summer hands-on math, computer science, and architectural activities.

Community Service Activities

The university's urban commitment is also manifested in a large number of community service initiatives. Since the establishment of the Office of Community and Public Service in 1991, 2,300 NJIT students have participated in the NJIT Service Corps. Several features of community and public service programs at NJIT are the opportunities they provide for students to gain hands-on experience in their fields, to link classroom concepts and practical applications, to connect knowledge and abilities to tangible community building projects, to exhibit qualities of responsibility and leadership, and to broaden the scope of their career planning and enhance their marketability in a competitive job environment.

Most of the Service Corps' projects have been located in Newark, but some projects have been conducted at sites in Trenton, Camden, and Paterson. Initiatives included Service Learning as a component of certain credit-bearing courses such as the new required management course, "Diversity in Organizations"; off-campus Federal Work Study which is major-related employment in non-profit agencies; Housing Scholars, which provides full-time summer employment in low-cost and affordable housing agencies as part of a state grant; Special Projects including a foundation-funded computer Service Learning project; and Project COOL, a set of special events involving traditional volunteer activities. Following are examples of the kinds of community service provided:

- *Engineering and Architecture Services*
  Students carry out feasibility studies, HVAC assessments, and playground and neighborhood garden development for such organizations as the Greater Newark Conservancy, Urban League, Head Start of Paterson, Unified Vailsburg Services Organization (Newark), New Community Corporation, and the City of Newark.

- *Computer Expertise*
  Students offer assistance in making hardware and software choices, installation and de-bugging, and staff training for hundreds of non-profit agencies and organizations including Newark Emergency Services for Families, the New Jersey Performing Arts Center, the Carter G. Woodson Foundation, UMDNJ-University Hospital, and St. Paul's Community Development Corporation.

- *Low-Cost and Affordable Housing*
  Students assist in housing starts for Habitat for Humanity (Newark, Paterson, and Trenton), La Casa de Don Pedro (Newark), Neighborhood Housing Services of Camden, and St. Lucy's Community Development Corporation (Newark) among many others. The university is host to a campus chapter of Habitat for Humanity.

Economic Development Strategies

In recent years, economic development has become a central element of NJIT's mission, with a growing array of initiatives designed to support the development of new industries and revitalize old ones, to help create new jobs and save existing ones, to serve as a source of technical expertise to businesses and government agencies, and to foster physical development and redevelopment. When the university established an Office of Economic Development in 1988, it was making a strong statement about the importance of the growing array of activities in this area. The university offers direct assistance to small and medium sized businesses, primarily through a half dozen small business assistance centers, and plays a number of other important roles in service to the community and industry.

- *Enterprise Development Centers*
  These two technology-based business incubator facilities assist firms to start up and grow with the aid of university resources. Located on NJIT's campus in Newark, the centers house thirty-three small businesses.

- *Procurement Technical Assistance Center*
  This program has received extensive federal funding to achieve its goal of helping small, minority-owned businesses compete successfully for Department of Defense and other federal contracts. It serves a base of well over a thousand companies, many of them urban-based, and has helped them to secure millions of dollars in contracts.

- *Center for Information Age Technology (CIAT)*
  Established in 1983, this center assists New Jersey government, non-profit, and educational organizations integrate computer technology into their operations.

- *Technology Extension Center in Information Science*
  Closely linked with CIAT, this program offers technical assistance in computer technology to New Jersey small businesses.

- *New Jersey Technical Assistance Program (NJTAP)*
  This state-funded program helps small and medium-sized businesses in the State comply with state and federal pollution prevention regulations.

- *Technology Extension Program in Manufacturing Engineering*
  This is a statewide extension program that assists small and medium-sized manufacturing businesses to modernize and become more competitive.

- *New Jersey Manufacturing Extension Partnership (NJMEP)*
  This was established in 1995 with a six-year grant from the National Institute of Standards and Technology (NIST), an agency of the U.S. Department of Commerce. NJMEP is a statewide core organization to which small manufacturers from all industrial sectors can turn. Services include direct technical and business assistance, seminars, focus groups, and training.

- *Movie Theater*
  NJIT played a pivotal role in the planning, construction, and operation of the first movie theater in the center of Newark in twenty-five years. President Saul Fenster served as chairman of the Urban Movie Corporation from the time when it was first convened in 1990 until after the theater was opened in Spring 1993. Its board meetings are still held at NJIT. A significant proportion of the profits from the six-screen, state-of-the-art family theater are designed to be returned to the neighborhood to support social, educational, cultural, and economic development efforts.

- *Continuing Professional Development*
  NJIT makes for-credit and not-for-credit courses available at sites throughout the state, including corporate/industrial facilities located in urban areas. Since 1995,

NJIT has conducted a total of 43 courses at urban sites other than NJIT's main campus in Newark. Designated as a Superfund University Training Site by the Environmental Protection Agency, NJIT has been a leader in providing hazardous waste training to industry for nearly a decade.

Partnerships

Many of the urban-based activities and programs that have had the most profound impact are collaborative undertakings with other colleges and universities, corporations, and government agencies. They include efforts to work with the public school system to improve the education of Newark youth, fostering community and economic development in Newark and its environs, and serving in leadership capacities in a wide range of civic organizations. The university is represented on a number of boards in support of the revitalization of Newark, including the READY Foundation, the Newark Education Partnership, Newark Fighting Back, the Washington Commons Development Corporation, and the Central High School Renaissance Initiative. Descriptions of three partnerships follow:

- *Central High School Renaissance Initiative*
  NJIT is a founding member of the Central High School Renaissance Board, a public private partnership that seeks to lead the school through a change that will "break the mold" of failure. The program is based on a plan to empower the teachers and re-engineer the school by dividing the student body into an number of "houses." NJIT is providing the Technology and Business House with teacher training, direct student instruction, a career awareness program, college orientation, SAT preparation, and mentoring services. The university has also assisted in facilities planning, repair, and maintenance for the school.

- *Consortium for Pre-College Education in Newark*
  Established in 1986 with State funding, this program for "high risk" Newark students in grades seven through twelve is offered and administered cooperatively by NJIT, serving as the lead institution, and Rutgers-Newark, the University of Medicine and Dentistry of New Jersey, and the Newark Public Schools. The consortium serves approximately 700 students annually in a six-week comprehensive summer academic program and a thirty-week after-school and Saturday program.

- *Teen Business Camp*
  This is a two-week, overnight summer camp provided for Newark youth on the NJIT campus. Students learn the basics of money management, the budgeting process, the acquisition of capital resources, the importance of ethics in business, and how to develop a business plan. Workshops are conducted by experts in business and field trips to local enterprises are conducted. NJIT's partners in this unique program include major corporations, small local businesses, and New Jersey foundations.

Finally, NJIT is playing a central role in the development of a major urban economic development effort involving Newark's four public institutions of higher education; city, state and federal governments; the local community; and private industry. University Heights Science Park (UHSP) will be located on 40 acres in close proximity to the colleges and universities. It will be designed to attract existing technology companies and grow new faculty-sponsored, spin-off companies. The UHSP is unique among science parks in North America in that it takes a mixed use approach to community development by joining a variety of community components to the development of technology and commercial space. As presently conceived, the project has a fourfold mission:

> Scientific: to promote research and commercial product development in six technology industry clusters.
>
> Economic: to create one million square feet of commercial research, laboratory, and office space which is anticipated to generate 3,000 permanent jobs and $4 million in tax ratables.
>
> Educational: to create an 800 student science-based high school that will prepare Newark and Essex County youth for technology-based higher education and jobs.
>
> Community: to provide job training, ancillary retail business opportunities, child care services, and 75 to 100 new and rehabilitated housing units for community residents.

A not-for-profit corporation, University Heights Science Park, Inc. was established in 1992 to implement this comprehensive vision. Groundbreaking for the first Science Park building occurred in October 1995. Known as the CHEN building, that structure now houses the New Jersey Center for Biomaterials and Medical Devices, UHSP offices, and business and development services for Science Park tenants. NJIT's second business incubator, Enterprise Development Center 2, is located in a second Science Park building immediately adjacent to the CHEN building. This building also houses NJIT's new Day Care Center.

Visibility

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1. *Getting the Word Out*
2. *Increased Recognition in Local, Regional and National Publications*
3. *NJIT Home Page*
4. *Public Policy Studies*
5. *Research Publications*
6. *Marketing Initiatives*
7. *Visibility Goals for the Future*

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1. Getting the Word Out

NJIT has become the source of a steady stream of contributions to the economy and quality of life of New Jersey and the nation. For example, university faculty and staff are developing new technologies and processes to preserve the integrity of the environment, developing partnerships to modernize and improve the competitiveness of our manufacturing industries, conducting landmark public policy studies on the use of information technologies in healthcare and the safety of gas pipelines, adapting technologies to ease the burdens of Alzheimer patients, and introducing innovative instructional and distance learning methodologies to the undergraduate curricula. These and other initiatives have raised NJIT's profile in the academic, business, and government communities.

As a result of its 1992 visit, the Middle States team suggested that NJIT make a greater effort to tell the story of its accomplishments, particularly to a national audience. Pursuant to the visiting team's comments and recommendations, NJIT reviewed its approach and identified certain strengths and weaknesses.

A major weakness lay in the lack of attention given to external inquiries about programs and university facilities. To address that weakness NJIT improved its responsiveness to external inquiries including those from the media. The university has now:

- Published a media guide to the resources available in the NJIT faculty
- Established periodic "Media Days" on campus
- Improved the process for sending university publications to national media and professional and technical journals

- Increased visits and correspondence with editors and staff of local, regional, and national publications such as: the *New York Times*, *Money Magazine*, *U.S. News and World Report*, and *Business Week*

- Added a second staff person in public relations and hired a public relations agency to assist in media placement

- Subscribed to an Internet-based service used by reporters to find expert sources among university faculty.

2. *Increased Recognition in Local, Regional, and National Publications*

The following points highlight the increased media attention NJIT is receiving and the recognition the university is receiving for the value of its instruction, research, community and public service, and economic development initiatives:

- In the 1994 *Money Magazine* listing of "best buys" among Scientific and Technical Schools, NJIT moved from 10th to 6th place, and appeared for the first time among the top 100 institutions nationally, ranked 77th.

- In 1995, 1996, and again in 1997, *Money Magazine* ranked NJIT 3rd as a "best buy" among Scientific and Technical Schools. In 1996 NJIT was ranked 54th among the top 100 institutions. *Money Magazine* also listed NJIT among the 10 institutions with the highest percentages of enrolled minority students, excluding the historically black colleges.

- In 1995, 1996, and again in 1997, *U.S. News and World Report's* issue on *America's Best Colleges* ranked NJIT in tier two of the National University Category which combines the Carnegie Foundation's Research University and Doctoral University categories.

- NJIT is frequently contacted by the media as a source of expert information on technology, engineering, science, economic development, and educational issues.

- New Jersey Network, the state's public television station, has become an occasional visitor to campus.

- *The Star-Ledger*, New Jersey's largest and most influential paper, contains stories about NJIT activities, students, and faculty several times per month.

- Other New Jersey papers such as *The Bergen Record*, *The Asbury Park Press*, the *Trenton Times* as well as monthly publications such as *New Jersey Business* and *Business News* regularly cover the university. The university also has been featured on *The Associated Press* state wire. The opening of the NJIT/Burlington County

College Technology and Engineering Center in Mount Laurel -- South Jersey's first engineering education facility -- captured the attention of the South Jersey and Philadelphia print and television media, which continue to report NJIT stories more frequently than before.

- In addition to local, state and regional media, NJIT accomplishments and activities have been covered by: *The New York Times, The Washington Post, The Philadelphia Inquirer, The Chronicle of Higher Education, Business Week, Chemical Week, Environmental Management Today, Remediation Journal, Technology Transfer Business, Sensor Technology, Mechanical Engineering, ASEE Today, Civil Engineering News, Engineering News Record, Education Today.*

3. NJIT Home Page

Increasingly, the Internet is a preferred medium for communication. For two decades NJIT has been an international leader in the development of computer mediated communication and, in particular, computerized conferencing and electronic mail. NJIT's Electronic Information Exchange System (EIES) has served as a test bed for many of the breakthroughs that have made the World Wide Web a useful and popular tool in the workplace and home.

NJIT has enhanced and expanded its own presence on the World Wide Web as a source of comprehensive information on all aspects of the university. The university's Home Page supports functions such as student recruitment, marketing, public service, fundraising, alumni relations, internal communications, customer service, and a job service for students and alumni. Applicants are now able to apply on-line for admission to both undergraduate and graduate programs.

The Home Page includes a searchable database of faculty research interests, a map and virtual tour of the campus, and current information about degree programs offered by the university. In addition, a number of departments and research centers have comprehensive home pages. The university is designing a new treatment for its web site in order to utilize some of the special capabilities of Internet publishing, such as animation.

4. Public Policy Studies

NJIT has a long tradition of providing policy analysis and technical assistance to public agencies. Since the Middle States team visit in 1992, at the request of the legislature and/or the Governor, the university has completed a series of comprehensive studies on issues of importance to the State. The reports resulting from these studies provided sound science-based analysis and advice that contributed to public dialogue and significantly influenced state policy and decision making. A number of legislative bills based upon the studies were enacted into law. The following highlights some of the reports.

"Review of the Economic Impact of Environmental Statutes, Rules, and Regulations On Industry in New Jersey"

In March 1994, after an 18-month study, NJIT presented the New Jersey Legislature a report with 46 specific recommendations on 24 issues regarding the impact of environmental regulation on the state's economy. The report stimulated considerable public dialogue during subsequent legislative and executive branch deliberations and decision making processes. The theme that emerged from these discussions was that New Jersey cannot afford to adopt a simplistic approach that views either its economic development efforts or its environmental challenges in isolation. Industrial health and growth can coexist with effective environmental regulation if both sides of the equation are given sufficient care and attention.

"Adoption of the California Low Emission Vehicle: An Analysis of the Environmental Impact and Cost"

NJIT's Center for Environmental Engineering and Science has conducted a number of studies related to vehicle emissions and vehicle inspections. The most significant was a nine-month study completed in January 1994 recommending that the State of New Jersey Legislature delay implementation of the California Low Emission Vehicle (LEV) program for up to two years to allow the development and analysis of a comprehensive emission reduction plan that ensures the state's compliance with the 1990 Clean Air Act Amendments. The report found that delaying implementation of the California LEV program would have only a minor impact on emission levels over the next decade, and would provide an opportunity to assemble the information needed to make prudent decisions regarding the LEV program. The report provided a scientific foundation for the state government's decision making regarding policy on the control of vehicle emissions.

"Electronic Network Solutions for Rising Healthcare Costs"

This comprehensive study completed by NJIT in cooperation with Thomas Edison State College found that the state's healthcare industry could save $760 million in the administrative costs of processing claims and medical information by adopting a set of standardized electronic forms and using electronic data interchange (EDI) technology. The 18-month study focused on identifying state-of-the-art information technologies with administrative cost saving potential for the state's $30 billion healthcare industry. The original study was presented in November 1994. Since then, the State has moved to adopt the major recommendations of the report through a series of laws that passed the legislature with nearly unanimous support. The Legislature has provided appropriations for NJIT and Thomas Edison State College to continue assisting the State to implement the report's major recommendations.

"Comprehensive Study of the State of New Jersey Information Resources"

In fiscal year 1993, the State of New Jersey asked NJIT to provide staffing for a Joint Legislative/Executive Information Processing Task Force. The Task Force, including representatives of the Speaker of the General Assembly, the President of the Senate, the State Treasurer, and the Governor, developed a strategic plan for the effective and efficient management of the state's information and data resources. The Task Force report resulted in the passage of legislation to establish the New Jersey Information Resources Management Commission to establish policies and standards to govern information management services in the three branches of state government.

"Report of the Building and Construction Procurement Task Force"

In the Spring of 1995, the New Jersey Department of Treasury's Building and Construction Procurement Task Force asked NJIT to develop recommendations to improve the state's organizational structure and procedures for procuring design and construction contracts. The NJIT report has resulted in the implementation of a number of administrative changes and other improvements that should allow the state to build its projects more economically and deliver its services more reliably.

Reports by the Institute for Transportation

Since the Middle States team visit, NJIT's Institute for Transportation has conducted over twenty significant studies related to important transportation and infrastructure issues. These studies include "An Analysis of Policies, Practices, Siting and Operation of Gas and Hazardous Liquid Pipeline Transmission Systems in the United States"; "Pipeline Accident Consequences Analysis Using GIS for Natural Gas and Hazardous Liquids Pipelines"; "Transportation Network Design"; a series of reports on the impact of telecommunications on manufacturing, commuting, and distance learning; and a series of reports on the impact of information systems on traveler services and the movement of freight and vehicular traffic.

5. Research Publications

The university initiated publication of "NJIT Research" as a means of promoting peer recognition of faculty accomplishments and attracting government and industrial grant support in key areas. The reports published thus far include: *Environmental Engineering and Science*; *Infrastructure*; *Manufacturing*; and *Materials Science and Engineering*. A sample can be found in Appendix R3.

6. Marketing Initiatives

Since the 1992 Middle States team visit, several steps have been taken to improve the university's marketing approach.

- A university Marketing Committee assumed responsibility for an overall marketing agenda. Members include the admissions, academic affairs, continuing professional education, university advancement, publications and advertising, and public relations offices.

- A second committee was established to set priorities for specific publications and advertising needs related to student recruitment. It consists of admissions and marketing staff, the academic deans, and representatives of the office of research and graduate studies.

- The university established a clear, attractive visual identity in its promotional literature and publications for recruitment, fund-raising, and general image-enhancement.

- The university developed consistent design approaches for publications, advertising, event regalia, and related media. These included a vivid university logo; consistent use of the descriptor, "a public research university"; standards and procedures for the appearance and content of printed material, advertising, and related media; colorful banners marking the perimeter of the campus; and increased utilization of university gonfalons at university ceremonial events.

Although considerable progress has been made in "telling the university's story", an important organizational step is being taken. The university is consolidating the various "communication units" into an Office of University Communications that includes the public relations, publications, advertising, and government affairs groups that previously operated independently. Consolidation will assure a more consistent message by focusing on the relationship between the university's marketing and communication goals. It will also allow for increased productivity and more effective utilization of resources.

7. Visibility Goals for the Future

Enhancing national visibility remains a major marketing goal. The university is developing new strategies which will:

- Continue promotion of NJIT's distance learning offerings

- Continue enhancement of the university's World Wide Web site as a marketing tool

- Increase placement of items in national media

- Increase promotion of NJIT's advanced technology research centers and laboratories

- Increase promotion of the university's athletics program
- Promote the university's educational programs nationally
- Enhance and promote NJIT's national architectural design and engineering competitions.

Short-term goals include:

- Development of the bookstore's offerings of university paraphernalia
- Expanded placement of clear and consistent signage on and around the campus and city, in cooperation with appropriate state, county, and municipal government agencies
- Development and enhancement of the university magazine as a tool for improved alumni relations and fundraising support.