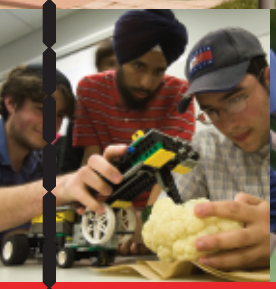
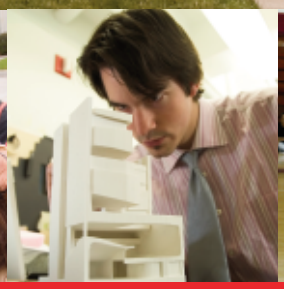
NJIT™

New Jersey's Science & Technology University





Fiscal Year 2009

Budget Submission to the Office of Management and Budget

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

TABLE OF CONTENTS

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

TABLE OF CONTENTS

SECTION 1.

PRESIDENT'S STATEMENT

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

PRESIDENT'S STATEMENT

I am pleased to present NJIT's budget plan for FY 2009. The funding requested provides for the strengthening of NJIT's exemplary programs in education, research, service, and economic development for the benefit of students and New Jersey's business, industry, government, and education sectors. While the budget requested takes into account the serious fiscal stringencies facing the State, it builds on key strengths that propel NJIT on its path to achieving major gains in primary indicators of institutional performance, the creation of external partnerships (particularly those involving initiatives on behalf of the State's economic growth), the strength and diversity of funding streams, and regional as well as national recognition. NJIT's expense base continues to remain significantly lower than its peers, while efficiency and excellence in management contribute to NJIT's success in meeting its primary goals and objectives.

As New Jersey's Science and Technology University, NJIT is in the forefront among the State's leaders in business, government, and education who recognize that the global economy is becoming knowledge-driven at an increasingly furious rate. It is a truth that we at NJIT have responded to in a direct and practical sense. An NJIT education provides students with the edge in knowledge essential for professional success in the scientific and technical fields that comprise the global economic engine of the decades ahead. NJIT's vision has taken deep root as our institution takes its position as one America's most innovative and accomplished universities of science and technology. The result is an innovative blueprint that has emphasized support for research and development, technology transfer, and job creation in such areas as stem cell therapies and other life sciences, engineering, information and communications technology, architecture, transportation, nanotechnology, and homeland security.

For these reasons, we are particularly proud that NJIT has again been ranked one of America's best national research universities by the *US News and World Report*, which also ranked NJIT among the top ten national universities for diversity. The prestigious *Princeton Review* also ranked NJIT among the nation's best institutions of higher education. In addition, NJIT has been named among the nation's Most Connected Campuses – the Top 25 most technologically sophisticated universities selected by *Forbes.com* and a *Princeton Review* survey, based on the ratio of computers to students, and technology-enhanced learning, among other factors. These widely reported rankings reflect the increasing recognition that NJIT's excellence has garnered in recent years.

NJIT Degrees Awarded / NJIT Enrollment

Degrees Awarded May 2007 Commencement:	*Fall 2007 Enrollment:*
949 Bachelor's	5,416 Bachelor's
854 Master's	2,416 Master's
49 PhD's	444 PhD's
Total: 1,852	**Total: 8,276**

PRESIDENT'S STATEMENT

How NJIT Assists Economic Development

NJIT is proud of the widespread recognition it has garnered for its broad and intensive commitment to economic development. What follows below is an array of specific programs and initiatives that serve as exemplars of NJIT's historic and continuing commitment to supporting State and local economic development:

- *NJIT's* **Enterprise Development Center**, *the State's largest business incubator, helps start-up companies commercialize their ideas by providing office and lab space, financial help and technical services, ultimately creating businesses that generate jobs and bolster the state's economy. The incubator has launched 70 businesses and has 80 companies now in residence, employing over 300 people. They have attracted more than $30 million in third-party funding and in 2006 had revenues surpassing $44 million. Descriptions of three representative EDC companies follow:*

  M2M IMAGING formerly known as Supertron Technologies Inc. a developer of next-generation solutions for high-performance preclinical and clinical MRI coils. These coils could make obtaining MRI scans cheaper and faster while also increasing their resolution.

  Menssana analyzes human breath for medical diagnosis. Just as a Breathalyzer can detect drunk drivers, a Menssana process can detect illness. The Food and Drug Administration has approved the marketing of Menssana's Heartsbreath test, which determines if patients with heart transplants are showing signs of rejecting the new heart.

  CyberExtruder has developed technology that enables the conversion of a two-dimensional (2D) facial image — like the one on a driver's license or passport — into a lifelike biometrically and forensically accurate three-dimensional (3D) model of the subject's face or head. The technology promises to be a critical tool for making face-recognition useful to the security industry.

- NJIT's **Defense Procurement Technical Assistance Center** provides small, minority and women-owned businesses with help in procuring government contracts. All of the Center's services are offered free of charge. Since 1986, New Jersey businesses continue to receive almost $1 billion in government prime and subcontract awards as a direct result of the assistance provided by the center.

- NJIT's **Center for Manufacturing Systems** helps small and mid-sized companies solve manufacturing and design projects with a range of services that includes computer-assisted design, prototype development and better manufacturing processing techniques. It is a leading provider of Lean Manufacturing training, a discipline that enables our NJ manufacturers to complete globally on both price and quality.

- NJIT's **Microfabrication Center** provides companies with access to a fully functional, Class-10 micro-electronics and micro-electromechanical systems pilot production center. With help from the Center's staff, companies translate design concepts to fully functional device prototypes that can be readily scaled to full production.

PRESIDENT'S STATEMENT

- NJIT's **Polymer Processing Institute** helps its industrial partners develop high performance materials and products by offering them expertise in polymer processing, and advanced mixing, compounding and blending technologies.

- NJIT-based **New Jersey Manufacturing Extension Program** (NJMEP) helps New Jersey's small and medium-sized manufacturers become more productive. Field agents with manufacturing experience are based in every county in the state to help companies improve operations. NJMEP services have resulted in nearly $200M in cost savings, new or retained sales and 3,000 jobs created or retained.

How NJIT's Educational Initiatives Aid Economic Development

- *NJIT produces more engineers in New Jersey than any other college or university. The university's more than 8,000 undergraduate and graduate students, enrolled in degree programs in engineering, science, and related fields, help attract and keep high-tech companies in the state. For example:*

- NJIT has offered corporate training programs for more than **57,000** employees at more than **500** New Jersey companies since 1990. The companies include **Cardinal Health, CIT, CVS, Marcal Paper, Panasonic, Stryker Orthopaedics and Verizon Wireless.**

- NJIT's Educational Opportunity Program educates and graduates more than a hundred minority engineers each year, making it easy for NJ businesses to diversify their workforce.

- NJIT, an e-learning pioneer, has launched a customized e-learning program for Verizon Wireless employees nationwide and is offering a Weekend University Program for adults 24 and older where all courses are conducted through a combination of online and classroom learning.

- NJIT is an original partner in North Jersey's $5.1 million US Department of Labor's Workforce Innovation for Regional Economic Development (WIRED) program and is involved with the Department of Labor and Workforce Development commitment of up to $18 million in matching training grants to strengthen the workforce of companies in seven high growth sectors of New Jersey's economy.

- NJIT is participating in the joint program of the Commission on Higher Education, the Department of Education, and the Department of Labor and Workforce Development to create Innovation Partnership Institutes in the areas of Financial Services (where NJIT is the Lead), in the Biotechnology and Pharmaceutical sectors and in Information Technology. The Innovation Partnership Institutes are collaborations among businesses in these key sectors and New Jersey's colleges, universities and vocational technical schools, to develop cutting edge curricula to meet the evolving training needs of businesses.

- NJIT's Career Development Services division helps companies hire technological workers and remain productive. It annually hosts career fairs and other on-campus

recruiting programs that help 400 companies find top graduates. The division posted over 6,000 technology job listings to its electronic database for over 1,500 NJ employers. Last year, 500 NJIT students worked in internships and co-ops for New Jersey companies. Some 60 percent of the students will be hired by these firms after they graduate from NJIT. Graduates from these programs enter companies at a significantly higher skill level and are thus immediately more productive to their employers.

How NJIT Research Helps the State's Economy

- Research at NJIT has grown dramatically. The level of research grew to $80 million in 2007, a 450 percent increase and a ten-fold (1,000 percent) increase in Federal funding since 1990. This level of expenditure ranks NJIT in the top ten nationally among universities whose research is principally in engineering. In 2004 it led New Jersey's research universities by a factor of two in patent submissions per dollar of Federal research support.

- Research has not only grown in quantity but also in quality. In the past four years, seven of our new faculty members have been recognized with prestigious National Science Foundation CAREER Awards. One, a young African-American professor at NJIT, Treena Arinzeh, has received Presidential recognition for research showing that adult stem cells can help patients suffering from spinal cord injuries, bone and cartilage damage and related diseases. Within five years, Arinzeh's research is expected to lead to off-the-shelf stem-cell products that patients can use instead of drugs to treat their illnesses. Her research should be a huge boon to New Jersey's bio-tech businesses.

- NJIT supports transportation research that helps New Jersey with key initiatives critical to a growing economy, such as enhancing freight movement at domestic and international gateways; increasing global competitiveness; optimizing intermodal passenger and freight transportation systems; and modeling tools for transportation planning, design and operations. NJIT has been designated as the leading planner for the Liberty Corridor supporting the dramatic expansion of Port Bayonne-Elizabeth-Newark and is addressing critical issues of congestion on the State's roadways. In this role it is working closely with the New Jersey Department of Transportation, New Jersey Transit, and the Port Authority of New York & New Jersey to ensure a coordinated plan that comprehends the value of a multi-modal solution to freight transit.

- By executive order from the Governor, NJIT serves as the State's Homeland Security Technology Systems Center. The Center is leading the implementation of new security measures under federally funded demonstration projects in the State's shopping malls and elementary schools. Pilot projects such as these help the Center develop performance and interoperability standards that will guide cost-effective use of public funds to safeguard our infrastructure and citizens.

- NJIT led the formation of the Newark Institute for Regenerative Healthcare. While still in the development stage, this center will create a functional, bio-processing pilot

production facility that will enable stem cell researchers and biotechnology firms to develop commercial process technology, translating laboratory discoveries into a new generation of healthcare products. The Institute has received a $50 million construction grant and is working with NJ EDA to finalize implementation plans.

- NJIT has drawn upon its considerable expertise in cyber-security and information assurance to assist the New Jersey Attorney General's office in evaluating electronic voting machines. A team of NJIT researchers and staff developed a test protocol and evaluated commercial voting machines against state criteria for paper print out validation systems. The team's findings have been used by the AG to insist upon improvements by the manufacturers.

How NJIT Assists Municipalities, which Helps Local Businesses and Grows Jobs

- At the request of Mayor Cory Booker, NJIT is assisting the City of Newark's initiative to develop a comprehensive Port Redevelopment Strategy to utilize the assets of both Port Newark and Newark Liberty Airport in order to enhance the contribution of these assets for the economic revitalization of the City. NJIT has been designated as the official planning agency for the first phase of the federally-funded Liberty Corridor Project, which will incorporate City port redevelopment initiatives.

- Working with the New Jersey Department of Health and Senior Services, NJIT has developed a computer network — an electronic disease reporting and management system — that allows local health departments to send information out state-wide in the event of a health emergency. Researchers at NJIT have also created an electronic filing system for real-estate transactions that speeds up the processing of real-estate documents such as deeds.

- NJIT established and operates the Center for Information Age Technology. CIAT provides consultation and project implementation support to municipal offices across the State as they migrate to digital systems for the widest array of services. Current efforts include DARM, a program to record digitally all property transfer documents and technical support for new IT systems in Atlantic City.

Recent Progress: Laying the Foundation for NJIT's Future

Building on progress already made, we have witnessed an acceleration of major changes at NJIT during the past few years:

- The completion of an architecturally dramatic $83 million, 160,000 sq. ft., campus complex that encompasses: a new Campus Center including a modern, state-of-the-art servery, campus dining area, the Hazel Ballroom, student activity offices, and a faculty and staff dining facility; the recently dedicated Fenster Hall to house the recently created Department of Biomedical Engineering, Admissions, and administrative offices and the recently completed renovation of Eberhardt Hall NJIT Alumni Center to serve as a facility to accommodate alumni and fund raising functions and office space for the Alumni Association of NJIT and University offices of Advancement, Alumni Relations, and Development.

PRESIDENT'S STATEMENT

- Reallocation of funds to support implementation of a NJIT's Strategic Plan.

- Implementation of the Strategic Plan, including clear objectives and tactics on which the budget request is by and large based, with Strategic Priorities to:

    - Enhance and enrich the quality of life of the university community and ensure a focus on the student.
    - Increase revenue from private sources.
    - Develop a core of nationally recognized programs.
    - Improve national rankings in research and intellectual property development.
    - Become nationally recognized for attracting high achieving students from diverse national and international populations.

These Strategic Priorities will allow us to:

- Intensify even further NJIT's engagement in economic development of the state and region.
- Accelerate the number and extensiveness of research and development partnerships that allow NJIT to maximize its technological and scientific contributions.
- Continue to raise the level of excellence of undergraduate education.
- Continue and expand NJIT's support of K-12 education in New Jersey.
- Maximize partnerships and relationships that increase the diversity and funding for NJIT's students and programs.
- Enhance the diversity of the NJIT community.

As a major aspect of NJIT's engagement in regional economic development, we are particularly pleased to report that NJIT is making a major contribution to the well publicized Newark Renaissance. The university's ***Campus Gateway Plan*** to revitalize its surrounding neighborhood recently took a step forward as NJIT officials selected a real estate company and an architect to manage the renovation project. Jones Lang LaSalle, a real estate firm known for revitalizing campus neighborhoods, will oversee the project. The renovation will extend from Martin Luther King Jr. Boulevard, on the campus's eastern edge, along Warren Street, just south of campus, and along Martin Luther King Jr. Boulevard from Central Avenue north to Orange Street. Elkus Manfredi Architects will design the project, known as the Campus Gateway.

The university plans to build nineteen fraternity/sorority houses along Warren Street, on a site now housing a university parking lot. The new fraternity row will include retail shops, cafes, restaurants and recreational space, altogether forming a "Greek Village." The row of fraternity houses that now stretches along MLK Boulevard, across from St. Michael's Hospital, are planned to be converted into private town houses. The four-block renovation will include vacant land owned by St. Michael's Hospital. The Campus Gateway plan will connect with a city project known as Transit Village. Together the two projects will create a vital urban center in the heart of Newark's University Heights section. The campus revitalization plan comes at a time when the city is undergoing a major renaissance. High-rise apartment buildings, new restaurants, art galleries, clubs and cafes are opening up. A recent op-ed essay in the Wall Street Journal indicated that Newark now has the most valuable land in the U.S.

PRESIDENT'S STATEMENT

As president of NJIT, I am also proud to report that I have been privileged to play a leadership role in Newark's redevelopment of its downtown business district. As chairman of the Newark Downtown Core Redevelopment Corporation, I have contributed to the redevelopment of Newark, including the building of the Newark Arena, recently named the Prudential Center. Future home of the New Jersey Devils hockey team, the Prudential Center opened in October 2007.

With respect to Athletic venues on our own campus, we have elevated the university's athletic program to NCAA Division I status, bringing the highest level of college sports competition to NJIT and the Newark community, which is encouraged to embrace the NJIT Highlanders as "Newark's college teams."

Coupled with the step up to Division I, NJIT has upgraded its home playing venues. Since 2004, NJIT has installed artificial grass on its soccer field, renovated its gymnasium, and completed a 10-year agreement to play all of its home baseball games at Bears and Eagles Riverfront Stadium, an early cornerstone of the Newark Renaissance.

Finally, and in closing, we would state with pride that NJIT has a long tradition as a university of opportunity. Throughout the institution's history, the majority of its students have been the first in their families to attend college. The university's goal of transforming young lives began early in the last century and was based on the conviction that an excellent technological education guarantees a student's future success and financial security.

NJIT ranks ninth in the nation, tied with MIT, for the most diverse student body in the nation. The university offers a wide range of Educational Opportunity and Pre-College initiatives designed to bring women and other under-represented groups onto the campus and to help them succeed once they get there.

At the same time, NJIT has been working to attract the most talented and motivated students through its Albert Dorman Honors College. The College today enrolls more than 600 of the nation's most academically accomplished students with SAT scores in the top ten percent nationally and with mathematics proficiency scores in the top two percent. The students are of diverse cultural backgrounds, many with multiple language skills, well-suited for world-class companies that continue to contribute to the State's competitiveness and prosperity.

A "Full-Needs" budget for NJIT would require an increase to the appropriation of approximately $104.8. However, NJIT has placed special emphasis on critical needs totaling $77.7 million. This includes a $70 million one time renovation request to establish the New Jersey Center in Newark for Science, Technology, Engineering and Mathematics Education. This also includes $3.6 million increase to the base appropriation for the Graduate Assistant Health Insurance Benefit Plan and $4.1 million for full funding of FY2009 salary program. We are also requesting 1,498 FTE recognizing program growth over the past fifteen years.

_____

Robert A. Altenkirch
President

SECTION 2.

UNIVERSITY INITIATIVES AND ACTIVITIES

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

Introduction

Progress in the 2004-2010 strategic plan has been steady, and NJIT continues its evolution by broadening its program offerings while growing in excellence and remaining true to its mission. The following identifies many highlights of recent initiatives and activities from 2005 to 2008.

I. Instruction

Recent Program Development and Changes

- B.S. in Bioinformatics (2005).
- B.S. in Industrial Design (2006).
- M.S. Bioinformatics (2007).
- Completed revision of the General University Requirements (CUR) (2007).
- Established an NJIT teacher certification program in partnership with Rutgers University-Newark (2007).
- B.S. in Business (nomenclature change from B.S. in Management, 2007).
- Established new Department of Biological Sciences (2008).
- B.S/B.A. in Communication and Media (nomenclature change from B.S./B.A. in Communication pending 2008 approval).

Re-accreditations

- Middle States Commission on Higher Education reaffirmed accreditation. The next evaluation visit is scheduled for 2011-2012 (2007).
- Middle States Periodic review completed (2007).
- TAC/ABET for the Engineering Technology programs in the Newark College of Engineering successfully completed (2007).
- EAC/ABET for the Engineering programs in the Newark College of Engineering in process (2008).
- CAC/ABET for the College of Computing Sciences in process (2008).
- AACSB for the School of Management in process (2008).
- NAAB for the New Jersey School of Architecture in process (2008).

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

New Programs under Development

- Newark College of Engineering
  - M.S. Healthcare Systems Management (pending 2008 approval).
  - M.S. Power and Energy Systems (pending 2008 approval).
  - M.S. Pharmaceutical Systems Management (pending 2008 approval).
  - M.S. Bioelectronics (pending 2008 approval).
  - M.S. Pharmaceutical Processing and Manufacturing (in development for 2009 approval).
  - M.S. Pharmaceutical Materials Science and Engineering (in development for 2010 approval).

- New Jersey School of Architecture
  - B.A. Digital Design (pending 2008 approval).
  - B.A. Interior Design (pending 2008 approval).
  - B.F.A. Art (pending 2008 approval).
  - B.S./B.A. Graphic Design (in development for 2010 approval).
  - B.S. Landscape Architecture (in development for 2010 approval).

- College of Science and Liberal Arts
  - B.S. Computational Sciences (pending 2008 approval)
  - M.S. Biostatistics (pending 2008 approval)
  - M.S. Pharmaceutical Chemistry (in development for 2009 approval)
  - B.A. Law, Technology and Culture (in development for 2009 approval)
  - B.S. Biophysics (in development for 2010 approval)
  - B.S. Biochemistry (in development for 2010 approval)

- School of Management
  - M.S. Financial Engineering (pending 2008 approval).
  - B.S./M.S. International Business (pending 2008 approval).
  - B.S./M.S. Enterprise Development (pending 2008 approval).
  - M.S. Management Information Systems (in development for 2009 approval).
  - M.S. Health Systems Management (in development for 2009 approval).
  - B.S. Financial Engineering (in development for 2009 approval).
  - B.S./M.S. New Media Business Development (in development for 2010 approval).

- College of Computing Sciences
  - B.S./M.S. Computing and Business (pending 2008 approval)
  - B.S./M.S. Business and Information Systems (pending 2008 approval)

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

Student Remediation, Retention and Advisement

- Continue to assess retention on campus to improve graduation rates and address outcomes from studies of gender and ethnicity to identify demographic groups with special needs.
- Continue to develop Winter Session that allows us to promote student retention and improve graduation rates.
- Established an effective Enrollment Management Committee to coordinate campus-wide efforts.
- Established campus-wide committee on student advising to identify and implement best practices.

Evaluation and Outcomes Measurement

- Department and Program Review (annually).
- Face-to-face and distant learning courses delivery study (2005).
- Student Learning Outcomes in Engineering Technology Courses (2005).
- Writing assessment at NJIT study (2005).

Table: Enrollment Headcount of Underrepresented and Women:

Total Enrollment Headcount and Percent	(Approximate) 1972	Fall 2007
Full/Part-time, Graduate and Undergraduate	4,825 (100%)	8,276
Underrepresented Enrollment (Black & Hispanic)	120 (2.5%)	1,760
Women Enrollment	100 (2%)	1,899

- In three annual (*Money, Hispanic Outlook in Higher Education, Black Issues in Higher Education*) national magazine surveys, NJIT ranks among the top 15 U.S. schools enrolling and graduating minority engineers.

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

II. Research and Interdisciplinary Centers

- Establishment of a Senior Vice President for Research and Development (2004); Assistant Vice President for Technology Development (2003).

- Research Growth:

Growth in Research and Associated Expenditures from FY95 – FY07 ($ Millions)			
	FY95	FY00	FY07
Total Research and Associated Expense	$30.9	$47.9	$88.7
Federal Funds	$15.1	$17.4	$41.3

- Interdisciplinary Research and Service Centers:

  - Smart Campus Initiative.
  - Cyber-security and Intrusion Detection Industry University Cooperative Research Center (NFS).
  - Materials Characterization Laboratory; Advanced Manufacturing Laboratory; Microfabrication Center; Center for Information Age Technology.
  - Newark Stem Cell Alliance.
  - NJ Homeland Security Technology Systems Center.

- Joint Research Corporation – New Jersey Institute of Technology, Rutgers and University of Medicine and Dentistry of New Jersey (in review 2005).

- Founded NJIT Research and Technology Corporation (2004).

III. Information Services and Technology

NJIT provides a comprehensive information services and technology infrastructure in support of its programs. The university continues to be recognized as an innovator and leader for the pragmatic use of information technologies in higher education.

- Recognized by SunGard Higher Education (formerly SCT) as a pioneer in "connected learning" for successfully integrating portal, ERP, and WebCT course management systems with single sign-on authentication (2002).

- Implemented undergraduate computer requirement, requiring all undergraduate students to have a computer in their place of residence. This ended a decades old program where NJIT issued computers to incoming freshman students. Funds for that program were re-invested in software licensing for students, bringing them a wealth of tools available to support programs across the NJIT curriculum (2003).

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

- Implemented Student Employment Management System (SEMS) to seamlessly integrate the student, financial, and human resources system to support the administration of more then 4,000 student employment assignments annually (2004).

- Mathematical Sciences department awarded an NSF Instrumentation grant for installation of a 67-node Linux computational cluster for research problems requiring high performance computation (2004).

- Received EDUCAUSE Award for Excellence in Administrative Information Systems in recognition of SEMS as an innovative and noteworthy application of information technology to improve campuses processes with creativity, efficiency, and effectiveness worthy of emulation (2005).

- Recognized by Forbes.com and The Princeton Review among the 25 of ***America's Most Connected Campuses*** for technology sophistication available to students (2006).

- Acquired Sun Microsystems 112-node Linux cluster for high performance research computing. Began process to tie all high performance computing resources into a computational grid, which when completed will provide nearly 2 teraflops of compute resources for NJIT researchers (2006). The computational resources are now connected to NJIT's OpenAFS file system so that researchers have access to the same files from these computational resources (2007).

- Established working group of high performance computation systems administrators from NJIT, Rutgers, and UMDNJ to demonstrate that researchers at separate institutions can securely access a shared computational resource, independent of the researcher's location, and from that resource, the researcher can access the same file system. Under the auspices of NJEDge.Net, the working group will share results with other NJ colleges and universities (2007).

- Established 60 TB Storage Area Network (SAN) array to support academic and administrative storage needs and implemented 24 TB network attached storage appliance to increase reliability of backups for all centrally managed services (2007).

- Began project to upgrade and replace servers supporting NJIT's most critical application systems with a hardware and software solution to "virtualize" some 50 servers, saving approximately $350,000 over the traditional approach to server lifecycle replacement (2007).

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

IV. Administration and Planning

- Leadership and Administration

  - In place leadership at senior level: President, Senior Vice President for Academic Affairs & Provost, Senior Vice President for Administration and Treasurer, Senior Vice President for Research and Development, Vice President for University Advancement, Vice President for Academic and Student Services and Dean of Albert Dorman Honors College, Vice President for Human Resources, Associate Provost Undergraduate Programs, Associate Vice President Resource Development, Associate Vice President for Development, Associate Vice President for Facilities Management, Associate Vice President for University Budgeting, Associate Vice President for Continuing and Distance Education, Associate Treasurer, Dean of Newark College of Engineering, Dean of New Jersey School of Architecture, Dean of School of Management, Dean of College of Science and Liberal Arts, Dean of College of Computing Sciences, Dean of Student Services, Associate Dean – First Year Student, Associate Provost for Information Services and Technology and Chief Information Officer, General Counsel, Dean of Graduate Studies, Associate Vice President for Enrollment Services, Assistant Vice President for Pre-College Programs, Assistant Vice President for Finance/Controller, Assistant Vice President for Technology Development, Assistant Vice President for Government and Military Relations, Director of Institutional Research and Planning.

  - Codification and promulgation of certain policies as part of continuing policy review effort, including, affirmative action, purchasing/receiving, facilities guidelines, sexual harassment, travel, gifts-in-kind, partial return of research indirect costs to instructional departments, personnel policies and procedures manual, accounting manual, public safety, safety policies associated with biohazards, human subjects experimentation and radiation, vehicle use, smoke-free university, drug-free workplace, sick leave, use of facilities by faculty consultants, computing ethics and access to information, policy on AIDS, hiring procedures, tuition waivers, patent, copyright and promotion policies, procedures for approval, operation and review of research centers, joint appointments, involuntary emergency withdrawal of students with mental disorders, and access to campus by non-university groups.

- Planning

  - Middle States Self Study, including strategic plan. (2002).

  - Identified five strategic priorities consistent with the planning themes identified through the strategic planning process (2003).

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

- Financial Planning

    - Completed negotiations with Department of Health and Human Services on a four-year Facilities and Administration Overhead rate. The F&A rate increased from 47 percent to 50 percent in FY04, 51 percent in FY05, and increased to 52 percent in FY07 (2003).

- Facilities Improvement

    - Rehabilitation of Eberhardt Hall, listed on the national register of historic places (completed 2005), making it suitable as a new center for the Alumni Association, University Club, conferences and seminar facilities.

    - Upgrade exterior renovations to Cullimore Hall (completed 2005).

    - Campus landscaping (completed 2005).

    - Occupancy of Enterprise Development Center III, East and West Buildings (initiated 2002).

    - Installed new SprinTurf, an artificial surface, on Lubetkin Field, a walking track around its perimeter, midfield scoreboard and pressbox facilities with seating to hold approximately 1,000 spectators (2004).

    - Upgrade gymnasium floor, lighting, bleachers and sound system (2006).

    - Upgrade interior space for New Jersey School of Architecture studios and seminar rooms (2006). Second phase of the expansion to commence in 2008.

    - Stabile Labs will be under construction in 2008.

    - Lier Executive Conference Room is currently under construction.

V. External Relations

- Public Affairs and Development

  Success in meeting objectives set in Strategic Plan
  The new 2004-2010 Strategic Plan for the university, finalized and adopted in 2004, sets forth the goals of increasing revenue from private sources for endowment, programmatic and unrestricted funds; enhancing the university's stewardship program; and organizing a major comprehensive campaign.

  The future of private support for NJIT continues to rest on two fronts: identifying new major donors and encouraging current donors to increase their giving levels. With an ongoing focus on building long-term relationships, we sustained significant gains

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

in achieving the goals that were adopted.

This year marked an aggressive approach to the Annual Fund – additional direct mail appeals and phonathons, and enhanced outreach through electronic communications. These electronic communications included *The Edge* e-newsletter, e-solicitations, and the e – "Find a Friend" Campaign. *The Edge* has found a consistent following of more than 2,700 readers. Response to this initiative has been positive and helped boost Annual Fund appeals. As a result, the unrestricted portion of the Annual Fund increased by 5 percent from $562,733 to $592,407 and the total number of donors increased from 5,293 to 5,394.

Other FY 2007 achievements include:

- Total donations in FY'07 totaled $ 8,076,173, representing a 15 percent increase from FY'06.

- Total donations without Gifts-in-Kind totaled $6,977,110, representing a 36 percent increase from FY'06.

- Matching Gifts totaled $184,995, representing a 30 percent increase from FY '06.

- The number of corporate donors increased from 465 to 549; and the number of foundation donors increased from 25 to 29.

- Foundation giving increased 110 percent.

- Leadership Circle, which includes groups of benefactors whose level of giving begins at least $100 annually, continues to attract new donors, while encouraging current donors to move up the giving ladder.
    - As part of the university's 125th anniversary in 2007, NJIT launched the Eberhardt Society, a individuals who contribute $25,000 or more annually, with 50 members.
    - The President's Circle, individuals who contribute at least $1,000 annually, increased by 19 percent, accounting for a 28 percent increase in the total raised through gifts at that level.
    - Membership in the Weston Society, individuals who contribute $10,000 or more annually, increased by 21 percent, contributing 9 percent more in total gifts at that level.
    - Overall giving at Leadership Circle Levels increased by 35 percent to nearly $4.4 million.

- Thirty-three new scholarships were added, including two seven-figure scholarships and two six-figure scholarships. All in all, NJIT students benefited from nearly 400 sources of scholarship assistance, including endowed, alumni and annual scholarships.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

SUMMARY OF UNIVERSITY INITIATIVES AND ACTIVITIES

- Cultivation dinners remain an important strategy for building relationships with major donors and prospects. Last year these dinners attracted 264 guests, many hosted by donors who are dedicated to expanding NJIT's circle of supporters.

- The Albert Dorman Honors Scholarship Endowment Campaign announced victory, exceeding the $20 million goal and raising $22.9 million. These funds represent contributions from more than 700 donors.

- The Highlander Athletics Campaign achieved 75 percent of its $5 million goal.

- Plans for the next comprehensive campaign were initiated. Changing Our World, a national full-service fundraising firm was retained as campaign counsel; a campaign director was hired; a Needs Assessment Committee was formed; over 60 proposals were submitted by faculty and administrators; and wealth-screening was initiated. Official pre-campaign counting began as of July 1, 2007.

- The Planned Giving Program secured three charitable gift annuities totaling more than $380,000 with one donors committing to annual gifts over $20,000. Another donor earned a place in the Olympian Society, a special recognition category for donors whose lifetime giving exceeds $1million. Two alumni committed to irrevocable bequests of over $2 million; two fulfilled bequests resulted in gifts totaling more than $70,000; and two additional bequests have mature and are currently in probate.

    - The university is diligent in its stewardship of these important gifts and in 2007 the staff helped to organize special tributes to deceased donors and facilitate the final distribution of charitable remainder trusts and gift annuities. These efforts resulted in an additional $2 million in scholarship endowment resources to the university.

SECTION 3.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

ORGANIZATION CHART

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

Outlined below are the major university program goals for Fiscal Year 2009 and beyond, the objectives associated with these goals and relevant descriptions.

The goals outlined below reflect the broad statements consistent with the traditional university mission of teaching, research, and service and associated support. For all goals, NJIT continues its commitment to continuous improvement in quality as the major objective in all academic and administrative functions.

Goal: Teaching and Learning

1. Curriculum

   - To ensure that the curriculum remains congruent with the realities of a demographically and a technologically dynamic world.
   - To modify curricula, teaching, and learning modalities with a view toward educating for leadership in a global economy.
   - To enhance student awareness of an increasingly complex, diverse and interdependent world.
   - To expand context-based learning and problem-based instructional strategies across the curriculum.
   - To develop an understanding and implementation of information literacy and academic integrity throughout the curriculum.
   - To strengthen and enhance student analytical and communications skills.
   - To implement changes in pedagogy that create more opportunities for students to effectively interact with the excellent instructional staff at NJIT.
   - To review academic programs on a regular basis.

2. Technology

   - To continue to expand the use of computing hardware, software, and other advanced technologies.
   - To enhance discipline-specific use of state-of-the-practice computing and information technologies.
   - To further integrate technology and technology-based resources in teaching and learning activities.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

- To develop new classroom models that are appropriately equipped with technology to leverage local, state and global resources and that recognize student learning styles and the technology that students bring with them to campus.

- To support development of e-portfolios for student work, permitting showcasing of their work and sharing it with other students, faculty, advisors and potential employers.

3. Professional Development

- To expand links between what students and faculty do on campus and their experiences in industry and other professional settings.

- To more effectively assess the quality of teaching as part of the promotion and tenure process.

- To continue to conduct outcomes assessment research to develop best practices in teaching and learning.

- To implement a peer-mentoring process to help newer faculty understand and implement best practices in teaching,

- To improve the integration of the university's various assessment-related activities.

4. Learning Environment

- To support programs that foster teaching excellence and the use of effective teaching techniques that promote a student-centered learning environment.

- To create a learning environment that better serves and supports under-represented student groups such as women and minorities.

- To increase the numbers of undergraduate students who are actively involved in research on campus.

Goal: Research and Graduate Studies

- Increase number of faculty recognition awards to at least the average of a select set of benchmark peer institutions within five years.

- Increase the number of licenses from university held intellectual property to at least the average of a select set of benchmark peer institutions within five years.

- Reach and maintain a three-year average of 60 PhD graduates per year in 15 disciplines within five years to continue to expand NJIT's reputation as a nationally recognized research university.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

The objectives that follow describe expected outcomes in a format consistent with the activities grouped in the traditional accounting of headings of instruction, research, etc. More specific objectives are included within the core and priority needs detail.

Instruction: Objectives

1. To offer baccalaureate degree programs in architecture, engineering, engineering technology, computer science, information systems, management, statistics and actuarial science, biology, chemistry, communication and media, science technology and society, applied physics, applied mathematics, information technology, bioengineering, environmental studies and sustainability, materials science and engineering, transportation and other disciplines that will enable graduates to qualify for immediate, productive careers and for advanced study in graduate and professional schools.

2. To provide opportunities for graduate students to attain advanced degrees leading to success in professional careers.

3. To provide digital and distance learning courses, certificate programs, and degrees that deliver opportunities for continuing education for engineers, scientists, architects, managers, computer specialists, engineering technologists, and others employed in business, industry, and government in New Jersey and throughout the region.

4. To encourage and provide opportunities for the development and maintenance of high professional standards within the academic community.

5. To enhance the NJIT partnerships with New Jersey businesses by providing on-site certificate and degree programs that will keep our industries at the edge in knowledge.

6. To offer college courses to students in high schools through carefully planned television and computer conferencing programs.

7. To expand undergraduate course offerings by digital and distance learning modalities and hybrid learning environments.

8. To expand the use of technology, computation, and information management and analysis in each of the curricula offered by the university.

Goal: Student Diversity

1. To increase the number of full-time enrolled women undergraduate students and the number of full-time enrolled minority graduate students.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

2. To achieve a female enrollment of at least 22 percent of all full-time undergraduate students by Fall 2008 or 25 percent by Fall 2011.

3. To continue to maintain high levels of under-represented minority graduate enrollments.

4. To increase the resident student population to improve retention, quality of life, and attractiveness of the campus to more distant populations, and as part of a university's visibility plan.

5. To increase the number of domestic (U.S. national) full-time graduate students.

6. To improve the recruitment and retention of adult learners.

Goal: Faculty and Staff

1. To improve the quality of the applicant pool NJIT faculty and staff are recruited from.

2. To recruit intensively so that women and minorities account for at least 30 percent and 10 percent respectively, of the full time, tenure track university faculty.

3. To maintain NJIT's favorable labor-management relations and atmosphere for negotiations.

4. To foster a welcoming and supportive environment for all new and incumbent NJIT employees.

5. To expand and improve the staff and management development program.

6. To expand career development ladders for non-faculty employees.

7. To improve employee productivity, efficiency and effectiveness.

Goal: Campus Life

1. To continue to develop an environment that provides a tangible sense of community for students, faculty, staff and administration.

2. To provide multiple opportunities for student engagement through student organizations, programs, facilities enhancements and campus activities.

3. To work in conjunction with faculty and administrative units to continuously improve programs and services to support student retention.

4. To encourage and continuously improve student learning opportunities in and out of class.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

Goal: Public Service

1. To serve diverse student populations through the continued development of programs and services for disadvantaged pre-college students, as well as specific populations such as the disabled, the gifted, and practicing professionals.

2. To continue to develop innovative programs for elementary and secondary school students.

3. To continue to develop services for the professional community.

4. To increase the involvement of students, faculty and staff in community service.

Goal: Economic Development

1. To serve the economic development needs of the City of Newark, the State, and the nation.

2. To make the best possible use of NJIT's special talents and expertise in service to its external communities.

Goal: Resource Management and Development

1. To continue to improve the budgetary process for academic and administrative sectors, ensuring appropriate links between allocation decisions and institutional goals and strategic priorities.

2. To improve formal linkages between all planning activities, resulting documents, and institutional budgets.

3. To continue to develop resources to support ongoing programs and the implementation of plans for NJIT's future.

4. To increase significantly the university's endowment.

5. To increase giving from alumni and other individual donors.

The objectives which follow describe expected outcomes in a format consistent with the activities grouped in the traditional accounting of headings of instruction, research, etc. More specific objectives are included within the core and priority needs detail.

Instruction: Objectives

1. To offer baccalaureate degree programs in architecture, engineering, engineering technology, computer science, management, statistics and actuarial science, chemistry, applied science, science technology and society, applied physics, applied mathematics, information technology, bioengineering and applied sciences, environmental studies and sustainability, advanced materials, transportation and other disciplines that will enable

graduates to qualify for immediate, productive careers and for advanced study in graduate and professional schools.

2. To provide opportunities for graduate students to attain advanced degrees in a number of professional fields.

3. To provide opportunities for continuing education for engineers, scientists, architects, managers, computer specialists, engineering technologists, and others employed in business, industry, and government in New Jersey and throughout the region.

4. To encourage and provide opportunities for the development and maintenance of high professional standards within the academic community.

5. To the extent feasible, where there is a demonstrable need, expand the number of sites in the state where NJIT's programs are offered, to make them available on a statewide basis.

6. To offer college courses to students in high schools through carefully planned television and computer conferencing programs. To expand graduate course offerings at remote sites through distance learning modalities.

7. To expand the use of computers in each of the curricula offered by the university.

Instruction: Program Description

1. NJIT currently offers day and evening courses leading to the following degrees:

   - Bachelor of Architecture (B.Arch.)

   - Bachelor of Arts (B.A.) in: Applied Mathematics (joint with Rutgers University - Newark Campus); Biology (joint with Rutgers University - Newark Campus); Communication, Computer Science (joint with Rutgers University - Newark Campus); History (joint with Rutgers University - Newark Campus); Information Systems (joint with Rutgers University - Newark Campus

   - Bachelor of Science (B.S.) in: Applied Physics (joint with Rutgers University - Newark Campus); Architecture; Bioinformatics; Biology (joint with Rutgers University - Newark Campus); Biomedical Engineering; Chemical Engineering; Chemistry; Civil Engineering; Communication; Computer Engineering; Computer Science; Electrical Engineering; Engineering Science; Engineering Technology; Environmental Engineering; Environmental Science (joint with Rutgers University - Newark Campus); Human Computer Interaction (joint with Rutgers University - Newark Campus); Industrial Design; Industrial Design; Industrial Engineering; Information Systems; Information Technology; Business; Mathematical Sciences; Mechanical Engineering; Science/Technology and Society

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

- Master of Architecture (M.Arch.)
- Master of Business Administration (M.B.A.) in Management of Technology
- Master of Infrastructure Planning (M.I.P.)
- Master of Public Health (M.P.H.) joint with both The University of Medicine and Dentistry of New Jersey and Rutgers University - Newark Campus
- Master of Arts in Teaching (M.A.T.) in History joint with Rutgers University – Newark Campus
- Master of Arts (M.A.) in History joint with Rutgers University – Newark Campus
- Master of Science (M.S.) in: Applied Mathematics; Applied Physics (joint with Rutgers University - Newark Campus); Applied Statistics; Architectural Studies; Biology (joint with Rutgers University - Newark Campus); Bioinformatics; Biomedical Engineering; Chemical Engineering; Chemistry; Civil Engineering; Computational Biology (joint with Rutgers University - Newark Campus); Computer Engineering; Computer Science; Electrical Engineering; Engineering Management; Engineering Science; Environmental Engineering; Environmental Policy Studies; Environmental Science (joint with Rutgers University - Newark Campus); Industrial Engineering; Information Systems; Internet Engineering; Management; Manufacturing Systems Engineering; Materials Science and Engineering; Mechanical Engineering; Occupational Safety and Health Engineering; Pharmaceutical Engineering; Professional and Technical Communication; Telecommunications; Transportation
- Master of Science in Nursing-Nursing Informatics (M.S.N.) joint with The University of Medicine and Dentistry of New Jersey
- Doctor of Philosophy (Ph.D.) in: Applied Physics (joint with Rutgers University – Newark Campus); Biology (joint with Rutgers University - Newark Campus); Biomedical Engineering (joint with The University of Medicine and Dentistry of New Jersey) Chemical Engineering; Chemistry; Civil Engineering; Computer Engineering; Computer Science; Electrical Engineering; Environmental Engineering; Environmental Science (joint with Rutgers University - Newark Campus); Industrial Engineering; Information Systems; Materials Science and Engineering; Mathematical Sciences (joint with Rutgers University - Newark Campus); Mechanical Engineering; Transportation; Urban Systems (joint with both The University of Medicine and Dentistry of New Jersey and Rutgers University - Newark Campus)

2. NJIT teaches, advises and mentors doctoral students in Ph.D. in Management offered with Rutgers University as the degree-granting institution.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

3. NJIT offers cooperative education programs in which work in industry and business is a part of the student's curriculum leading to most of the listed bachelors' and masters' degrees.

4. Faculty responsibilities, in addition to instruction and academic program development, include advisement of students in undergraduate and graduate programs; supervision of students in laboratories and independent study, research, and scholarship; professional activities and public service; service on departmental, college, and university committees concerned with academic governance of the university; and activities related to community service including recruitment and promoting campus diversity.

5. New Programs in Development:
   - New Jersey School of Architecture
     - B.A. Digital Design (pending 2008 approval).
     - B.A. Interior Design (pending 2008 approval).
     - B.F.A. Art (pending 2008 approval).
     - B.S./B.A. Graphic Design (in development for 2010 approval).
     - B.S. Landscape Architecture (in development for 2010 approval).

   - Newark College of Engineering
     - M.S. Healthcare Systems Management (pending 2008 approval).
     - M.S. Power and Energy Systems (pending 2008 approval).
     - M.S. Pharmaceutical Systems Management (pending 2008 approval).
     - M.S. Bioelectronics (pending 2008 approval).
     - M.S. Pharmaceutical Processing and Manufacturing (in development for 2009 approval).
     - M.S. Pharmaceutical Materials Science and Engineering (in development for 2010 approval).

   - School of Management
     - M.S. Financial Engineering (pending 2008 approval).
     - B.S./M.S. International Business (pending 2008 approval).
     - B.S./M.S. Enterprise Development (pending 2008 approval).
     - M.S. Management Information Systems (in development for 2009 approval).
     - M.S. Health Systems Management (in development for 2009 approval).
     - B.S. Financial Engineering (in development for 2009 approval).
     - B.S./M.S. New Media Business Development (in development for 2010 approval).

   - College of Computing Sciences
     - B.S./M.S. Computing and Business (pending 2008 approval)
     - B.S./M.S. Business and Information Systems (pending 2008 approval)

   - College of Science and Liberal Arts
     - B.S. Computational Sciences (pending 2008 approval)
     - M.S. Biostatistics (pending 2008 approval)
     - M.S. Pharmaceutical Chemistry (in development for 2009 approval)
     - B.A. Law, Technology and Culture (in development for 2009 approval)
     - B.S. Biophysics (in development for 2010 approval)

     B.S. Biochemistry (in development for 2010 approval)

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

Program Description: Sponsored Research and Other Sponsored Programs

Various projects and activities are carried out that serve to develop new knowledge, broaden the educational program, encourage faculty to improve their academic competence, provide developmental experience to students, and extend and improve relationships with the corporate and government communities. Programs are funded by the sponsor or grantor, except for some matching requirements that frequently consist of in-kind contributions of staff time, indirect services, or the use of facilities and equipment.

Objectives: Campus Life

1. To maintain a safe environment through excellent security/information dissemination and emergency alert/ safety systems.

2. To add more green space and develop campus facilities for social, recreational and educational purposes

3. To ensure appropriate levels of community participation in the decision-making process.

4. To encourage programs and activities that create a vibrant sense of campus life both during the week and on weekends.

5. To continue to cooperatively develop community events, celebrations and traditions with all constituents on campus.

6. To improve the quality of food service.

7. To develop school spirit by encouraging support of our athletic programs.

8. To develop a First Year Experience, in concert with academic units, in order to engage and retain first year students.

9. To continue to improve our support of student learning through CAPE, First year Seminar and leadership development programs.

10. To continue to encourage understanding and awareness of diverse racial, ethnic and cultural perspectives, as well as develop services and facilities appropriate to the needs of women on an urban campus.

Objectives: Public Service

Public Service at NJIT includes Continuing Professional Education, Community Service and Enterprise Development Center.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

Objectives: Continuing Professional Education

To make available to technical and managerial professionals education and training programs conducted in a variety of formats off- and on-campus and online for the primary purpose of maintaining proficiency in employment and professional talent development. Programs and courses of varying duration and locations are held for this purpose and to satisfy other specific educational objectives of individuals and their corporate and government employers.

Program Description: Continuing Professional Education

The Division of Continuing Professional Education plays an active role in providing programs and services meeting the extension and public service commitments of the university. Representative examples of the types of programs offered are as follows:

1. The Division offers select NJIT Master's Degrees, Academic Certificates and Bachelor's degrees at company sites, community colleges, on-campus through its Weekend University Program and online to practicing professionals who desire to upgrade their competence in newly emerging areas of concern to government and industry. These include Biotechnology/Pharmaceutical; Critical Infrastructure and Homeland Security, Construction. Engineering and Emergency Management, Energy, Environmental Health and Safety, Finance, Information Technologies and Logistics.

2. The Division offers practicing professionals the opportunity to acquire Continuing Education Units (CEUs) in study in the same areas of emerging technology using the same system of distributed educational systems and locations as above.

3. Specially tailored "in-house" programs are presented to industry and government organizations.

4. Non-credit and credit-bearing distance-based degrees, certificates and courses and non-credit training courses are developed and delivered to audiences too remote to take advantage of other curriculum offerings.

5. For professionals who have been displaced by layoffs, plant or business closings, or corporate restructuring, and for other specialized populations such as people with disabilities, the Division of Continuing Professional Education provides skill and competency upgrading so that these individuals can pursue new employment opportunities.

6. The Division works closely with NJIT's various research centers to provide a comprehensive training component, helping the centers achieve their public service objectives.

7. The Division responds to opportunities originating from the federal and state levels and from the New Jersey public workforce system to provide training, education and educational infrastructure development which facilitate New Jersey's economic development goals.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

Objectives: Community Service and Economic Development

1. To promote civic responsibility through service for all members of the university community, with a special focus on students.

2. To link students, faculty and staff directly to an array of community service opportunities.

3. To provide technical and other assistance to New Jersey firms, especially small, minority and women-owned businesses, in order that they may become more competitive, and to promote job creation in Newark and the state.

Program Description: Community Service and Economic Development

1. The Office of Community and Public Service promotes the integration of service learning programs with course work, as well as providing opportunities for paid and volunteer work with public and community-based agencies. The office administers NJIT's Service Corps enabling students to use their skills and knowledge to address serious social and environmental issues facing the city, state and region. The Housing Fellows Program, for example, places students in community based non-profit housing organizations to develop plans, design and initiate affordable housing, and related projects.

2. Economic development includes three major initiatives. The Enterprise Development Center is a technology-based business incubator that assists firms to start-up and grow with the aid of university resources. The Procurement Technical Assistance Center is a federally funded program that helps businesses successfully compete for Department of Defense and other federal contracts. The Office of Intellectual Property provides systematic coordination of efforts to support NJIT faculty, staff and students seeking to commercialize their inventions. NJIT is also involved in a number of other efforts to support and develop the economy of the city, the state and beyond.

Objectives: Auxiliary Services

To provide students with collateral services related to the instructional program.

Program Description: Auxiliary Services

The university operates the residence halls and parking facilities on a self-supporting, non-profit basis. Operations of the bookstore and food service are contracted to private vendors.

Objectives: Academic Support

1. To provide print and non-print media materials to the faculty and students for research, reference and supplemental reading to complement and supplement the formal instructional program.

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

2. To provide instruction to students in the use of library collections to aid them in study and research.

3. To provide bibliographical and other technical assistance to faculty and students to meet their needs in academic program planning and development and in carrying out independent study projects, and other course-related assignments.

4. To provide instruction in the use of and access to modern computer technology.

5. To provide computer and programming capability appropriate to the research and instructional activities of the university.

Program Description: Academic Support

1. The library and staff provide a full range of services to students, faculty and administration, including circulation, catalog maintenance, reference services, technical and bibliographical services, and general assistance in the use of all library collections. Media Services and the Library also provide films, film-strips, video tapes, and other audio-visual materials and equipment to faculty and staff for instructional and other university purposes.

2. The University Information Systems department provides a full range of computing facilities, services, and information systems. An extensive network of mainframes, minicomputers, microcomputers, terminals, and software has been developed and is regularly updated and expanded.

Objectives: Student Services

1. To provide students with a quality campus life experience.

2. To provide students with comprehensive academic support services and programs.

3. To provide students with a broad range of education-related services in order to facilitate their social, emotional, and intellectual growth.

4. To provide financial assistance to students on the basis of demonstrated need, and to provide scholarships from university and private sources when there is a combination of need and merit.

5. To provide a complement of support services outlined in the Program Descriptions.

Program Description: Student Services

Services provided include admissions processing, academic tutoring and support, residence, dining, athletics (including an extensive program of intercollegiate and intramural sports), counseling services (including testing, course placement, academic and personal counseling), veterans and international student services, student activities, financial aid programs, health

PROGRAM GOALS, OBJECTIVES AND DESCRIPTIONS

services, co-op's, internships, college work study, career planning and placement. Under established policies and procedures, financial aid is provided to students through a program of loans, scholarships, grants and work opportunities. Funds are derived from state appropriations, federal grants, and private sources and institutional budgets.

Objectives: Institutional Support

1. To provide management of the university with strong support in planning, program development and evaluation, financial management, and effective resource development, allocation, and utilization.

2. To provide general support services to all instructional, service and administrative units of the university.

3. To provide security and other related services to maintain a safe and secure physical environment through a commissioned police force and a contingent of security officers.

Objectives: Physical Plant Operations and Management

1. To operate the physical plant in a safe and energy-efficient manner.

2. To operate and maintain all physical facilities required for the conduct of the educational and related programs.

3. To provide transportation and other related services required to maintain a secure and efficiently managed physical environment.

4. To preserve and extend the useful life of the physical assets.

Program Description: Physical Plant Operations and Management

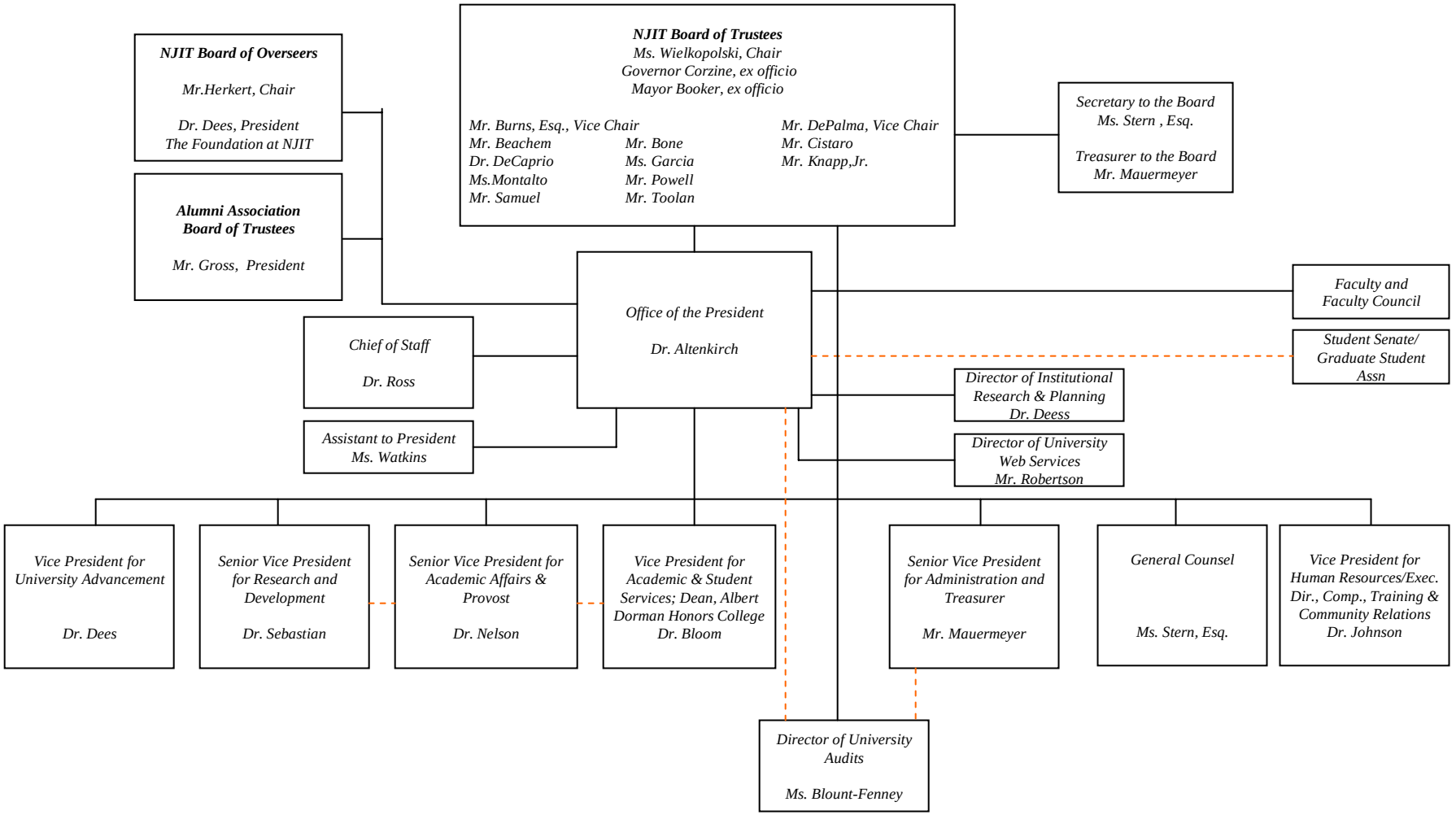
The program provides for the planning, management, and operation of physical plant assets of the university including buildings, grounds, and equipment. Utilities, maintenance, rehabilitation, improvement, and custodial services are provided.

ORGANIZATION CHARTS

The current organization structure is displayed on the following pages.

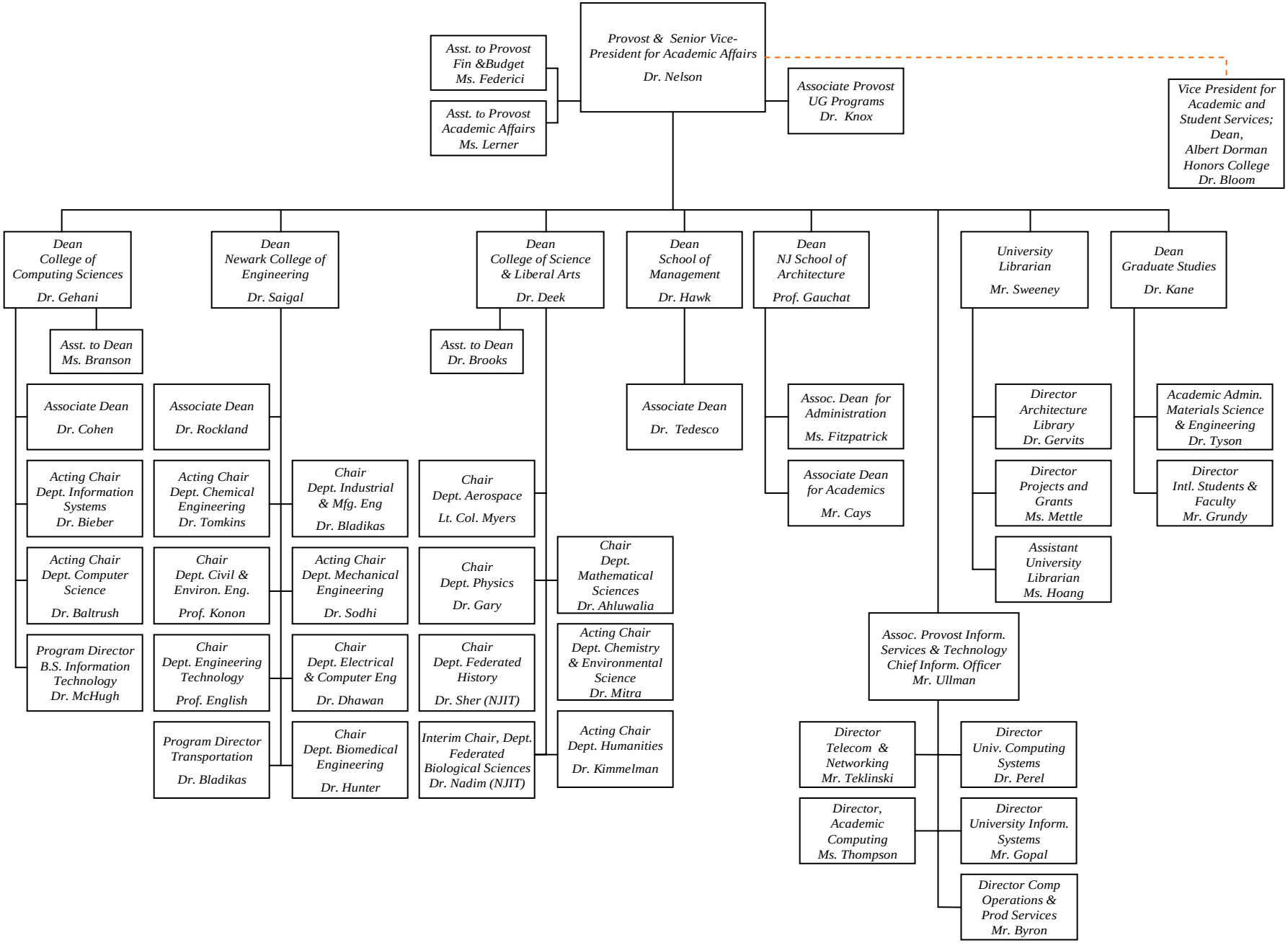
NJIT BOARD OF TRUSTEES, OFFICERS, AND ADMINISTRATION

Fall 2007



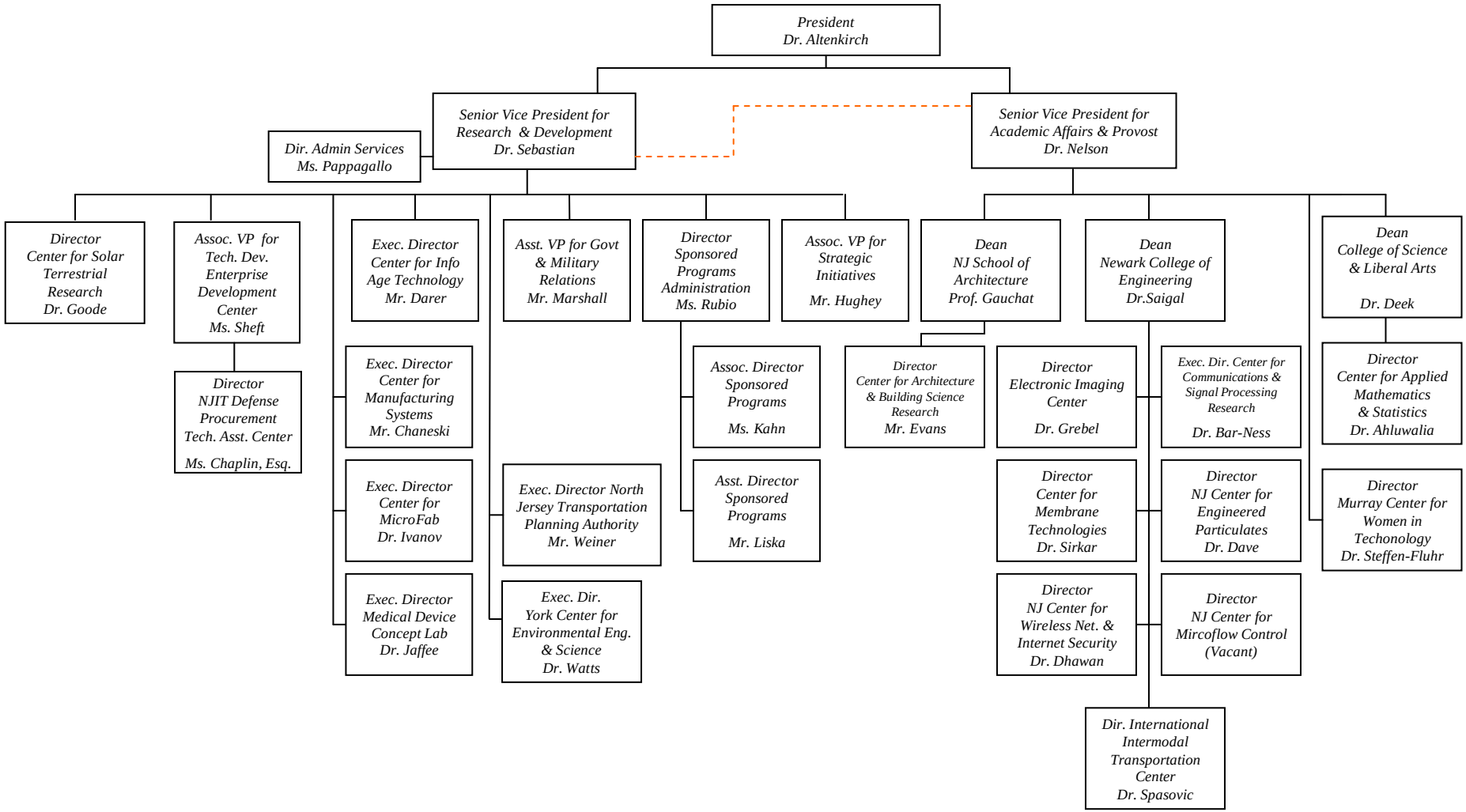
ACADEMIC AFFAIRS

Fall 2007



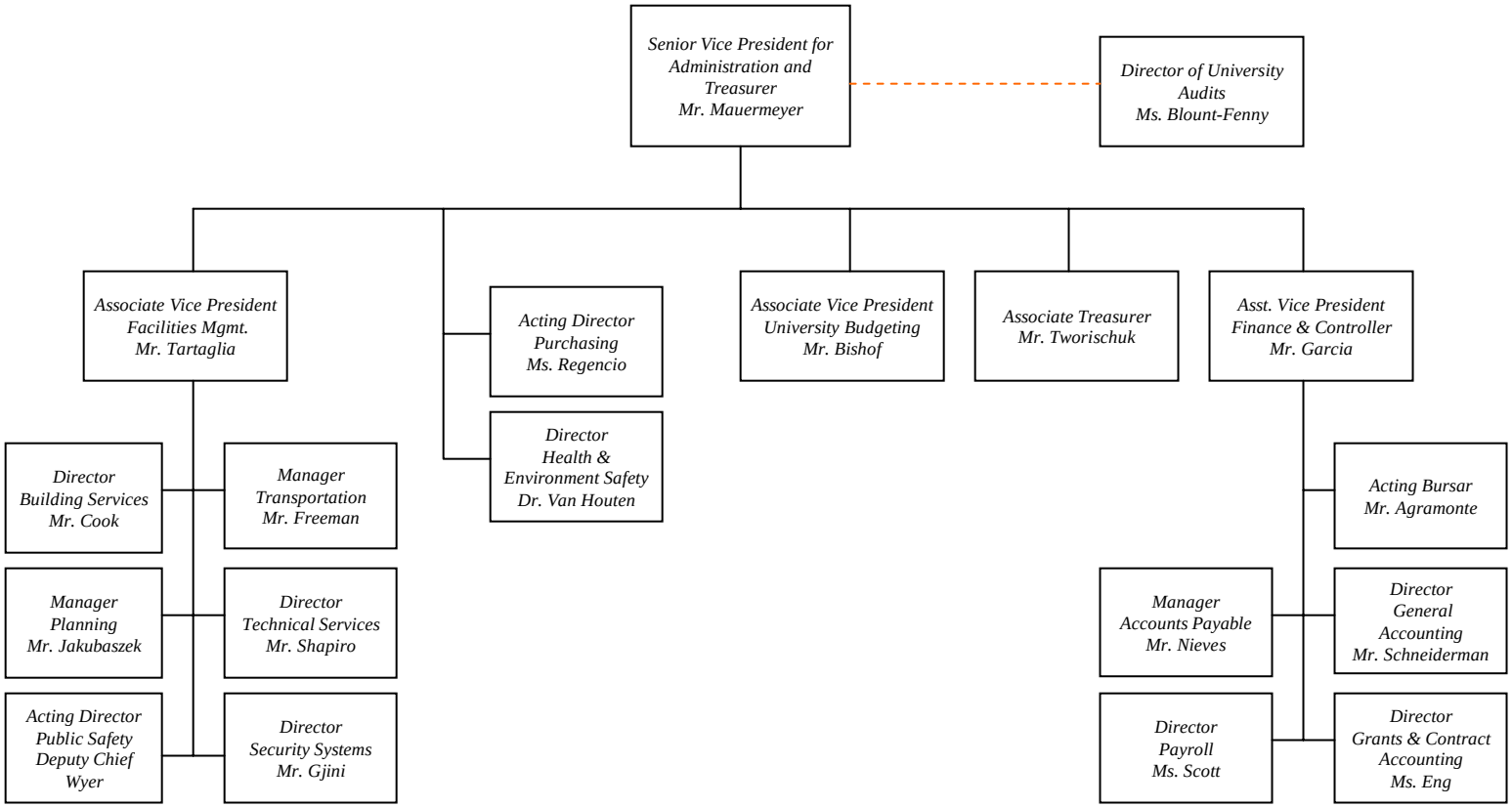
RESEARCH ADMINISTRATION

Fall 2007



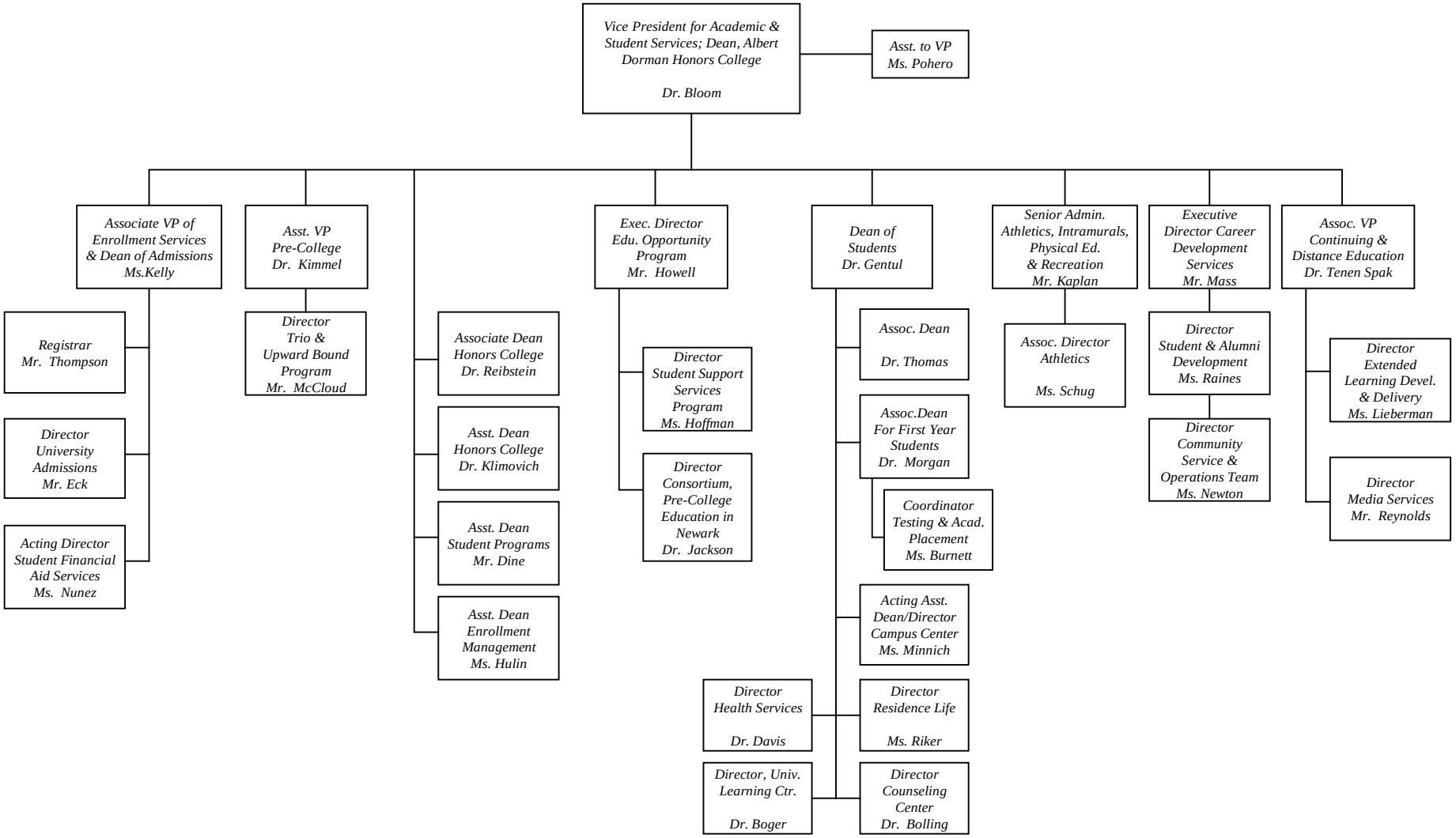
FISCAL ADMINISTRATION

Fall 2007



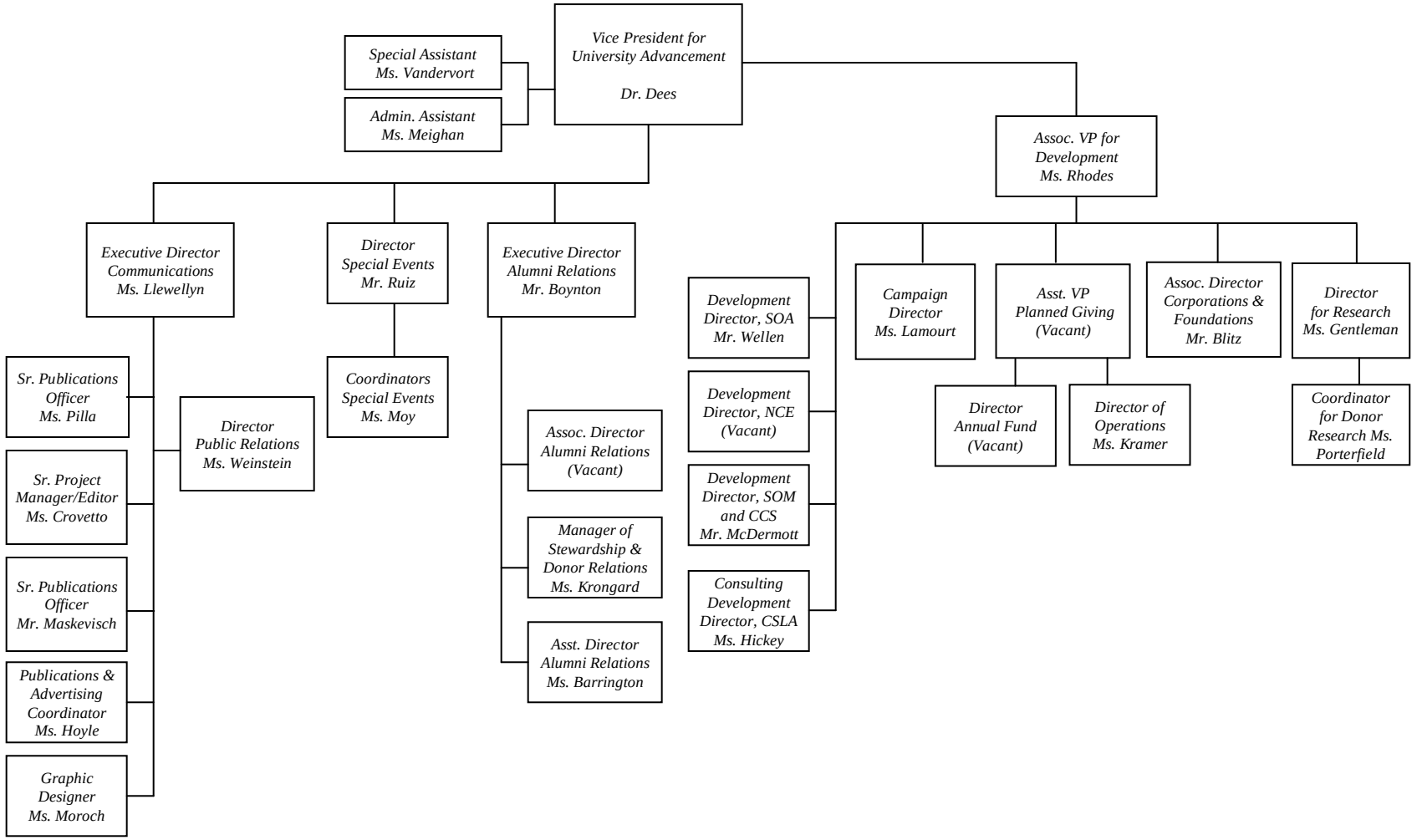
ACADEMIC AND STUDENT SERVICES

Fall 2007



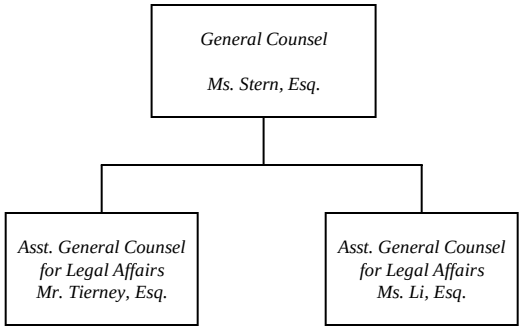
UNIVERSITY ADVANCEMENT

Fall 2007



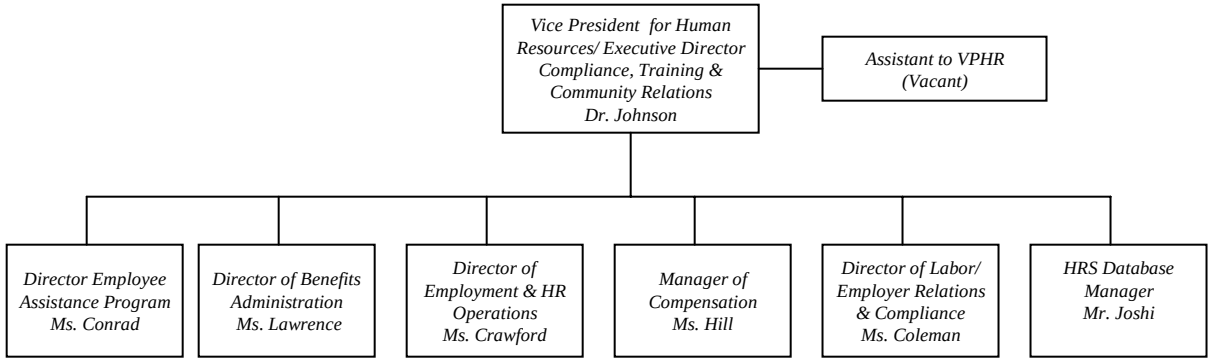
OFFICE OF GENERAL COUNSEL

Fall 2007



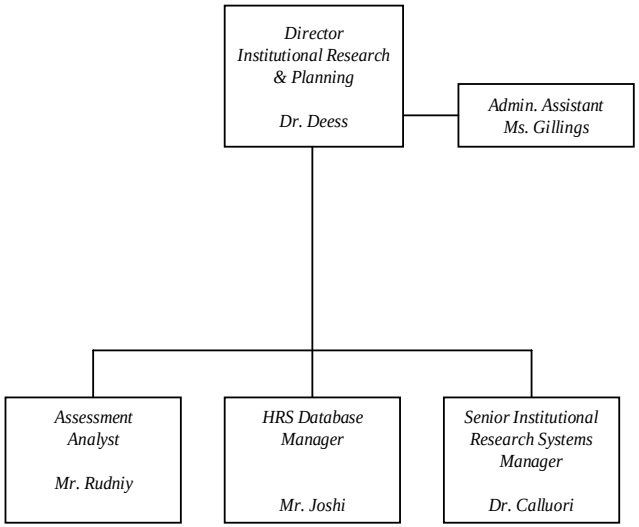
HUMAN RESOURCES

Fall 2007



OFFICE OF INSTITUTIONAL RESEARCH AND PLANNING

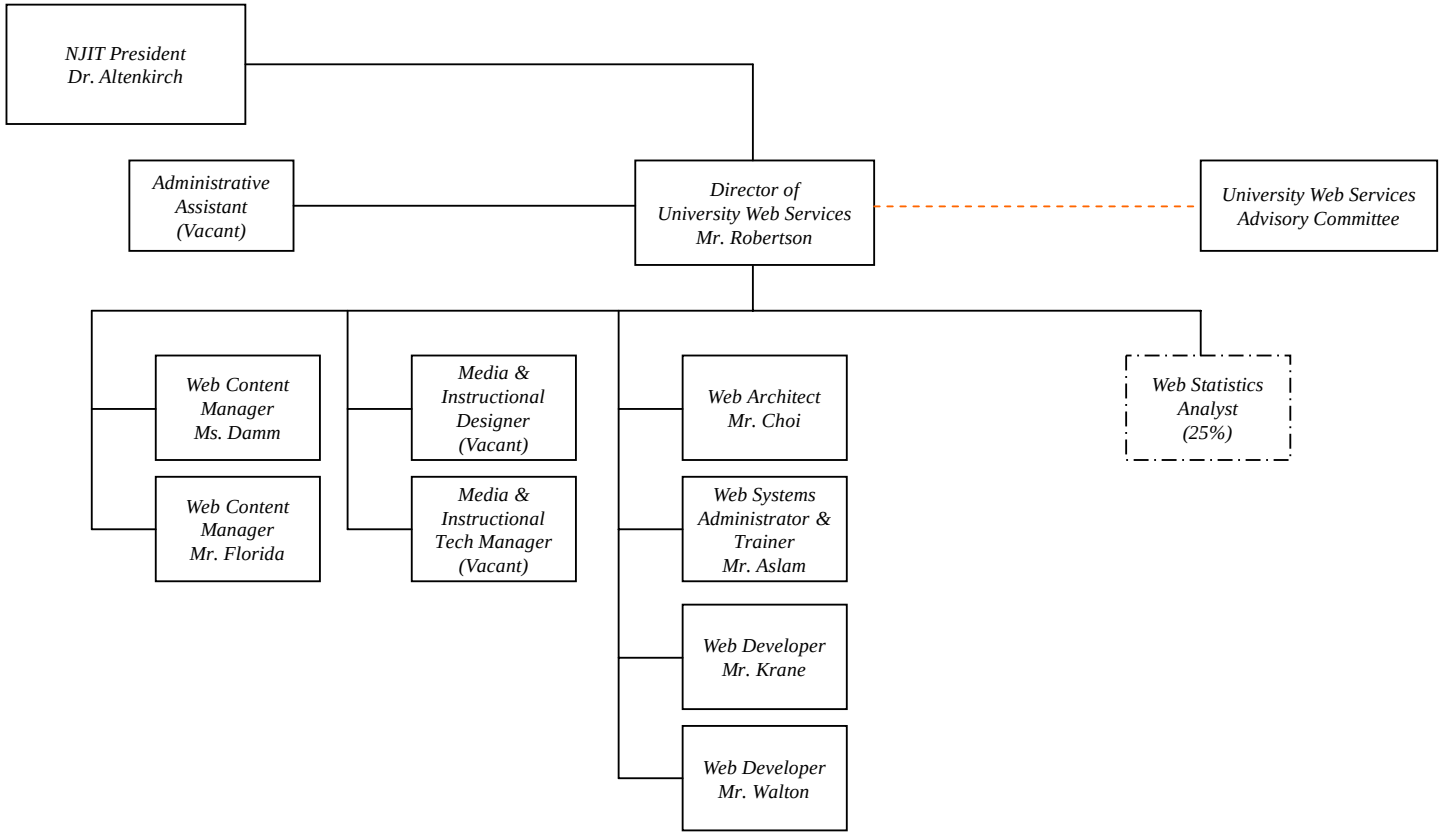
Fall 2007



Late updated:
11/14/2007

OFFICE OF UNIVERSITY WEB SERVICES

Fall 2007



SECTION 4.

ENROLLMENT/STUDENT RETENTION INFORMATION

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST
EVALUATION DATA

PROGRAM DATA	Actual FY 2006	Actual FY 2007	Orginal FY 2008	Revised FY 2008	Budget Request FY 2009
Institutional Support					
Enrollment total (headcount)	10,908	11,162	11,306	11,154	11,577
Enrollment total FTE's (a)	6,059	6,116	6,276	6,184	6,365
Undergraduate total (headcount)	5,263	5,380	5,451	5,416	5,615
Undergraduate total FTE's (a)	4,145	4,167	4,214	4,199	4,331
Full-time (headcount)	4,080	4,136	4,176	4,177	4,267
Full-time FTE's (a)	3,723	3,543	3,779	3,578	3,655
Part-time (headcount)	1,183	1,244	1,275	1,239	1,348
Part-time FTE's (a)	422	624	435	621	676
Graduate total (headcount)	2,795	2,829	3,025	2,860	3,002
Graduate total FTE's (a)	1,418	1,470	1,582	1,532	1,555
Full-time (headcount)	1,431	1,569	1,750	1,641	1,651
Full-time FTE's (a)	966	1,053	1,174	1,101	1,108
Part-time (headcount)	1,364	1,260	1,275	1,219	1,351
Part-time FTE's (a)	452	417	408	431	447
Extension and Public Service					
Enrollment (headcount) (a)	2,850	2,953	2,830	2,878	2,960
Enrollment total FTE's (a)	496	479	480	453	479
Undergraduate (headcount)	2,145	2,281	2,150	2,189	2,290
Undergraduate FTE's (a)	372	358	358	329	358
Graduate (headcount)	705	672	680	689	670
Graduate FTE's (a)	124	121	122	124	121
Degree programs offered	93	93	93	93	117
Courses Offered	3,315	3,380	3,325	3,365	3,447
Student credit hours produced	180,396	185,817	187,901	186,153	189,533
Degrees Granted - Total	1,899	1,852	1,920	1,910	1,910
Ratio: Student/faculty (b)	12.7/1	13.0/1	13.0/1	13.0/1	13.0/1
Full-time, First-Time, Degree-Seeking Freshmen who					
are Regular Admission Students	612	794	695	740	740
Average SAT Score - Math	607	590	603	602	602
Average SAT Score - Verbal	544	520	532	536	536
Average SAT Score - Total	1,151	1,110	1,135	1,138	1,138
Outcomes Data (c)					
Third Semester Retention Rates	82.0	80.0	80.0	80.2	80.2
Seven Year Graduation Rates	56.0	58.0	58.0	58.3	58.3
Student Tuition and Fees					
Total Cost of Attendance (d)	22,622	24,106	24,106	25,450	25,450
Full-Time Undergraduate Tuition State Residents	8,472	9,066	9,066	9,700	9,700
Full-Time Undergraduate Tuition Non - State Residents	14,676	15,850	15,850	18,432	18,432
Full-Time Undergraduate Fees	1,350	1,440	1,440	1,650	1,650
PERSONNEL DATA					
Position Data					
State Funded Positions	805	805	1,488	805	1,498

(a) Equated on the basis of 32 equivalant credit hours per undergraduate student and 24 equivalant credit hours per graduate student, consistent with IPED's.

(b) Calculated on the number of teaching positions (including adjunct faculty) and equated full-time (weighted) students as reflected in IP

(c) As calculated by the Student Unit Record Enrollment (SURE) system.

(d) As reported to the Office of Student Assistance. Includes tuition, fees, room and board, transportation, and supplies. FY2009 does not reflect rate increases, which are determined after the FY2009 appropriation is known.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

ENROLLMENT NARRATIVE

Nationally, approximately 9 percent of those enrolling in college are engineering majors. Despite the fact that it is only 7 percent in New Jersey, the continuing demand for scientific and technological undergraduate education remains high at NJIT as evidenced by the sustained enrollments in these programs over the past several years. Recent strong undergraduate enrollment trends indicate that initiatives designed to enlarge the applicant pool have resulted in an increase in the number of highly qualified students seeking enrollment at NJIT. Despite the national and regional decline in enrollment in computer science, computer engineering, information systems, and business (MBA), we have undertaken an aggressive recruitment program, and a new program development, which we expect will result in a slight increase in applications at the freshman, transfer and graduate levels. Enrollment yields will improve by 1-2 percent across all student populations. Targeted initiatives will also contribute to a 2 percent increase in our student retention rate. However, while initiatives to increase enrollment are being implemented, we are at capacity for architecture and several engineering majors and only modest enrollment increases in these programs are possible. For FY 2008, annual enrollment is expected to be 11,154 students. An enrollment of 11,577 is expected for FY 2009.

Some of the recruitment efforts that have been developed or expanded at NJIT include:

- Increased faculty and student (Ambassadors Club) involvement with recruiting.
- Academic department career fairs and Engineering Career Days for high school students and teachers.
- On-campus "Open House" events for prospective students and their parents.
- Representation at over 500 high schools and recruiting events throughout New Jersey and the region.
- Development of a competitive scholarship program to attract highly qualified students.
- CCS, CSLA, SOA, and SoM "Career Exploration Programs" for high school students.
- Establishment of a Parents Advisory Council.
- Establishment of an Alumni Admissions Program throughout the United States.
- Expanded statewide EOP recruiting.
- Athletic recruiting as NJIT moves its intercollegiate athletics program to NCAA Division I status.
- Expanded marketing of extension and distance learning course offerings.
- Extensive Pre-College Programs, serving over 4,500 primary and secondary school students and teachers, and the addition of a 12th year options initiative, and an "academy."
- Exploring options to make on-campus housing more attractive, to achieve nearly 100 percent usage of 1,400 beds.
- Continuing to develop close working relationships with New Jersey community colleges to increase the enrollment of NJ Stars II students; and to create BS/MS programs with four-year colleges and universities.
- Completed a student-friendly renovation of dining facilities in the Campus Center to offer more dining options and longer hours.
- New majors/degree programs (MS in Bioinformatics; joint BS/Physical Therapy and BS/Physician Assistant programs with UMDNJ; expanded the Engineering Technology from a two-year completer degree to a full four-year BS degree program.)

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY 2009 BUDGET REQUEST

ENROLLMENT NARRATIVE

- Articulated curriculum and joint admissions agreements with science and technology high schools.
- Partnerships with the National Action Council for Minorities in Engineering, the Philadelphia Alliance for Minorities Program, corporate and other science association programs, NSF CUNY-MAGNET Alliance for Graduate Education for the Professoriate, the New Jersey Minority Action Careers Program, Project 1000, and the GEM program.
- Targeted overseas student recruitment in India, China, the Pacific Rim, and Eastern Europe.
- Increased evening and weekend student programming to improve campus life.
- Increased entrance requirements for selective undergraduate majors due to limited instructional and physical facility capacities.
- Renovated the gymnasium, installed additional seating and upgraded the speaker/sound system.
- Continued refining the "Weekend College" for adults who are currently employed in technological jobs, initiated an undergraduate degree, but had yet to complete it

Additional recruitment efforts will focus on increasing women undergraduate and graduate enrollment. Nationally, 56 percent of students attending college are women, yet they remain underrepresented at technological universities. Efforts will also be expanded to use distance learning to train at corporate sites, insuring that the state's technological workforce has the necessary skills and knowledge.

Overall, the appreciating reputation of NJIT for educating the scientific and technological workforce of the State, partnerships with industry and government, and magazine rankings have resulted in increased undergraduate enrollment. The fields of study offered by the university relate well to the aspirations of highly motivated individuals who will contribute significantly to the economic development of the State, and to their communities, as they build careers, largely in New Jersey.

Current undergraduate and graduate catalogs are available at http://ecatalog.njit.edu

SECTION 5.

BUDGET INFORMATION

State of New Jersey
Department of the Treasury
Office of Management and Budget

FY2009 Budget Request (BB-102)

Date:

Department: New Jersey Institute of Technology

Citation:

Approved by:
Director

To the State Treasurer:
Appropriations as follows are requested for the above agency for fiscal year 2009. Attached are data covering the present and preceding fiscal years. The statements given are true and correct to the best of my knowledge and belief. I certify that the request submitted is in accordance with instructions contained in the Budget Instruction Manual.

Department Head/Officer
Robert A. Altenkirch
President

Positions Budgeted by fund (1,2)	Budgeted FY 2008	Agency Request FY 2009
[1] State Funded (per Appropriations Act Language)	805	1,498
[2] General Services Funded	249	0
Total Positions	**1,054**	**1,498**

Expended 2007					Recapitulation	FY2008	FY2009
Original and Supplemental	Reappro. and Receipts	Transfers and Emerg.	Total Available	Expended	By Department By Fund Category	Appropriated	Agency Request
230,241	37,272	0	267,513	267,513	Institutional Support	273,397	351,130
					Total Grants-In-Aid		
					Less:		
	(5,081)		(5,081)	(5,081)	Receipts from Tuition Increases	(5,865)	
(82,877)	(3,827)		(86,704)	(86,704)	General Services Income	(91,993)	(97,858)
(11,012)	(1,001)		(12,013)	(12,013)	Auxiliary Funds Income	(11,372)	(11,372)
(58,850)	(27,363)		(86,213)	(86,213)	Special Funds Income	(88,816)	(88,816)
(30,320)	0		(30,320)	(30,320) [3]	Employee Fringe Benefits	(26,253)	(26,253)
(183,059)	**(37,272)**	**0**	**(220,331)**	**(220,331)**	**Total Income Deductions**	**(224,299)**	**(224,299)**
47,182	**0**	**0**	**47,182**	**47,182**	**Total State Appropriation**	**49,098**	**126,831**
					Special Purpose		
230,241	37,272	0	267,513	267,513	General Institutional Operations	273,397	273,397
					Center for Science & Technology Education		70,000
					Salary Program		4,141
					Graduate Assistant Health Insurance Benefit Plan		3,592
(183,059)	**(37,272)**	**0**	**(220,331)**	**(220,331)**	**LESS: Income Deductions**	**(224,299)**	**(224,299)**
47,182	**0**	**0**	**47,182**	**47,182**	**TOTAL STATE SUPPORT**	**49,098**	**126,831**

[1] State Funded = Positions per Appropriations Act Language [2] General Services Funded = All Other Unrestricted Positions

[3] Per OMB, fringe amount is fixed. Audited financial statements reflect fringe benefits totaling $21.071 million for FY09.

New Jersey Institute of Technology
FY 2009 Budget Request

Spending Agency: New Jersey Institute of Technology

Appropriations Data

($000)

—Year Ending June 30, 2007— Original	Reapprop. & Receipts	Transfers & Emerg.	Total Available	Expended	GRANTS - IN - AID Distribution by Fund & Program	FY 2008 Adjust. Approp.	FY 2009 Request	FY 2009 Recom-mended
230,241	37,272	0	267,513	267,513	Institutional Support	273,397	351,130	
					Total Grants - in - Aid			
					LESS:			
	(5,081)		(5,081)	(5,081)	Receipts from Tuition Increase	(5,865)		
(82,877)	(3,827)		(86,704)	(86,704)	General Services Income	(91,993)	(97,858)	
(11,012)	(1,001)		(12,013)	(12,013)	Auxiliary Funds Income	(11,372)	(11,372)	
(58,850)	(27,363)		(86,213)	(86,213)	Special Funds Income	(88,816)	(88,816)	
(30,320)	0		(30,320)	(30,320)	Employee Fringe Benefits	(26,253)	(26,253)	
(183,059)	(37,272)	0	(220,331)	(220,331)	***Total Income Deductions***	(224,299)	(224,299)	
47,182	0	0	47,182	47,182	*Total State Appropriations*	49,098	126,831	
					Distribution by Fund and Object			
					Special Purpose			
230,241	37,272	0	267,513	267,513	General Institutional Operations	273,397	273,397	
					Center for Science and Technology Education		70,000	
					Salary Program		4,141	
					Graduate Assistant Health Insurance Benefit Plan		3,592	
					LESS:			
(183,059)	(37,272)		(220,331)	(220,331)	Income Deductions	(224,299)	(224,299)	
47,182	0	0	47,182	47,182	Grand Total State Appropriations	49,098	126,831	

State of New Jersey
Department of the Treasury
Office of Management and Budget

New Jersey Institute of Technology
FY 2009 Budget Request

Revenue Statement (BB-103)

The following information should be reconciled to the "Statement of Revenues, Expenses, and Change in Net Assets" from the audited financial statements for fiscal years indicated as "actual."

Institution: NEW JERSEY INSTITUTE OF TECHNOLOGY	FY 2007 Ending June 30, 2007 ACTUAL	FY 2008 Ending June 30, 2008 ESTIMATED	FY 2009 Ending June 30, 2009 ESTIMATED
EDUCATION & GENERAL REVENUE			
General Services:			
Tuition and Fees			
Gross Tuition	72,579	78,200	84,065
Receipts from Tuition Increase (BB-102 & BB-105)	5,081	5,865	0
Required fees	11,390	12,103	12,103
Subtotal Tuition and Fees (Gross)	**89,050**	**96,168**	**96,168**
Less student awards	(22,388)	(23,284)	(23,284)
Subtotal Tuition and Fees (Net)	**66,662**	**72,884**	**72,884**
Non - Operating Revenue			
Investments	1,934	1,000	1,000
Miscellaneous nonoperating revenues	801	690	690
Subtotal Non - Operating Revenue	**2,735**	**1,690**	**1,690**
Subtotal General Services Income; excluding rate increase (BB-102 & BB-105)	**86,704**	**91,993**	**91,993**
Subtotal General Services Income; including rate increase	**91,785**	**97,858**	**97,858**
Other Non - Operating Revenue			
Base State Appropriation	47,182	49,098	49,098
Employee Fringe Beneftis (Per OMB)	30,320	26,253	26,253
FY 2009 Critical Needs Request			77,733
Subtotal, Other Non - Operating Revenue	77,502	75,351	153,084
TOTAL EDUCATION & GENERAL REVENUE	**169,287**	**173,209**	**250,942**
NET EDUCATION & GENERAL REVENUE	**146,899**	**149,925**	**227,658**
Auxiliaries			
Resident Life	9,827	9,262	9,262
Bookstore	215	210	210
Other	1,971	1,900	1,900
Total Auxiliaries (BB-102 & BB-105)	**12,013**	**11,372**	**11,372**
Less student awards	(2,343)	(2,437)	(2,437)
Subtotal Auxiliaries (Net)	**9,670**	**8,935**	**8,935**
Special funds			
Student tuition and fees	125	125	125
Grants & Contracts	64,064	67,267	67,267
Other operating revenues	3,933	3,933	3,933
Nonoperating revenues	13,368	12,768	12,768
Other revenues	4,723	4,723	4,723
Subtotal Special funds(BB-102 & BB-105)	**86,213**	**88,816**	**88,816**
TOTAL REVENUE	**242,782**	**247,676**	**325,409**

New Jersey Institute of Technology
FY 2009 Budget Request
FY 2007 Financial Statement Revenue Reconciliation
For the year ended June 30, 2007
($000's)

Financial Statement Description	E & G Revenue		Auxiliaries	Special Funds	Subtotal	Adjustments		FY07 Financial Statement
Operating revenues:								
Student tuition and fees	89,050	(1)	0	125	89,175	(22,388)	(2)	66,787
Federal grants and contracts	0		0	46,272	46,272	0		46,272
State grants and contracts	0		0	14,961	14,961	0		14,961
Other grants and contracts	0		0	2,831	2,831	0		2,831
Auxiliary enterprises	0		12,013	0	12,013	(2,343)	(2)	9,670
Other operating revenues	0		0	3,933	3,933	0		3,933
Total operating revenues	**89,050**		**12,013**	**68,122**	**169,185**	**(24,731)**		**144,454**
Nonoperating revenues:								
State appropriations	68,253	(3)	0	0	68,253	0		68,253
Gifts and bequests	0		0	2,606	2,606	0		2,606
Investment income	1,934		0	10,160	12,094	0		12,094
Other nonoperating revenues	801		0	602	1,403	0		1,403
Net nonoperating revenues	**70,988**		**0**	**13,368**	**84,356**	**0**		**84,356**
Other revenues:								
Capital grants and gifts	0		0	1,655	1,655	0		1,655
Additions to permanent endowments	0		0	3,068	3,068	0		3,068
Total other revenues	**0**		**0**	**4,723**	**4,723**	**0**		**4,723**
Total revenues	**160,038**		**12,013**	**86,213**	**258,264**	**(24,731)**		**233,533**

(1) E&G tuition and fee revenue reflects $232 reclass of CPE revenue to State grants.

(2) Deductions for student awards: $22,388 tuition & fees), $2,343 (Auxiliary).

(3) Includes base appropriation totaling $49.182 million and employee benefits totaling $21.071 million.

New Jersey Institute of Technology
FY 2009 Budget Request

FY 2008 Projected Tuition Revenue
Based Upon FY 2008 Original FTE Estimates

A. In-State						
3,806	FTE Undergraduate (Est.)	X	$9,700	(FY 2008 Tuition Rate)	=	$36,918,200
639	FTE Graduate (Est.)	X	$12,730	(FY 2008 Tuition Rate)	=	$8,134,470
B. Out-of-State						
408	FTE Undergraduate (Est.)	X	$18,432	(FY 2008 Tuition Rate)	=	$7,520,256
900	FTE Graduate (Est.)	X	$18,090	(FY 2008 Tuition Rate)	=	$16,281,000
				SUBTOTAL		**$68,853,926**

FTE Undergraduate is equated to 32 student credit hours.
FTE Graduate is equated to 24 student credit hours.

	Y	N
Is full - time undergraduate tuition a flat rate?	X	
If yes, the flat rate applies to students taking at least 12 credits, but not more than 19 credits.		
Is full - time graduate tuition a flat rate?	X	
If yes, the flat rate applies to students taking at least 12 credits, but not more than 19 credits.		

C.	Executive Management Programs 43 FTE Graduate (Est.)	=	$2,057,000
D.	Continuing Professional Education	=	$440,000
E.	Summer / Winter Session Tuition	=	$5,866,000
		SUBTOTAL	**$77,216,926**
		ADJUSTMENTS: (1)	$6,848,074
NET TUITION REVENUE ANTICIPATED FOR FY 2008			**$84,065,000**
Tuition funds designated toward facilities projects			$0

(1) Adjustments represent the difference between the flat rate tuition for full-time students versus the per credit hourly rate for part-time students as well as fluctuations between resident and non-resident enrollment.

New Jersey Institute of Technology
FY 2009 Budget Request

FY 2008 Tuition & Fee Schedule

	Charge Per Credit Hour	Annual Rate For Full-Time Student	Charge Per Occurrence (If Applicable)
Tuition			
Resident			
Undergraduate	370	9,700	N/A
Graduate	694	12,730	N/A
Non-Resident			
Undergraduate	788	18,432	N/A
Graduate	955	18,090	N/A
Fees Required Of All Students			
Registration	80 [1]	160	N/A
Student Activity - UG	6	106	N/A
Student Activity - G	4	80	N/A
Athletic	8	190	N/A
Technology Infrastructure	20	320	N/A
Academic Facilities	37	700	N/A
Student Services	9	130	N/A
Health Services	22 [1]	44	N/A

Other Fees	Undergraduate	Graduate
Application	50	60
Commencement	100	100
Deferred Payment	50	50
Re-instatement	200	200
Late Registration	100	100
Miniversity	140	N/A
Parking - F/T	125	125
Parking - P/T	65	65
Schedule Change	25	25
Make-up Exam	50	50
Thesis	N/A	75
Dissertation Binding	N/A	100
Maintaining Registration	25	50
Transfer Student Orientation	10	N/A
Health Insurance - if needed:		
In State and Out of State	278	278
International Students	316	316
Distance Learning	75	75
Room And Board - Academic Year		
Typical Student Housing	6,486	6,486
Typical Meal Plan Charge	2,778	2,778
	9,264	**9,264**

[1] Flat rate per semester

NEW JERSEY INSTITUTE OF TECHNOLOGY
SALARY PROGRAM FY2008 AND FY2009

ESTIMATED SALARY PROGRAM BY BARGAINING UNIT:

	Total # Unrestricted FTE	FY2007 Deferred COLA/Merit	FY2008 Base Salary	FY2008 COLA	FY2008 Merit	FY2008 Total Salary Program	FY2008 Anticipated Cash Need	FY2009 Estimated Base Salary	FY2009 COLA	FY2009 Merit	FY2009 Total Salary Program	FY2009 Anticipated Cash Need
Union Totals												
afscme	98.00	70,311	4,187,703	125,631	64,700	260,642	4,378,034	4,378,034	131,341	67,641	198,982	4,577,016
fop	17.00	0	949,907	66,493	0	66,493	1,016,400	1,016,400	40,656	0	40,656	1,057,056
fop - soa	7.00	0	491,813	14,754	10,131	24,886	516,699	516,699	15,501	10,644	26,145	542,844
njsolea	3.00	0	257,672	7,730	8,626	16,356	274,027	274,027	8,221	9,173	17,394	291,421
non-aligned	128.89	456,493	13,716,091	0	685,805	1,142,298	14,401,896	14,401,896	0	720,095	720,095	15,121,991
opeiu	189.02	129,995	8,070,974	242,129	124,697	496,821	8,437,800	8,437,800	253,134	130,364	383,498	8,821,298
psa	610.61	883,542	54,729,414	1,641,882	986,498	3,511,922	57,357,794	57,357,794	1,720,733	1,033,874	2,754,607	60,112,401
Total	**1053.52**	**1,540,341**	**82,403,574**	**2,098,621**	**1,880,455**	**5,519,418**	**86,382,651**	**86,382,651**	**2,169,586**	**1,971,791**	**4,141,377**	**90,524,028**
			TOTAL FY2008 SALARY PROGRAM:			**5,519,418**		**TOTAL FY2009 SALARY PROGRAM:**			**4,141,377**	

SALARY PROGRAM PARAMETERS:

	FY2008 SALARY PROGRAM			FY2009 SALARY PROGRAM	
Union	FY07 Deferred Cola & Merit	FY08 Cola	FY08 Merit	Cola	Merit
afscme	1.175%	3.000%	1.500%	3.000%	1.500%
fop - soa	0.000%	3.000%	2.000%	3.000%	2.000%
fop	0.000%	7.000%	0.000%	4.000%	0.000%
non-aligned	3.750%		5.000%		5.000%
opeiu	1.175%	3.000%	1.500%	3.000%	1.500%
njsolea	0.000%	3.000%	3.250%	3.000%	3.250%
psa	1.175%	3.000%	1.750%	3.000%	1.750%

DISTRIBUTION BY ELEMENT:

Element	FY2008 Salary Program	FY2009 Salary Program
Instruction	2,838,407	2,199,510
Research	127,288	86,085
Public Service	35,120	25,265
Academic Support	689,464	505,674
Student Services	418,293	313,341
Institutional Support	1,088,091	770,492
Physical Plant	322,755	241,011
Total	**5,519,418**	**4,141,377**

SECTION 6.

FY 2009
CRITICAL, CORE AND PRIORITY NEEDS

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

CRITICAL, CORE AND PRIORITY NEEDS INTRODUCTION

The outcome of a recent university-wide assessment of a 'full-needs' budget for NJIT identified $104.841 million in new funding requirements, of which $21.046 million are recurring needs while $83.795 million are non-recurring needs.

This section identifies budgetary needs above our current appropriation and is categorized into three groups, critical needs, core needs and priority needs. Critical needs total $77.733 million ($7.733 million in recurring needs and $70.000 million in non-recurring needs), core needs total $10.133 million, while priority needs total $16.975 million.

Critical needs represent four specific requests, and are essential to sustain a level of excellence the university has long been associated with. Included within this request is $3.592 million to support graduate assistant health insurance, full-funding, $4.14 million, for FY09 salary program (consistent with the State-wide pattern for across-the-board salary increases), recognition of employee FTE growth (249 FTE) over the past 15 years attributable to program growth and complexity, and a one-time $70 million renovation request to establish the New Jersey Center in Newark for Science, Technology, Engineering and Mathematics (S&T) Education (formerly Central High School).

Core needs are essential to running the base "business," and, in most cases, are needs that have been deferred for a number of years. Requests include $1.077 million in required academic support and physical plant services, $3.904 million in Library, Information Services and Technology Infrastructure, $1.578 million for research associated with Homeland Security and Stem Cell Process Technology, and $3.574 million supporting needed academic programs.

Priority needs have been defined as programs needed to move the university forward programmatically and ensure that we are providing quality educational, research, service, and economic development programs to address broad State economic and societal goals. In this category, totaling $16.975 million, includes: $11.313 million in new/expanded academic programs, $1.407 million in research projects, $3.633 million in Library, Information Services and Technology Infrastructure programs, and $.622 million in Facilities improvements.

For the FY09 budget request, NJIT is requesting funding for critical programs defined above, totaling $77.733 million ($7.733 million in recurring needs and $70.000 million in non-recurring needs). Core and priority projects will continue to be deferred due to the economic issues facing the State, thus these are not included in the FY09 requested appropriation.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST
SUMMARY OF CRITICAL, CORE AND PRIORITY NEEDS
($000's)

	CRITICAL NEEDS		CORE NEEDS		PRIORITY NEEDS		FY09 IDENTIFIED NEEDS	
	$	FTE	$	FTE	$	FTE	$	FTE
INSTRUCTION								
State Authorized FTE		109.0					0	109.0
General Non-Personnel Increase (3%)			129				129	0.0
Salary Program	2,200						2,200	0.0
Graduate Assistant Health Insurance Benefit Plan	3,592	444.0					3,592	444.0
Instructional Equipment Fund and Smart Classroom			700		700		1,400	0.0
Teaching And Learning Resource For Faculty					200	3.0	200	3.0
Newark College of Engineering:								
Wireless Communications And Networking			650		910	4.0	1,560	4.0
Center For Advanced Nano-Scale Technologies					1,200	4.0	1,200	4.0
Particle Technology					1,210	4.0	1,210	4.0
Neural Engineering					1,200	4.0	1,200	4.0
Critical Infrastructure Systems			500	1.0	1,250		1,750	1.0
School of Architecture			440	5.0	385	7.0	825	12.0
College of Science and Liberal Arts:								
Mathematical Sciences			75	1.0	428	3.0	503	4.0
Teacher Education			240	2.0	100		340	2.0
School of Management			280	3.0	275	6.0	555	9.0
College of Computing Science			220	3.0	190	4.0	410	7.0
Interdisciplinary Graduate Programs					2,515	16.0	2,515	16.0
Materials Science And Engineering			340	2.0	750		1,090	2.0
SUBTOTAL - INSTRUCTION	**5,792**	**553.0**	**3,574**	**17.0**	**11,313**	**55.0**	**20,679**	**625.0**
RESEARCH								
State Authorized FTE		5.0					0	5.0
General Non-Personnel Increase (3%)			78				78	0.0
Salary Program	86						86	0.0
Homeland Security			500	4.0	500		1,000	4.0
Stem Cell Process Technology Development			1,000		907		1,907	0.0
SUB TOTAL - RESEARCH	**86**	**5.0**	**1,578**	**4.0**	**1,407**	**0.0**	**3,071**	**9.0**
PUBLIC SERVICE								
State Authorized FTE		2.0					0	2.0
General Non-Personnel Increase (3%)			38				38	0.0
Salary Program	25						25	0.0
SUB TOTAL - PUBLIC SERVICE	**25**	**2.0**	**38**	**0.0**	**0**	**0.0**	**63**	**2.0**
ACADEMIC SUPPORT SERVICES								
State Authorized FTE		32.0					0	32.0
General Non-Personnel Increase (3%)			194				194	0.0
Salary Program	506						506	0.0
Information Services and Technology Infrastructure			3,180	2.0	3,240		6,420	2.0
Library and Services			530	2.0	393		923	2.0
SUB TOTAL - ACADEMIC SUPPORT SVS	**506**	**32.0**	**3,904**	**4.0**	**3,633**	**0.0**	**8,043**	**36.0**
STUDENT SUPPORT SERVICES								
State Authorized FTE		25.0					0	25.0
General Non-Personnel Increase (3%)			82				82	0.0
Salary Program	313						313	0.0
SUB TOTAL - STUDENT SUPPORT SVS	**313**	**25.0**	**82**	**0.0**	**0**	**0.0**	**395**	**25.0**
INSTITUTIONAL SUPPORT SERVICES								
State Authorized FTE		53.0					0	53.0
General Non-Personnel Increase (3%)			197				197	0.0
Salary Program	770						770	0.0
SUB TOTAL - INSTIT. SUPPORT SVS	**770**	**53.0**	**197**	**0.0**	**0**	**0.0**	**967**	**53.0**
PHYSICAL PLANT/FACILITIES								
State Authorized FTE		23.0					0	23.0
General Non-Personnel Increase (3%)			260				260	0.0
Salary Program	241						241	0.0
Physical Plant Support Services			500		622	8.0	1,122	8.0
Center for Science and Technology Education	70,000						70,000	0.0
SUB TOTAL - PHYSICAL PLANT	**70,241**	**23.0**	**760**	**0.0**	**622**	**8.0**	**71,623**	**31.0**
TOTAL CRITICAL, CORE AND PRIORITY NEEDS	**77,733**	**693.0**	**10,133**	**25.0**	**16,975**	**63.0**	**104,841**	**781.0**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST
CRITICAL, CORE AND PRIORITY NEEDS EXPENSE DETAIL
($000's)

	RECURRING EXPENSES						
DESCRIPTION	FTE	SALARY	EQUIP.	NON-SALARY	SUBTOTAL RECURRING	1 TIME	GRAND TOTAL
INSTRUCTION							
State Authorized FTE	109.0				0		0
General Non-Personnel Increase (3%)				129	129		129
Salary Program		2,200			2,200		2,200
Graduate Assistant Health Insurance Benefit Plan	444.0			3,592	3,592		3,592
Instructional Equipment Fund and Smart Classroom			1,400		1,400		1,400
Teaching And Learning Resource For Faculty	3.0	175		25	200		200
Newark College of Engineering:					0		0
Wireless Communications And Networking	4.0	360			360	1,200	1,560
Center For Advanced Nano-Scale Technologies	4.0	300			300	900	1,200
Particle Technology	4.0	310			310	900	1,210
Neural Engineering	4.0	300			300	900	1,200
Critical Infrastructure Systems	1.0	80		150	230	1,520	1,750
School of Architecture	12.0	695		55	750	75	825
College of Science and Liberal Arts:					0		
Mathematical Sciences	4.0	195		108	303	200	503
Teacher Education	2.0	90	50	95	235	105	340
School of Management	9.0	465		40	505	50	555
College of Computing Science	7.0	370		40	410		410
Interdisciplinary Graduate Programs	16.0	715		200	915	1,600	2,515
Materials Science And Engineering	2.0	35	250	305	590	500	1,090
SUBTOTAL - INSTRUCTION	**625.0**	**6,290**	**1,700**	**4,739**	**12,729**	**7,950**	**20,679**
RESEARCH							
State Authorized FTE	5.0				0		0
General Non-Personnel Increase (3%)				78	78		78
Salary Program		86			86		86
Homeland Security	4.0	300			300	700	1,000
Stem Cell Process Technology Development					0	1,907	1,907
SUB TOTAL - RESEARCH	**9.0**	**386**	**0**	**78**	**464**	**2,607**	**3,071**
PUBLIC SERVICE							
State Authorized FTE	2.0				0		0
General Non-Personnel Increase (3%)				38	38		38
Salary Program		25			25		25
SUB TOTAL - PUBLIC SERVICE	**2.0**	**25**	**0**	**38**	**63**	**0**	**63**
ACADEMIC SUPPORT SERVICES							
State Authorized FTE	32.0				0		0
General Non-Personnel Increase (3%)				194	194		194
Salary Program		506			506		506
Information Services and Technology Infrastructure	2.0	180	2,990	50	3,220	3,200	6,420
Library and Services	2.0	130	5	750	885	38	923
SUB TOTAL - ACADEMIC SUPPORT SVS	**36.0**	**816**	**2,995**	**994**	**4,805**	**3,238**	**8,043**
STUDENT SUPPORT SERVICES							
State Authorized FTE	25.0				0		0
General Non-Personnel Increase (3%)				82	82		82
Salary Program		313			313		313
SUB TOTAL - STUDENT SUPPORT SVS	**25.0**	**313**	**0**	**82**	**395**	**0**	**395**
INSTITUTIONAL SUPPORT SERVICES							
State Authorized FTE	53.0				0		0
General Non-Personnel Increase (3%)				197	197		197
Salary Program		770			770		770
SUB TOTAL - INSTIT. SUPPORT SVS	**53.0**	**770**	**0**	**197**	**967**	**0**	**967**
PHYSICAL PLANT							
State Authorized FTE	23.0				0		0
General Non-Personnel Increase (3%)				260	260		260
Salary Program		241			241		241
Physical Plant Support Services	8.0	272		850	1,122		1,122
Center for Science and Technology					0	70,000	70,000
SUB TOTAL - PHYSICAL PLANT	**31.0**	**513**	**0**	**1,110**	**1,623**	**70,000**	**71,623**
TOTAL CORE NEEDS	**781.0**	**9,113**	**4,695**	**7,238**	**21,046**	**83,795**	**104,841**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

- **The New Jersey Center in Newark for Science, Technology, Engineering and Mathematics (S&T) Education: $70 million renovation (one-time funds)**

NJIT has negotiated with Newark public Schools and the Schools Development Authority terms of purchase for Newark's Central High School, which sits within the 45 acre footprint that comprises the NJIT campus. NJIT proposes to acquire and renovate Newark's Central High School, which is being replaced by a new facility opening in 2008, to serve as the location for the State's flagship center for science, technology, engineering and mathematics (S&T) education, "New Jersey's S&T Education Center in Newark," to assist in improving the quality of all levels of pre-college teaching and learning in New Jersey's school systems. NJIT, as the State's science and technology research university, is uniquely qualified to serve as the State's leader in this area.

Rendering of Central High restored to its historical presence on Martin Luther King Blvd.

Goals of the Center would include developing, integrating, and evaluating curriculum, practices and tools that support S&T teaching for all students; offering professional development programs for teachers and administrators in the learning and teaching of S&T subjects; partnering with urban, local, and state organizations to develop effective policies concerning the learning and teaching of S&T subjects; encouraging students within minority groups to attain excellence in the S&T fields.

Total Identified Needs ($000's) Science, Technology, Engineering and Mathematics Center						
FTE#	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grant Total
0.0	$0	$0	$0	$0	$70,000	$70,000

SALARY PROGRAM

Collective bargaining agreements are in effect for OPEIU & FOP bargaining units and are on-going for all other bargaining units. Anticipated program costs are consistent with the State-wide pattern for across-the-board salary increases. Eligible employees also participate in a merit program, which has replaced the automatic step progression system. The base salary and estimated costs for FY08 and FY09 are detailed on Chart I below.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

Chart I
FY08 and FY09 Summary by Bargaining Unit ($000's)

	FY2007 Deferred COLA/Merit	FY2008 Base Salary	FY2008 COLA	FY2008 Merit	FY2009 Estimated Base Salary	FY2009 COLA	FY2009 Merit	FY2009 Total Salary Program	FY2009 Anticipated Cash Need
Union Totals									
afscme	70	4,188	126	65	4,378	131	68	199	4,577
fop	0	950	66	0	1,016	41	0	41	1,057
fop - soa	0	492	15	10	517	16	11	26	543
njsolea	0	258	8	9	274	8	9	17	291
non-aligned	456	13,716	0	686	14,402	0	720	720	15,122
opeiu	130	8,071	242	125	8,438	253	130	383	8,821
psa	884	54,729	1,642	986	57,358	1,721	1,034	2,755	60,112
Total	**1,540**	**82,404**	**2,099**	**1,880**	**86,383**	**2,170**	**1,972**	**4,141**	**90,524**

It is very important that the FY09 appropriation fully fund the estimated FY09 salary program at $4.1 million. Past funding shortfalls have necessitated dramatic tuition and fee increases, personnel reductions and extraordinary cost savings measures. Chart II displays the anticipated additional salary program cost for FY09 by element.

Chart II
Distribution of Salary Program by Element
($000's)

Element	FY2009 Salary Program
Instruction	2,200
Research	86
Public Service	25
Academic Support	506
Student Services	313
Institutional Support	770
Physical Plant	241
Total	**4,141**

Total Identified Needs ($000's) Salary Program						
FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
0.0	$4,141	$0	$0	$4,141	$0	$4,141

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

STATE AUTHORIZED BASE FTE'S

NJIT has experienced significant growth over the past fifteen years. Total operations have grown from $112.7 million in FY94 to a budget totaling $265.5 million in FY08, an increase of $152.8 million, or 135.6%. At the same time, student enrollment has increased from 10,153 (FY94 actual) to anticipated FY08 enrollment of 11,154, or 9.9%. During this same period, the State Appropriation has increased from $41.9 million to an anticipated FY08 base appropriation of $49.1 million, or 11.7%. Throughout this period, however, the State authorized FTE's have remained constant at 805. This authorized level has not been adjusted since FY95. An analysis of New Jersey's institutions of higher education (excluding Thomas Edison and UMDNJ) concludes that NJIT's ratio of student enrollment headcount to authorized employees is one of the highest of the ten institutions.

NJIT is requesting an additional 249 base FTE be recognized as authorized positions. Salary support for these positions has been identified from existing unrestricted operations. These positions in the academic, student, administrative and facilities areas are required to support appropriately a senior public research university and need to be recognized in our authorized state funded base FTE. By recommending these positions, NJIT's student to employee ratio will decrease from 14.38, second highest among the senior public institutions to 10.98, which ranks fourth behind Rutgers, the College of New Jersey and New Jersey City University. Chart II shows the impact of the proposed change.

FY09 Estimated
Chart I – Student Enrollment (HC)
11,577

Current Authorized Positions 805
FTE

School	Ratio	Rank
Rutgers	7.32	1
CONJ	8.28	2
Jersey City	10.23	3
Rowan	11.00	4
Richard Stockton	11.01	5
William Paterson	11.18	6
Ramapo	11.52	7
Kean	12.99	8
NJIT	14.38	9
Montclair	15.05	10

FY09 Estimated
Chart II – Student Enrollment (HC)
11,577

Requested Positions 1,054
FTE

School	Ratio	Rank
Rutgers	7.32	1
CONJ	8.28	2
Jersey City	10.23	3
NJIT	10.98	4
Rowan	11.00	5
Richard Stockton	11.01	6
William Paterson	11.18	7
Ramapo	11.52	8
Kean	12.99	9
Montclair	15.05	10

Note that this increase is an increase in base FTE and does not reflect new FY08 priority requests.

Total Identified Needs ($000's) University – Wide FTE	
FTE	$
249	$0

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

GRADUATE ASSISTANT HEALTH INSURANCE BENEFIT PLAN

NJIT is one of the three Public Research Universities recognized by New Jersey statute. NJIT cooperates and collaborates with the two other Public Research Universities (Rutgers and UMDNJ) in joint research and educational programs, primarily in Newark but also in New Brunswick. Many joint bachelor's, master's and doctoral programs exist between or among NJIT and one or both other universities. These programs feature diplomas with two or three universities on the document, showing the approval by trustees of the universities to numerous joint agreements. The state has also recommended continuing and perhaps expanding cooperation among the three universities. In addition to joint academic programs, there are many jointly operated research centers.

Typical support packages for Graduate Assistants, Teaching Assistants, and Research Assistants include tuition and fees and a stipend. There are also fringe benefits associated with employment in these categories. The fringe benefit package at NJIT is not at a par with the health care packages at our partner universities, particularly for medical insurance and dental insurance. This places NJIT at a competitive disadvantage with regard to attracting and retaining the best students and complicates joint and cooperative program arrangements among the three universities, where students often have a home at one university but are working with faculty and students at the other.

NJIT is requesting that the existing health, dental and prescription programs afforded to its employees be expanded to include the graduate students receiving stipends. At this time, 444 full-time PhD level graduate students are eligible for this program.

Based on existing health benefit costs, the cost of this program would total $3,711,644. A separate request to the New Jersey Division of Pensions will be submitted in support of these costs.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

Health Plan	Employer Cost 1 Person	Total Group	Employer Cost
NJ Plus			
Single	$4,167	288	$1,200,096
Married	$9,068	112	$1,015,616
Family	$10,792	44	$474,848
Total Employer Cost – Health		**444**	**$2,690,560**
Dental Plan			
Dental Plan Expense			
Single	$248	288	$71,424
Married	$431	112	$48,272
Family	$705	44	$31,020
Total Employer Cost – Dental		**444**	**$150,716**
Prescription Drug			
State			
Single	$1,333	288	$383,904
Married	$3,047	112	$341,264
Family	$3,300	44	$145,200
		444	**$870,368**
Grand Total – Health, Dental, and Prescription Drug			**$3,711,644**
Less: Student Payroll deduction			**(119,880)**
Net Request			**3,591,764**

Total Identified Needs ($000's) Graduate Assistant Health Insurance Benefit Plan						
FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
444.0	$0	$0	$3,592	$3,592	$0	$3,592

GENERAL NON-PERSONNEL INCREASE

Consistent with the long-range plan adopted by the New Jersey Commission on Higher Education, NJIT is requesting a 3 percent increase to the non-personnel operating budgets. This increase, based on the FY07 non-personnel budget is necessary to support inflationary increases, and does not provide funds for program expansion. This investment is essential to maintain general operations without significantly increasing the financial burden on the students and their families. Delivery of high-quality programs and student services, demonstration of successful student outcomes, significant scholarship and research, and public service are dependent on adequate State resources.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

Expense Element	3% Increase To FY09 Recommended Base Appropriation
Instruction	$129
Research	78
Public Service	38
Academic Support	194
Student Services	82
Institutional Support	107
Physical Plant	260
Grand Total	**$978**

Total Identified Needs ($000's) General Non-Personnel Increase						
FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
0.0	$0	$0	$978	$978	$0	$978

INSTRUCTIONAL EQUIPMENT FUND AND SMART CLASSROOMS

Budget limitations over the past several years have taken a toll on the quality of instructional and laboratory support equipment at NJIT. The $6.480 million received through the Equipment Leasing Fund (ELF) had a significant impact on improving campus-wide laboratory instruction. However, in order to continue progress, additional FY08 budget support is required. State-of-the-art academic equipment is critical in order for students to be educated in the newest methods and applications. These new programs have put cutting edge instructional equipment in classrooms and laboratories and ensured that the state's investment in these classrooms is protected.

NJSOA Computer-based Imaging Laboratory:

The New Jersey School of Architecture (NJSOA) is a nationally recognized leader in the use of computers in architectural education. The equipment priorities identified here are needed to maintain the adequate delivery of the computer aided design program to NJIT undergraduate and graduate students.

The objective of the NJSOA Imaging Laboratory is to continue to implement computer based design studios needed in the School of Architecture. The full need is for ten labs in the third year studio curriculum, twelve labs in the fourth/fifth year studio curriculum, and two in the graduate studio curriculum. The total identified need is $750,000.

Critical Infrastructure:

A Critical Infrastructure Systems Research Center (CISRC) will have the mission to raise infrastructure research and education within the State of New Jersey to a higher, more intelligent level. A major function of the center will be to coordinate and foster interactions with government and industry, helping them to identify and respond to their infrastructure and emergency response problems. Interdisciplinary approaches and solutions will be a hallmark of CISRC, given the depth and breadth of NJIT's faculty and staff expertise. Investments in facilities and equipment are planned within existing NJIT laboratories in

order to strengthen research capabilities in the area of infrastructure. The total identified need is $1,000,000.

Engineering Laboratories:

More than five years ago, NJIT received funding from the State of New Jersey through the Equipment Leasing Fund. However, this funding was only adequate to fund the most pressing needs among the more than $19.0 million requested from the various NJIT departments. In the Newark College of Engineering, for which the changes in technology have been especially rapid during the past decade, modernization of all laboratories is critical. NJIT has been successful in competition at the national level having received several million dollars of equipment grants from NSF. However, the combined funding from State and Federal sources has so far not met all of the programmatic needs.

Biomedical Engineering:

The Biomedical Engineering (BME) Department is the most recent addition to NJIT, and lab facilities investments are a priority. The student body has recently doubled and there is an essential need to expand laboratory experiences in fundamental courses, particularly those that provide measurements of living systems. In addition, there are no advanced lab experiences in the focus areas of biomaterials/tissue engineering and biomechanics. The estimated cost is $400,000.

Civil Engineering:

The undergraduate laboratory for materials testing is filled with antiquated equipment that requires upgrading, and new bench scale testing equipment is needed. The hydraulics lab also needs a flume, and the geotechnical engineering lab needs state-of-the-art data acquisition and modeling facilities. The estimated cost is $257,000.

Chemical Engineering:

Senior laboratories need to be upgraded to include experiments and innovations important for the success of NJIT students in the job market. In addition, NJIT needs a pharmaceutical unit operations-type laboratory to enhance the capabilities of the new pharmaceutical engineering program. The estimate for these undertakings is $350,000.

Electrical and Computer Engineering:

Several facilities need to be upgraded including laboratories for power and energy conversion, computer engineering, communications/telecommunication/ multimedia, control systems, and microprocessor systems. The total cost is $915,000.

Interdisciplinary Program in Transportation:

NJIT offers the only designated graduate and PhD programs in Transportation in New Jersey. The teaching laboratories need technological upgrades to keep at the edge of innovative instruction, particularly for courses in Traffic Control, Transportation Facility Capacity Analysis, Travel Demand Forecasting, and Systems Engineering. Hands-on experience is required for effective learning. The total cost is $84,000.

Industrial and Manufacturing Engineering:

The department needs to upgrade the laboratories in the areas of human

factors/ergonomics, environmental and safety, robotics and flexible manufacturing, and simulation. The approximate cost is $120,000.

Mechanical Engineering:

The department needs a new manufacturing laboratory, and modernization of others, including labs for CAD/CAE, heat transfer, fluids, and mechanics. The total cost is $600,000.

Next Generation Smart Classrooms:

The collaborative efforts of NJEDge.Net and Verizon allow NJIT to reach most of the K-12 community in New Jersey through the ACCESS NJ network. Currently, a number of higher education institutions offer Advanced Placement courses to the K-12 community interactively through this network. This connectivity also positions NJIT to engage the high school students and their teachers in many extra curricular activities such as tutoring, robotics, architectural and computing competitions. This network established by NJEDge.Net also allows for connectivity to our corporate partners throughout New Jersey and the world. This connectivity allows NJIT to leverage the expertise of our faculty in science, engineering, management and architecture to deliver timely training and leadership to the American workforce. NJIT's connectivity to the Internet2 network further increases the opportunity for the university to collaborate with and lead other world class institutions to advance science and stimulate innovation and economic growth. All of these connections provide NJIT with the opportunity to take a leadership position, not only in New Jersey, but nationally and internationally, in the development of innovative practices in education.

Building upon NJIT's mission of delivering instruction both face-to-face and at a distance, an investment is needed to develop the next generation of high technology classrooms that allow the distribution of the teaching and learning experience beyond the current classroom walls. Beyond the current technology of a computer and projector, these state-of-the-art classrooms need to be configured for live, multipoint interaction with both on-campus and off-campus locations.

Through the NJEDge.Net, live interactive collaboration between the campuses of New Jersey institutions of higher learning must be used effectively and efficiently on our campuses. These classrooms will permit NJIT to receive courses from our sister schools and vice versa. They will also permit a new pedagogy that allows real-time distribution of an NJIT course to many small class sections – an environment in which quality learning is possible.

These Smart Rooms will be easy to use and flexible in design, with each room's operation based upon a simple turn key design, easily operated by the instructor, using a basic control panel at the podium. The hardware for the interactive components would not interfere with operation of the room as a traditional learning environment.

The estimated cost for installation of each room is $60k, and this request is for five rooms during FY08. Components will include: (1) instructional support equipment for computing $20k; (2) video coders and decoders, and video cameras to allow the transmission of video signals world wide $20k; (3) audio and display equipment and controls to allow interaction between the face-to-face and remote classes, through existing and emerging networks

$20k. The total cost is $300,000.

INVESTMENT REQUESTED

The FY09 request totals $1.4 million, which would develop an on-going instructional and research laboratory equipment program. Current needs are summarized in the table below.

INVESTMENT REQUESTED FOR
INSTRUCTIONAL EQUIPMENT AND NEXT GENERATION SMART CLASSROOMS

ACTION	ESTIMATED COST
NJSoA Computer-based Imaging Lab	$750,000
Critical Infrastructure	1,000,000
Biomedical Engineering Labs	400,000
Civil Engineering Labs	257,000
Chemical Engineering Labs	350,000
Electrical and Computer Engineering Labs	915,000
Interdisciplinary Program in Transportation	84,000
Industrial and Manufacturing Engineering Labs	120,000
Mechanical Engineering Labs	600,000
Next Generation Smart Classrooms	300,000
Total	**$4,776,000**

Total Identified Needs ($000's) Instructional Equipment Fund and Smart Classrooms						
FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
0.0	$0	$1,400	$0	$1,400	$0	$1,400

INFORMATION SERVICES AND TECHNOLOGY INFRASTRUCTURE

NJIT is a c*omputing intensive* university. During the last 25 years the university invested heavily in computing equipment and technology that brought NJIT to the forefront of computing intensity in higher education. Computers play a role in virtually every task performed on the NJIT campus, and computers assist in teaching and independent study, campus communications, library research, and engineering and architectural design integration. A range of "self-service" functions through the university portal allows students to process nearly all administrative transactions electronically, such as choosing a class schedule, registering for courses, checking financial aid status, paying tuition bills, and performing a degree audit. Similar "self-service" functions that are available for faculty and staff include electronic class lists, grade reporting, and time reporting. Faculty members use course management systems and electronic discussion spaces that extend the traditional classroom experience on to a virtual classroom. The university's computing infrastructure facilitates technology transfer to industry and maintains contacts with its alumni, friends, and other constituents.

NEW PROGRAM NEEDS

Computing remains an intrinsic part of the campus culture, as vital a part of the university's infrastructure as the bricks and mortar of its physical plant. But unlike bricks and mortar, the university's technology infrastructure useful life averages three to six years before obsolescence. To remain at the edge of IT resource and service, NJIT needs to:

- Transform the campus with both fully wired and wireless connectivity throughout; enabling real-time video streaming anywhere and anytime, as well as a new class of developing technologies that leverage wireless networks for geo-spatial applications and their social impacts. Network technologies allow sharing of campus-based resources.
- Provide full-service computational and storage resources, allowing on-demand access anywhere and anytime.
- Leverage of NJEDge.Net for access to Internet2, the National Lambda Rail, and a national education and research cyberinfrastructure that will promote NJIT research participation and collaboration with colleagues throughout the world, and provide a testbed environment for experimentation in networking technologies and applications.
- Support development of e-portfolios for student work, allowing students to develop personalized, web-based collections of their work, showcasing and sharing them among other students, faculty, advisors, and potential employers.
- Leap ahead beyond the NJIT legacy information systems, providing state-of-the-art enterprise information resources for administrative information systems, leveraging advanced technology and open source software.
- Implement a business contingency plan for information services and technology, consistent with the university's risk tolerance.

The projects summarized below, when fully implemented over the next six years, will allow NJIT to provide the computing intensity and service comparable with peer premier technological research universities.

ACADEMIC INITIATIVES

Public Computing Facilities: NJIT's public computing facilities serve a dual purpose as computer classrooms and as open labs for general public use. Facilities are located in the Student Mall and in GITC and are available 7 days per week during the academic year. Equipment normally should be replaced on a 3-4 year lifecycle basis. However, tight budgets in recent years have deferred replacements in some facilities. The estimated FY09 cost for deferred and lifecycle replacement of computers in public computing facilities is $600,000.

Faculty Computer Distribution: In FY05 the university reinstituted a program of providing full-time faculty and instructional staff a computer (desk-top or notebook) appropriate for their work. The program was suspended in FY08.

The estimated cost to begin replacing computers issued in FY05 during FY09 is $250,000.

Classroom Technology: The NJIT degree programs are state-of-the-practice and require easy access to integrated computer simulation, modeling, and other design work in multiple multimedia formats. Advanced networking technologies are needed for broadcast-quality video conferencing that will support real-time collaborative efforts with remote students, faculty, and researchers across the globe. Our existing classroom technology infrastructure was installed with funding from previous Equipment Leasing Fund (ELF) and TIF programs. The estimated cost of lifecycle replacements and improvement is $550,000, budgeted over a five-year period with the FY09 budget at $110,000.

NEW PROGRAM NEEDS

Learning Management System: On our cutting-edge campus, software tools that support the learning environment have matured beyond current use, extending into hybrid use in traditional and non-traditional classrooms of the future. These learning tools allow instructors to continue discussions begun in the classroom, to make education accessible anywhere and at any time. It is important that learning creations of both faculty and students be stored, critiqued, and revised in the learning process, and the next-generation of software to support learning must be built on modern database platforms, and must be flexible and capable of managing the complex objects used in distributing, sharing and reusing academic content. These e-portfolios allow a new kind of "learning management" where students and faculty can maintain a personalized collection of their work, and can then showcase and share their collection with students, faculty, advisors, and potential employers. These systems are core services and require redundancy in design to provide the highest possible availability. The estimated FY09 cost to expand our current WebCT learning management system to support new community and content services is $50,100. These will be recurring license and support costs increasingly 5 percent annually.

NJIT Network Infrastructure Upgrades: The NJIT network is the central nervous system of campus life. It is an information and communication system that provides constant connectivity through voice, data, and video services across the campus and externally to other networks (NJEDge.Net, Internet2) that the network must be constantly growing to support internet-based applications that are consuming ever-increasing bandwidth. Wired networks cannot be replaced by wireless networks. The NJIT network supports networked personal file space and addresses "back-end" network issues such as security, spam, viruses, remote access, software updates, and illegal file sharing. Much of the current infrastructure to support the network was purchased under earlier NJ state funded ELF and TIF programs, as well as new building construction funding. The equipment is fast becoming obsolete and replacements for the past several years have been deferred. The estimated FY09 costs for deferred and lifecycle replacement of network infrastructure and upgraded tools for network management is $2,500,000.

Wireless Network Upgrades: The NJIT wireless has been deployed into public space and classrooms of all campus academic buildings. New buildings have full wireless coverage and many older buildings have had wireless added. Older academic, administrative, research buildings, and residence halls have limited coverage, and the current wireless technology is not yet able to replace wired connectivity in a high density, high throughput environment. A totally wireless campus enables the NJIT campus to serve as a test bed for the development of new applications utilizing wireless technologies, testing not only application utility, but also their social impacts. The current wireless network is served by approximately 170 access points. In order to complete a wireless network infrastructure, additional access points will be needed with appropriate overlap to support anticipated usage densities. This is currently estimated at 900 access points with an estimated cost of $1,530,000. This would be a major multi-year project. The first step in the multi-year project is an RF-survey of the campus and acquisition of wireless network management software that will allow the existing network to be redesigned for support of more access points. This requires an investment of $250,000. The next step would be to bring the existing campus to a "full basic" level of coverage which is estimated at 300 access points. This would require approximately $410,000 over FY09 and FY10. The total FY09 request for wireless network upgrades is $455,000.

Academic and Research Computing Staff Infrastructure: As a science and technology research university, NJIT faculty, students and researchers routinely work with a wide variety of complex application software systems in both the classroom and research lab, at both introductory and advanced levels of use. Professional staff is needed to work with academic users in support of

these applications. Positions for this purpose have been cut in previous years. NJIT also needs to provide professional staff to support researchers using high performance computing resources. With the growth of degree programs utilizing serious computation resources, for broad application and access to the resources, assistance will be needed by researchers in the efficient use of compilers, organizational strategies, libraries, and message-passing. Such support requires a specialized background in scientific high performance computing. NJIT does not currently have such support on staff. The estimated FY09 cost for two professional staff positions to provide support in these two areas is $180,000.

Storage Area Network Expansion: NJIT's enterprise file systems in support of academic, administrative and research applications continue to grow. The enterprise storage area network (SAN) project began in FY06 was estimated to satisfy growing demand for online and near-line storage through FY09. Increasing demand by researchers as well as the continued demand for increased mail quotas and personal, project, and application file space among both academic and administrative users will bring the existing SAN close to capacity in FY09. Plans for a multi-year expansion of SAN resources should begin in FY09 with cost estimates of approximately $175,000 per year for three years, adding an additional 60-70 TB of storage capacity.

ADMINISTRATIVE INITIATIVES

Enterprise Information Systems Replacement: NJIT's core information systems to support its student, financial, and human resource functions are based on 1980's technologies and the legacy systems should be replaced with modern enterprise information systems based on a relational database management system platform. The existing systems will no longer be supported by the vendor after December 31, 2011. The migration of NJIT's enterprise information systems is a major project and would be implemented over a 36-42 month period. Migration Services, software licensing, training, hardware acquisitions, consulting and temporary employment (for backfill of existing positions) is currently estimated at $7,500,000 for the entire project. First year project costs for FY09 are estimated at $2,000,000.

Central Computer Room: Most servers that support NJIT's academic, administrative, and research computing infrastructure are physically located in a central computer room that is convenient for general operations and physical security. In the 17 years at this location, there have been a few isolated incidents where a loss of street power to the building has interrupted computer services to the campus. However, terrorist attacks and natural disasters have heightened our awareness and concern for prudent business contingency planning. Agreements with neighboring institutions to host computer operations using spare capacity are not appropriate in the multi-server heterogeneous nature of NJIT's computing infrastructure. NJIT needs a second computer room, located on a separate electrical utility grid and at an appropriate distance from the existing room but connected by high-speed networks. The cost to build the facility is estimated at $1,750,000, and planning should begin in FY09 with $100,000 requested for design and full construction beginning in FY10.

INVESTMENT REQUESTED

To support this important agenda of activities, the amounts listed in the table below are requested from FY09 funds.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

INVESTMENT REQUESTED FOR INFORMATION SERVICES AND TECHNOLOGY INFRASTRUCTURE

ACTION	RECURRING	ONE-TIME
Academic Initiatives		
Public Computing Facilities		$600,000[1]
Faculty Computer Distribution	$250,000	
Classroom Technology	$110,000	
Learning Management System	$50,100	
Network Infrastructure Upgrades		$2,500,000[1]
Wireless Network Upgrades	$455,000[2]	
Academic and Research Computing Staff Infrastructure	$180,000	
Storage Area Network Expansion	$175,000	
Administrative Initiatives		
Enterprise Information Systems Replacement (multi-year)	$2,000,000[3]	
Central Computer Room		$100,000[4]
Total	**$3,220,100**	**$3,200,000**

[1] One time costs are significantly higher because of deferred lifecycle replacement.
[2] FY10 costs estimated at $405,000.
[3] Total estimated project cost of $7,500,000 spread through FY12.
[4] FY09 costs for design. Full project estimated at $1,750,000.

Total Identified Needs ($000's) Information Systems and Technology Infrastructure							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	2.0	$180	$2,000	$0	$2,180	$1,000	$3,180
Priority	0.0	0	990	50	1,040	2,200	3,240
Grand Total	**2.0**	**$180**	**$2,990**	**$50**	**$3,220**	**$3,200**	**$6,420**

THE NJIT LIBRARY AND SERVICES

"Libraries and universities must adjust their services and facilities to create supportive learning environments for these 'digital' students. Inundated with information, students are looking for meaning and knowledge."
» The Academic Library in 2010: A Vision (Symposium at American University, Mar 2005) Read at: www.library.american.edu/Symposium_2010.pdf

In their landmark article, *Born with the chip*, Abram and Luther discuss the coming impact of the largest generation since the Baby Boomers: the Millennials, born between 1982 and 2002. The behaviors and expectations of this group will have a profound effect on society, higher education, and library services. Millennials are already dominant in the NJIT undergraduate and graduate students, and they have the following characteristic: Format agnostic, Nomadic, Multitasking, Experiential, Collaborative, Integrated, Principled, Adaptive, and Direct. *(Abram, Stephen, and Judy Luther. "Born with the chip." Library Journal, May 1, 2004, pp. 34-37. Read at www.library.njit.edu/bornwithchip.pdf 2004)*

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

NJIT's library facilities, services, and collections were modeled on, designed, and built with the pre-web, Generation X, and, even, Baby Boomers cohort in mind. While the library has moved its facilities, services, and collections decisively in the digital direction over the last 10 years, the rising tide of Millennials in society and on our campus accelerates the need.

The library's "Blueprint for the Future" directly addresses these Millennial behaviors and expectations as we plan to accelerate and improve student learning through collaborative learning environments, discovery spaces, services, and collections. It is crucial for NJIT's library to continuously update its use of technology through knowledge management process to provide the most reliable infrastructure to support content creation and delivery.

INNOVATIVE LIBRARY SERVICES

The library needs staff to provide new services that are responsive to the adaptive, experiential, collaborative and integrated nature of the Millennials.

- Web Service Utilization Analyst/Designer: real-time and down-line evaluation of service usage; this professional closes the feedback loop to increase user productivity, provide for greatly increased customization and personalization of services, increase efficiency and reduce redundancy of library resources.

- Collaborative Learning Librarian: developing podcasts, online web-based tutorials and other media rich technologies and research grants.

- Alternative Format Collections Developer: selecting, managing, promoting, evaluating, and operating alternative format collections.

The library needs to create collaborative learning and meeting spaces to facilitate small group study and student creation of learning objects. A group study room which integrates student notebook PCs through a server/project/recorder system (5 systems at $7,500 each = $37,500) to allow sharing of documents, ideas and archiving of same for future reference.

ALTERNATIVE FORMAT COLLECTIONS

The library needs to provide digital multimedia collections and to incorporate web 2.0 principles and technologies that are responsive to the format agnostic, experiential, and collaborative nature of the Millennials.

- Alternative Format Learning Materials for students are increasingly important to maintain the edge in knowledge and learning expected at NJIT. The NJIT library needs to adopt web 2.0 technologies to push the needed information to the users rather than expecting them to come to the library to obtain the needed information. The NJIT library needs to make source materials available through e-journals, e-books, audio files, RSS feeds, and pod casts.

- Additional Library Books & Materials: in addition to newly-evolving information formats and platforms, there is still demand for information in traditional formats.

- Instructional Technology and Media Services, working with the Library, will pursue the creation of learning objects for use by students in a range of courses, empowering them to

take responsibility for their own learning, as well improving faculty productivity through reuse and across multiple sections and courses. Creation of podcasts, online web-based tutorials and other media rich assets will provide students with alternative methods to master difficult materials.

INVESTMENT REQUESTED FOR
LIBRARY DEVELOPMENT

ACTION	RECURRING	ONE-TIME
Support Staff – 2 @ $65K each	$130,000	
Collaborative learning/meeting space/equipment	5,000	$38,000
Alternate format collections	750,000	
TOTAL	**$885,000**	**$38,000**

Total Identified Needs ($000's) Library Development							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	2.0	$130	$0	$400	$530	$0	$530
Priority	0.0	0	5	350	355	38	393
Grand Total	**2.0**	**$130**	**$5**	**$750**	**$885**	**$38**	**$923**

TEACHING AND LEARNING RESOURCE FOR FACULTY

The state and nation have a need for well-trained graduates, particularly in the fields represented by the majors and degree programs at NJIT. Vital to the production of such graduates, as well as to the retention of students until graduation, is the quality of instruction provided by the faculty of the university. The members of the faculty at NJIT are, in general, highly qualified experts within their disciplines, many of whom are performing cutting-edge research in their fields. They are also highly motivated towards sharing their knowledge with students in the classroom, as those students represent the future, not only within their discipline, but as leaders in our larger society. Faculty members at NJIT, as at almost all universities, come to the university as experts in their field, but with little or no training in how to teach. Thus, it is important that NJIT be able to provide its faculty with the necessary resources to excel in the classroom as well as in their scholarly work.

NJIT plans to form a comprehensive teaching and learning resource to assist in maintaining the highest possible quality of instruction in its programs. This resource center would be a place where faculty and teaching staff could go to obtain assistance with all aspects of teaching, including but not limited to:

- preparation of course syllabi

NEW PROGRAM NEEDS

- development of course lecture notes
- establishment of fair and appropriate grading criteria
- mechanics of classroom teaching
- incorporation of active learning techniques
- design of workshops, studios, or laboratories
- use of instructional technology
- collaboration with faculty in other departments, colleges, or universities
- providing extra help to underachieving students
- implementation of team learning approaches
- inclusion of societal issues (e.g. ethics, diversity,) into courses
- assistance with logistical issues
- assessment of both teaching and learning

While a few of the above activities are currently available (for instance, assistance with instructional technology is currently provided by the Instructional Technology and Media Services division of Continuing Professional Education, and extra help for students is currently provided by the University Learning Center) most are currently unavailable at NJIT. The proposed Teaching and Learning Resource Center (TLRC) will be able to provide coordinated assistance with all of the above items, especially if the above three departments are collected into a single unit.

PROPOSED ORGANIZATIONAL STRUCTURE

The TLRC resource will primarily serve the faculty and instructional staff, and indeed may in practice be staffed at least in part by faculty members (e.g., Master Teachers). However, it will work best by closely coordinating its efforts with those of the University Learning Center and with Instructional Technology and Media Services. Therefore, NJIT proposes that the new TLRC be combined with the University Learning Center and with Instructional Technology and Media Services to form a new unit on campus.

INVESTMENT REQUESTED

The TLRC is a new unit on campus requiring that new positions be staffed. Identified positions for early hire include an executive director and professional staff, for a total of three positions, with an estimated cost of $175,000.

The operating budget for this worthy effort includes office expenses, materials to make available through the resource center, and costs to support staff participation in local, regional, national and international activities. Professional staff members must be supported to stay abreast of the latest advances in teaching. The department should be expected to organize workshops and seminars for development of faculty teaching skills. The estimated cost of operations is $25,000.

The total estimated cost is therefore $200,000 in recurring costs. It may be feasible to team with Rutgers-Newark in the development of this center. This is being evaluated and may affect the estimated cost of implementation.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

INVESTMENT REQUESTED FOR THE NJIT CAMPUS
TEACHING AND LEARNING RESOURCE CENTER

ACTION	RECURRING	ONE-TIME
Hire three staff	$175,000	$0
Operating Budget	25,000	0
Total	**$200,000**	**$0**

Total Identified Needs ($000's) Teaching and Learning Resource For Faculty							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Priority	3.0	$175	$0	$25	$200	$0	$200

NEWARK COLLEGE OF ENGINEERING

The Newark College of Engineering is embarking upon a reorganization and reinvigorization of its graduate programs to better serve industry and the state. New degree programs are under development for approval in the following areas:

- M.S. Healthcare Systems Management (pending 2008 approval).
- M.S. Power and Energy Systems (pending 2008 approval).
- M.S. Pharmaceutical Systems Management (pending 2008 approval).
- M.S. Bioelectronics (pending 2008 approval).
- M.S. Pharmaceutical Processing and Manufacturing (in development for 2009 approval).
- M.S. Pharmaceutical Materials Science and Engineering (in development for 2010 approval).

In addition, the college is focusing its future faculty hiring in the areas described below, supporting the program development areas identified above.

- For AY07/08 Hiring
  - Wu Ying Chair, networking
  - Drug Delivery/Cellular Therapy
  - Molecular Imaging
  - Biopharmaceutical Engineering
  - Bio-nano-electronics

- For AY08/09 Hiring
  - Cellular Re-Engineering
  - Neural Engineering

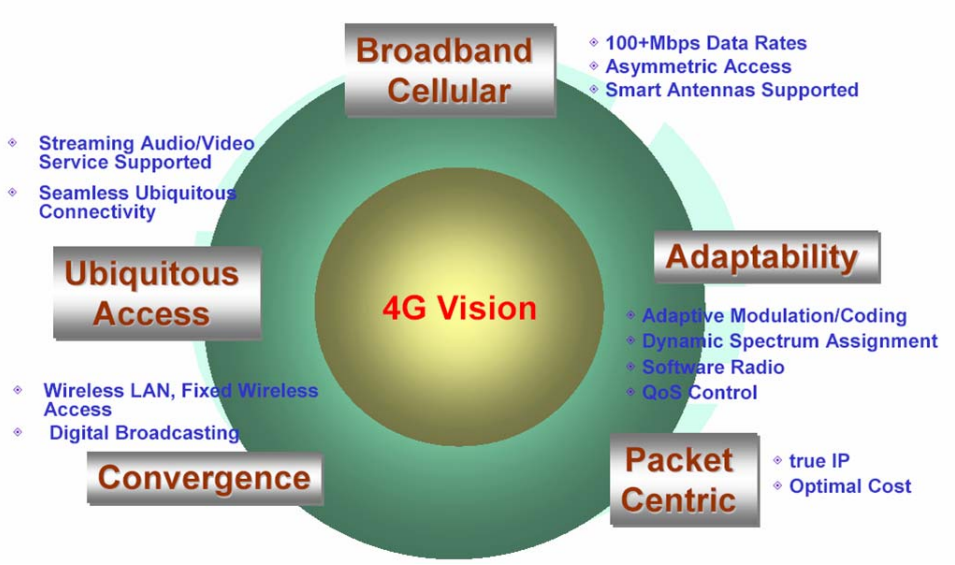
Specific areas for investment, in line with the established priority areas identified in the NJIT 2004-2010 Strategic Plan are described below.

NEW PROGRAM NEEDS

RESEARCH & DEVELOPMENT IN WIRELESS COMMUNICATIONS AND NETWORKING

The next generation of wireless communications will require systems and infrastructure that handle a much expanded volume of information, new applications that will require faster data rates as well as a mix of data rates, improved quality of service, and vastly improved security. Ubiquitous services and global mobility will require seamless transition between network infrastructures. In order to address the challenging problems of the next generation of wireless systems there must be a cross collaboration among researchers at the physical layer, networking layer, and security protocols

Solutions for these key problems are only possible through a multi-disciplinary research collaboration that is based on significant strength in the areas of wireless communications, signal processing, and networking in the Department of Electrical and Computer Engineering (ECE). Subsequently this work will grow through collaborations with ECE faculty in computer architecture and digital systems, solid-state, very large scale integrated (VLSI) circuits, and electro-optics systems and the NJIT Departments of Computer Science, Information Systems, and Physics. Existing partnerships with local industry and universities will be built upon and further enhanced.



IMPACT ON REGIONAL ECONOMY

The applications of wireless communications, networking, and security system technologies include a wide spectrum of priority and strategic areas defined by the national federal funding agencies (NSF, US Army, DoD, NSA, and NIH) and leading industries (AT&T-Bell Labs, Lucent Technologies, Telecordia, Interdigital, Samsung, Honeywell/ERI, Lockheed Martin, Mitsubishi, MITRE Corp, Northrup Grumman and SAIC). The application areas include mobile communications, e-commerce, health care, medical telemetry, the military, and homeland security. Wireless is an area of future industrial growth with significant opportunities for commercialization. New Jersey is a leading location in the country that has attracted major national and international communication industries. The knowledge base developed through this initiative will impact NJ industries on developing new network communication and security technologies through technology transfer and its commercialization and hiring of trained researchers. The proposed industry collaborations

and partnerships would provide students with a rewarding industry-based perspective in education and research. The collaborative effort will be valuable in training a future workforce as well as help future product development and commercialization. The proposed program will also help in establishing small-scale industries through NJIT incubator facilities for creating new companies and jobs. For example, new 4th Generation communications system technology is of strategic interest to industry and the academic research community. The implementation of 4G wireless communication technology along with networking applications in home, community and business environments is expected to open new job markets and industrial growth.

These new technologies include advanced communications and signal processing algorithms involving multiple transceiver systems and dynamic multiple networks working in conjunction with specific application-layer structures and systems. The communication networks in today's world have become highly heterogeneous and vary greatly in the services they offer and the traffic they carry. While network heterogeneity provides more flexibility in utilizing the latest technologies and allows for customization by user applications, it also poses new challenges in multi-user communications and network complexity and management for providing quality service. It also increases the risk of the occurrence of network anomalies. However, if the next generations of communications and network technologies are to operate beyond the levels of current networks, it will require a set of well-designed tools for dynamically changing requirements of communication systems, network management, and security protocols that will provide the capability of dynamically and reliably identifying and correcting network faults and anomalies. Technologies for cooperative communication and cognitive radio have been recently used. It has been also demonstrated that network performance monitoring is essential for managing a network efficiently and for ensuring reliable operation of the network.

RESEARCH CAPABILITIES

There are more than 14 faculty, 45 Ph.D., 20 M.S., and 6 Post-Doctoral/Visiting researchers in the areas of wireless communications and signal processing and networking in the ECE Department. Over the years, major grants from NSF, US Army, DoD, Air Force Office of Scientific Research, and the State of New Jersey have enabled this group of researchers to establish a national and international reputation in research. The record of research expenditures associated with their grants is substantial and accounts for a significant percentage of that in ECE. A selective list of some recent awards is shown in the table below and illustrates the depth and breadth of the research capacity and shows interdisciplinary collaboration both among the faculty and also with prominent researchers at other universities.

The request made here is designed to provide investment and financial leverage to obtain large interdisciplinary funded research. The focus of that research will be consistent with important problems recently identified by the International 4G Forum as some of the key technologies for future standards: packet data communication over coded CDMA with hybrid ARQ, multi-carrier systems including phase noise analysis and mitigation, power control strategies, multi-rate MC-CDMA and OFDM systems; cooperative communication and cognitive radio; ultra-wideband (UWB) communications including low SNR systems, UWB transceivers, UWB antenna design, channel modeling and experiments; and MIMO systems including MIMO-OFDM techniques for 4G wide-area networks.

NEW PROGRAM NEEDS

Research Projects at NJIT in Wireless Communications and Networking	
ITR: Collaborative Research: 'Free Bits': The Challenge of the Wireless Internet (with Princeton and Rutgers)– 3 faculty members	NSF
Multiple Antennas Multiple Appliances Wireless Networks: A Pervasive Tech. for the Home & Workplace – 3 NJIT faculty members	NSF
MIMO System Design and Implementation – 1 NJIT faculty member	Interdigital
Automatic Exploration of Signals – 2 NJIT faculty members	US Army-CECOM
Application of Rank Reduction – 2 NJIT faculty members	Honeywell/ERI
Joint Space-Time Modulation and Channel Coding over Fading Channels – 1 NJIT faculty member	AFOSR
Advanced Techniques for MIMO Broadband Communications – 1 NJIT faculty member	AFOSR
Characterization of Mulitpath and its Effect on Geo-Location Systems – 1 NJIT faculty member	US Army
Adaptive Schemes for Multi-carrier Based Communication Systems – 1 NJIT faculty member	NSF
Adaptive Schemes for Multi-carrier Based Communication Systems – 1 NJIT faculty member	NSF
Multiple Carrier Modulation – 1 NJIT faculty member	Samsung
Modulation Classification for Emerging Technology – 2 NJIT faculty members	US Army-CECOM
MIMO-OFDM for Future Wireless Communications – 1 NJIT faculty member	Samsung
Intrusion Detection – 1 NJIT faculty member	US Army
NJ C. for Wireless Telecommunications[1] (with Princeton, Rutgers, and Stevens)– 8 NJIT faculty members	NJCST
NJ C. for Wireless Networking & Internet Security (with Princeton and Stevens)– 6 NJIT faculty members	NJCST
NSF CAREER: Efficient Resource Allocation and management in Mobile Networks – 1 NJIT faculty member	NSF
Estimation In Algorithm Development – 1 NJIT faculty member	NTT DoCoMo
Modeling of Beam Wave Scattering – 1 NJIT faculty member	US Army
Modulation Classification for Emerging Technologies – 2 faculty members	US Army-CECOM
Cooperative Hybrid Architecture (with Princeton) – 2 faculty members	NSF

INVESTMENT REQUESTED

The investment strategy is as follows: (1) strengthen the critical mass of faculty in the program by hiring a senior faculty member in networking and a junior faculty member in signal processing for communication; (2) enhance the research focus and the visibility of the program by hiring postdoctoral researchers and visiting research scholars from prominent universities and corporations; (3) strengthen the laboratory infrastructure through investment in facilities and equipment. This investment is summarized below.

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

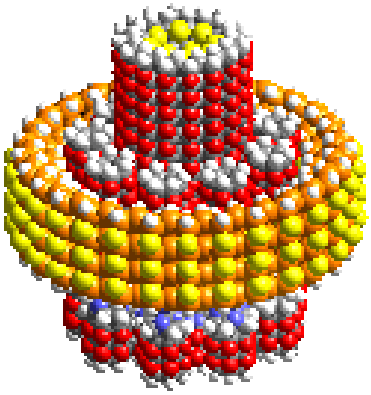
NEW PROGRAM NEEDS

INVESTMENT REQUESTED FOR
WIRELESS COMMUNICATIONS AND NETWORKING

ACTION	RECURRING	ONE-TIME
Hire one Senior and one Junior faculty	$260,000	$200,000
Establish postdoctoral and visiting research scholars (2 X $50K)	100,000	
Invest in facilities and equipment		1,000,000
Total	**$360,000**	**$1,200,000**

Total Identified Needs ($000's) Wireless Communications and Networking							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	0.0	$0	$0	$0	$0	$650	$650
Priority	4.0	360	$0	$0	$360	$550	$910
Grand Total	**4.0**	**$360**	**$0**	**$0**	**$360**	**$1200**	**$1560**

CENTER FOR ADVANCED NANO-SCALE TECHNOLOGIES



NJIT plans to develop a Center for Advanced Nano-scale Technologies that will focus on the fundamental understanding and exploitation of new physical, chemical, and biological properties of nano-systems. The Center's mission is to create an interdisciplinary focused group of researchers and educators with national and international level of prominence in the area of functional nano-systems and the control of matter on the atomic, molecular, or macromolecular levels. This mission will be achieved by creating new faculty positions, developing a base of support research staff (in the form of research associates and technicians) develop an educational program which will feed a continuous student body specializing in nanotechnology aspects of research, and build an educational program for the benefit of emerging nanotechnology industries.

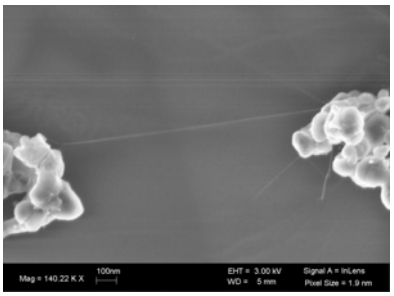
The Center will advance fundamental understanding of device and system design, architecture, pilot manufacturing, and system integration in two areas that relate to established strengths in six academic departments and two colleges at NJIT. These areas are Nano-OptoElectronics (n-OE) and Nano-Bio Systems (n-BS).

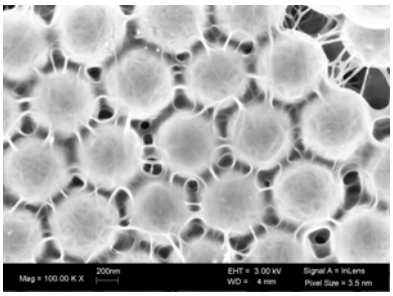
NEW PROGRAM NEEDS

The n-OE initiative responds to the needs of the local and nationwide industries for highly integrated, smaller, faster, and cheaper devices targeting competitive and environment-friendly manufacturing and novel applications in healthcare and information technologies. Examples include carbon nanotube–based bio/chemical sensors, fuel cells, advanced display and imaging technologies, and semiconductor nanostructure-based flash memory for personal health care devices.

The n-BS focused area is a novel direction toward controlled synthesis of molecular switches interfaced by inorganic, low dimensional structures such as carbon nanotubes and semiconductor nano-wires. We will exploit self-assembled nano-scale chemistry to achieve functionalization of single wall carbon nanotubes (SWCNT), and create DNA-based templates for inorganic nanostructures. As an example, these novel organic/inorganic nanosystems can create a foundation for a new generation of integrated nanoscale devices and circuits for controlled drug delivery.

Solutions to these key problems will be developed through multi-disciplinary research collaboration in the Departments of Electrical and Computer Engineering, Biomedical Engineering, Chemical Engineering, Mechanical Engineering, Physics, and Chemistry and Environmental Science. This will utilize university facilities and laboratories available through the New Jersey Nanotechnology Consortium. Subsequently this work will grow through partnerships with the Department of Biomedical Engineering and with the University of Medicine and Dentistry of New Jersey, the Public Health Research Institute and Rutgers-Newark.





Left: the bridge between electrodes may be used in making carbon nanotube based transistors. **Right**: carbon nanotubes within voids of synthetic opal and coated with organic semiconductive polymer may be used for novel nano-composite and opto-electronic applications.

IMPACT ON REGIONAL ECONOMY

Far-reaching outcomes for the State of New Jersey and local community are envisioned in scientific knowledge, competitive education, and joint university-industry initiatives in advanced healthcare, conservation of energy, and environment.

With the prospect of trillions of transistors on a single nanotechnology chip, many new applications will emerge. This will give rise to new industries. The effect of nanotechnologies will be dramatic not just on general-purpose computing, but on embedded systems as well. However, commercial challenges posed by nanotechnologies should be first met. These challenges include

the development of both fabrication and design tools. There is some progress on the fabrication front.

However, the design challenge has yet to be overcome. Without design, analysis, and simulation tools for the nanotechnologies, realizing their commercial potential will not be possible. The aim of this Center is precisely to develop such tools and methodologies. We believe that technology transfer of such tools to local companies will provide a significant boost to the New Jersey economy. The Center will also initiate many SBIR and STTR proposals from small companies to support the innovative aspect of New Jersey small-scale industries.

RESEARCH CAPABILITIES

While Nanotechnology is the single fastest growing Research & Development area in the nation, we at the New Jersey Institute of Technology are a perfect match for the task. The scientific and engineering scope of the Center will be based on the ongoing work at NJIT for the last decade: NJIT has built a strong record and developed the recognized leadership in nanoscience and nanotechnology. The Nano initiative at NJIT is currently funded by more than $4M per year through federal grants (Army, Navy, DOD, NSF) and contracts (e.g., Intel). The nano initiative is exemplified by the Active Coating Program which assesses smart and novel, nano-based coatings and structures for the US Army amounting to $2.5 million in 2005. NJIT possesses a Scanning Electron Microscope, Transmission Electron Microscope, Atomic Force Microscope, and Near-Field Optical Microscope all geared to assess nano-size structures. The 2005 NSF equipment awards include a low temperature scanning microscope and a THz spectrometer for a total of $0.5 million. In addition to our capabilities and expertise, the proposed Center will be built on the strong collaboration with New Jersey Nano-Consortium and will employ the world-best capabilities of the Murray Hill facilities for manufacturing at the nanoscale.

Recent developments in Nanoscience and Nanotechnology at NJIT have been driven by several well-established research groups: Carbon Nanotubes (ECE/Chemistry/Physics), Nanoscale Particles (Chemical and Mechanical Engineering/Chemistry), Electronic Structure of Nanoscale Materials (ECE/Physics), Magnetic Nanostructures (Physics), and Semiconductor Nanostructures (ECE/Physics).

Nanotechnology represents an interdisciplinary area, which augments the expertise of Chemists, Physicists, Biologists, Electrical Engineers, Mechanical Engineers and Computer Scientists. Currently, these activities represent over 10 NJIT faculty members. For example, single wall carbon nanotubes (SWCNT) are today one of the most investigated materials for Nanotechnology applications. NJIT has been working towards uniting the unique properties of SWCNT with specific molecular-recognition and sensing features. One application under pursuit with the EPA is the development of a micron-scale total analytical system on a chip for environmental sensing that exploits some of the remarkable nanoscale properties of pristine and functionalized SWCNT. The SWCNT provide on-chip concentration via quantum scale adsorption processes to attain high detection sensitivity. The integrated system is being fabricated on a chip using micro-electromechanical system (MEMS) technologies. Another ongoing application is in the area of biosensing. For example, organophosphorus (OP) compounds are commonly used as pesticides and nerve or chemical warfare agents. Through functionalization of SWNT's with enzymes capable of selective recognition of OP compounds, a highly effective sensor can be designed for which the SWCNT provide fast electron transfer to the metal electrochemical transduction platform for signal monitoring.

NEW PROGRAM NEEDS

INVESTMENT REQUESTED

The investment strategy is as follows: (1) strengthen the critical mass of the faculty in the program by hiring two junior-to-mid career faculty in each of the areas of Nano-OptoElectronics and Nano-Bio Systems; (2) enhance the research focus and the visibility of the program by hiring postdoctoral researchers and visiting research scholars from prominent universities and corporations; (3) increase the visibility of the program and enhance the university interactions with government and industry to stimulate future collaborations by establishing a distinguished lecture series; (4) strengthen the laboratory infrastructure through investment in facilities and equipment; (5) strengthen the outreach to industry in NJ and nationally and provide executive leadership for the Center by hiring a Center Director. This investment is summarized in the table below.

INVESTMENT REQUESTED FOR THE CENTER FOR ADVANCED NANO-SCALE TECHNOLOGIES

ACTION	RECURRING	ONE-TIME
Hire one Assistant and one Associate professor	$200,000	$400,000
Establish two postdoctoral and visiting research scholar positions	100,000	
Invest in facilities and equipment		500,000
Total	**$300,000**	**$900,000**

Total Identified Needs ($000's) Center for Advanced Nano-Scale Technologies							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Priority	4.0	$300	$0	$0	$300	$900	$1,200

RESEARCH IN PARTICLE TECHNOLOGY

Small particles, down to nano-size, are increasingly used as the building blocks of new materials. What makes nano-particles and nano-composites so important is that the phenomena associated with atomic and molecular interactions strongly influence macroscopic or bulk properties such as catalytic, mechanical, electronic, or optical characteristics. For example, copper made from nano-particles is up to 5 times harder than that made from conventional micron sized copper particles. Ceramics, which are normally brittle, can be made much more easily deformable if their grain size is in the nano range. A key step in preserving these special properties is to incorporate the nanostructure in a structured particle, such as shown in the figure that follows, to form the building block for advanced materials. Therefore, the goal of our research is to create and modify particulate materials with tailored properties that take advantage of the unique properties of nano, submicron and micron sized particles, and produce advanced materials in large quantities, i.e. tons rather than grams.

NEW PROGRAM NEEDS

Our vision is to further build from our existing strengths which include an established international center of excellence in advanced engineered particulate materials, the New Jersey Center for Engineering Particulates (NJCEP). The Center's efforts will endeavor to eliminate major hurdles faced by US industries; hurdles that led to the failure of dozens of companies dealing with nanomaterials. By developing highly scaleable techniques, and through the novel paradigm of formation of nano-structured, advanced engineered particulate materials, the Center will make an economic and scientific impact by (1) significantly improving the capabilities for storage, handling and transport of these materials, (2) increasing their stability and "shelf-life", (3) finding applications of nano-particulate materials in day-to-day consumer products such as sun-screens or outdoor deck-coatings, in addition to developing advanced, expensive materials, (4) developing a multipurpose multifunctional particulate characterization facility for industry and academia, and most importantly, (5) significantly reducing the production cost of these materials.

IMPACT ON REGIONAL ECONOMY

There are a large number of companies in NJ that engage in particle technology related product development. NJCEP has interacted with these companies through hosting mini-symposia and has sponsored a number of outreach programs in particle technology. Through these efforts, over 80 companies, of which 90 percent were from New Jersey, have been exposed to research done at NJCEP. Most of these companies have expressed a strong interest in collaborating with NJIT, and would like to see NJIT gain further strength in these areas; a number of them have already entered into collaborative projects with the Center. These NJ companies include defense, electronics, and ceramics as well as most of the major pharmaceutical companies, for example, Bristol-Myers Squibb, DuPont Pharmaceuticals, Hoffmann-LaRoche, Johnson & Johnson, Merck, Novartis, Pfizer, Schering Plough, SmithKline Beecham, and Wyeth-Ayerst. According to a recent working report from the New Jersey Commission on Science and Technology, based on information provided by Lux Research, by 2014, pharmaceutical companies alone (in NJ and elsewhere) are expected to have 23% of their sales revenues derived from incorporating nanotechnology. Similarly, in electronics, in particular defense electronics where NJ ranks third in the nation, nanotechnology is expected to revolutionize the products and account for up to 75 percent of sales revenue.

The main niche of NJCEP is incorporating value-added nanomaterials into particulate products, and since a majority of drug formulations as well as energetic materials involve particles, NJIT can make a significant economic impact by providing the core competency necessary for industrial product development in these areas. For example, by manipulating the size, structure and surfaces of drug particles to obtain improved bioavailability, drugs can be produced which require a reduced dosage and therefore are less toxic. Also, by developing a better understanding of particulate processes, the time to bring a new drug to market will be substantially reduced. In the area of defense, the NJCEP is already developing new particulate materials that provide better energy density, burn rates and safety (by incorporating smaller particles to produce less sensitive munitions).

RESEARCH CAPABILITIES

A common theme of the New Jersey Center for Engineered Particulates (NJCEP) research activities is the synthesis and utilization of nano-particles to exploit the unique properties of nano-structure materials in power composities. The Center includes core faculty from the Departments of Chemistry and Environmental Science, Mechanical and Chemical Engineering; about a dozen postdoctoral researchers; and over 18 PhD students supported by grants from federal (NSF, ONR,

NEW PROGRAM NEEDS

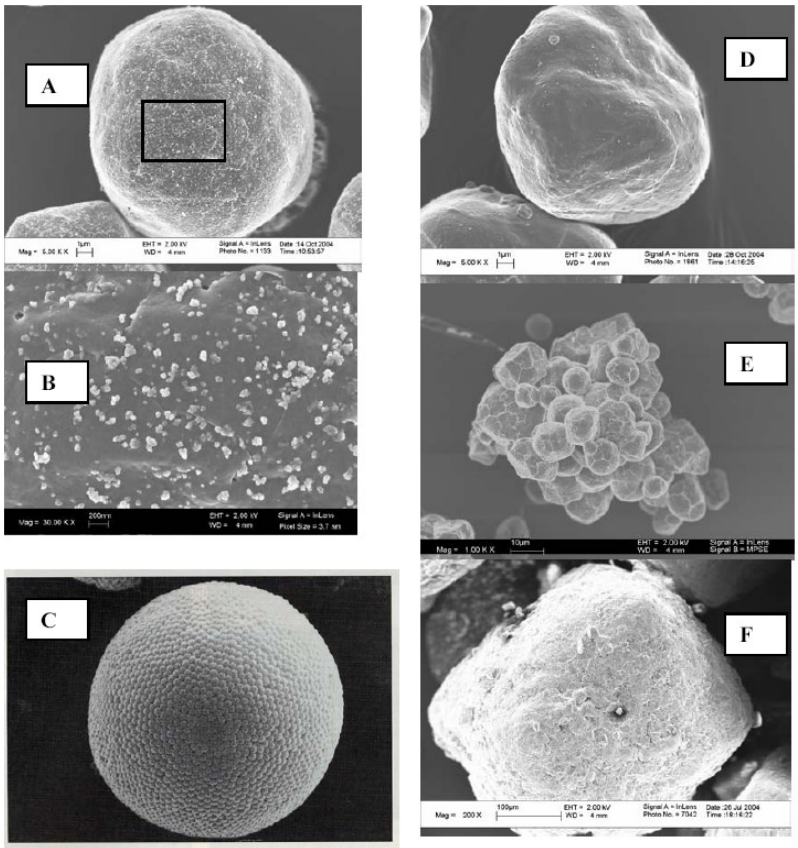
NASA, DOD), state, and industrial sources. The Center has research facilites that total over $3.5M, including a state-of-the-art materials characterization facility; strategic national and international research partnerships; and significant intellectual property in terms of patents. NJCEP is internationally recognized for its breakthrough contributions, including environmentally-benign mixing of nano powders, coating of nano particles with polymers to form nano-composites, formation and in-situ coating of aluminum/metal nano-powders, preparing nano-structured programmed energetic metallic fuels, and the fluidization and intimate mixing of nano powders as a first step towards further processing of nanostructured materials.

The research in fluidization and intimate mixing of nano powders is funded by two 4-year prestigious NIRT (Nano Interdisciplinary Research Teams) awards totalling over $2M, two of many NSF awards received by the core faculty. Recently (July 2006), the National Science Foundation awarded an Engineering Research Center (ERC) to a team of four Universities, Rutgers (the lead institution), Purdue, NJIT, and Puerto Rico at Mayaguez to conduct research on Structured Organic Composites, with an emphasis on enhancing the quality and consistency of materials used in drug tablets, pharmaceuticals, processed foods, agrichemicals and other composite organic products. In addition to improving the quality and consistency of these materials, the ERC will develop more cost-effective manufacturing techniques based on experiments and mathematical modeling than methods based largely on trial and error that are in widespread use today. NJCEP will play a major role in this new NSF and Industry funded ERC by contributing its expertise, knowhow, and research capabilities in nano-structured particulate composites which should result in significant economic development in NJ in the pharmaceutical and related industries.

The table below shows the areas of research and funding agencies - there are many exciting areas of research, with a large number of faculty so engaged.

Areas of Research	Source(s) of Funding
Discrete and film coating of nano and micron sized particles – 5 faculty	NSF, NJCST, US Army, Industry
Formation of sub-micron and nano particles using supercritical fluid processing – 4 faculty	NSF, NJCST, Industry
Dry and wet granulation of fine and nano sized particles – 3 faculty	NJCST, Industry
Metal-based high energy density materials (mechano-alloying and modeling) – 2 faculty	ONR, NASA, NJCST, DTRA, Industry
Flow of nano and micron particles in narrow channels under high electric fields – 1 faculty	DARPA, NSF, NASA, Industry
Mixing of nano particles, fluid-solid mixing, and formation of metallic nano-particles – 5 faculty	NSF, NJCST, Navy, Army, DTRA, NASA, ONR
Fluidization based processing of nano and other cohesive powders – 4 faculty	NSF, Navy, NJCST
Nano structured polymer composites – 4 faculty	Army, NJCST, Industry

NEW PROGRAM NEEDS



SEM Images: (A) Nano-particles (20 nm) on a carrier particle of 10 micron through a special dry coating technique, forming a structured particle. (B) Enlarged area of the rectangle from A. (C) Another structured particle, where the small spheres on the surface of the carrier particle can have unique photonic properties. (D) Particle from A can also be covered or individually encapsulated by a polymer film, protecting the nano-particles on its surface. (E) Particles from D can be made into granules, allowing easy transport or end-use. (F) Nano-particles dry-coated onto 5-10 micron hosts, which themselves are polymer bonded onto a larger ~250 micron "cubic" carrier particle, creating a multi-level structured particle.

NJIT has also started a highly successful pharmaceutical engineering masters program, and several specialty courses in advanced materials, nanotechnology and materials characterization have been developed. NJIT is also involved in NSF funded initiatives (IGERT, REU) that help train undergraduate and graduate students. During the summer of 2006, 11 undergraduates coming from all over the country spent 10 weeks doing research with NJCEP faculty.

INVESTMENT REQUESTED

The investment strategy is as follows: (1) to strengthen the critical mass of the faculty in the program by hiring senior and junior faculty; (2) enhance the research focus and the visibility of the program by hiring postdoctoral researchers and visiting research scholars from prominent universities and corporations; (3) strengthen the laboratory infrastructure through investment in facilities and equipment. This investment is summarized in the table.

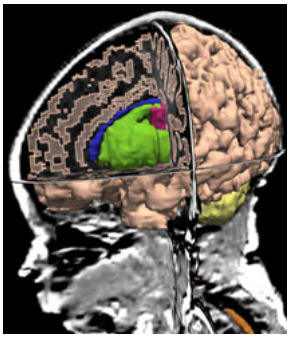
INVESTMENT REQUESTED FOR
PARTICLE TECHNOLOGY RESEARCH

ACTION	RECURRING	ONE-TIME
Hire one Senior and one Junior faculty	$210,000	$400,000
Establish two postdoctoral and visiting research scholar positions	100,000	
Invest in facilities and equipment		500,000
Total	**$310,000**	**$900,000**

NEW PROGRAM NEEDS

Total Identified Needs ($000's) Research In Particle Technology							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Priority	4.0	$310	$0	$0	$310	$900	$1,210

NEURAL ENGINEERING PROGRAM



Neural engineering applies tools and concepts from engineering to both basic and clinical problems – in this case, problems in neural function. The "Decade of the Brain" – during the 90s – provided fundamental neuroscience knowledge. Clinical studies then showed that the brain retains a great capacity to reconfigure itself so that functions can be transferred away from damaged areas, when stimulus regimes are properly engineered to induce or reinforce this transfer of function. This neural plasticity is central to the work of the neural engineering program. When such neural plasticity is inadequate, however, neural engineers work with other therapeutic means, such as interfacing prosthetic neural devices to the nervous system – or – neural tissue engineering to enable growth of existing neurons or development of new neurons from stem cells.

This program is being developed with a focus in the Biomedical Engineering Department; but faculty from the Departments of Mathematical Sciences, Electrical and Computer Engineering, Chemistry and Environmental Science, and Chemical Engineering will participate. Most important, the program will collaborate with researchers in fundamental neuroscience, clinicians in the rehabilitative care industry, and researchers in both pharmaceutical and medical device industries. Numerous pharmaceutical agents target neural functions, and new agents that foster neural plasticity will certainly be sought. Neural engineering will assist both the development and evaluation of new agents and engineered devices, to affect therapeutic changes in neural function.

Neural engineers collaborate with key nationally recognized New Jersey partners: (1) Kessler Institute for Rehabilitation (ranked fifth in US for adult rehab.), (2) Children's Specialized Hospital (largest pediatric rehabilitation program in US), and (3) the Center for Molecular and Behavioral Neuroscience (CMBN) at Rutgers-Newark.

IMPACT ON REGIONAL ECONOMY

Because engineering neural plasticity and neural tissue engineering will lead to therapies that are clinically applicable, a number of new businesses are expected to be born out of this research endeavor. For example, one successful company has already emerged from the CMBN research.

RESEARCH CAPABILITIES

As summarized in the table below, there are substantial strengths within the Biomedical Engineering Department and other Departments and Centers at NJIT. Also, existing and potential collaborations with the Center for Molecular and Behavioral Neuroscience (CMBN) at Rutgers-Newark, and the University of Medicine and Dentistry of New Jersey provide significant depth and breadth to the research capacity in neural engineering.

NEW PROGRAM NEEDS

The New Jersey research partners, with which neural engineering researchers already interact, provide further assets for neural engineering. For example, the Center for Molecular and Behavioral Neuroscience at Rutgers-Newark is one of the leaders in studying neural plasticity. It has an annual research budget on the order of $10M and following BME's lead, this center chose to focus on neural plasticity for their proposal submitted to the Governor's Commission on Job Growth and Economic Development (2003). Biomedical neural engineers were included in that proposal.

NJIT FACULTY WITH RESEARCH INTERESTS RELEVANT TO NEURAL ENGINEERING			
Faculty	Department	Research	Funding
Adamovich	BME	Neuromuscular rehabilitation	NIH
Alvarez	BME	Oculomotor adaptation	NSF-CAREER
Foulds	BME	Neuromuscular rehabilitation	NIDRR
Arinzeh	BME	Neural adaptation of stem cells	NSF–CAREER
Pfister	BME	Neural tissue engineering	(new 1/06)
Sahin	BME	Neural interfaces to prosthetics	NIH
Bose	Applied Math	Computational & experimental neuroscience	NSF
Miura	Applied Math	Computational neuroscience	
Nadim	Applied Math	Computational & experimental neuroscience	NIH
Tao	Applied Math	Computational neuroscience	
Ivanov	BioMEMS Facility	MEMS for neural interfaces	NSF

Another example of a key New Jersey research partner for neural engineering is the 3Tesla functional MRI imaging unit at UMDNJ. This unit has twice the normal magnetic field strength of typical human MRI. Only such 3T units are capable of accurate mapping of neural function sites and will provide critical data demonstrating the reconfiguration or re-mapping of neural function.
Also, there are existing partnerships that provide an integrated biomedical engineering PhD training program between NJIT and UMDNJ-Newark, and an integrated neuroscience training program between Rutgers-Newark and UMDNJ-Newark.

INVESTMENT REQUESTED
The investment strategy is as follows: (1) to strengthen the critical mass of the faculty in the program by hiring senior faculty in neural engineering and junior faculty in imaging; (2) enhance the research focus and the visibility of the program by hiring postdoctoral researchers and visiting research scholars from prominent universities and corporations; (3) strengthen the laboratory infrastructure through investment in facilities and equipment. This investment is summarized in the table below.

INVESTMENT REQUESTED FOR
NEURAL ENGINEERING

ACTION	RECURRING	ONE-TIME
Hire one Senior and one Junior faculty	$200,000	$400,000
Establish two postdoctoral and visiting research scholar positions	100,000	
Invest in facilities and equipment		500,000
Total	**$300,000**	**$900,000**

NEW PROGRAM NEEDS

Total Identified Needs ($000's) Neural Engineering							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Priority	4.0	$300	$0	$0	$300	$900	$1,200

CRITICAL INFRASTRUCTURE SYSTEMS

Recent hurricane disasters along the Gulf Coast have underscored the critical role that infrastructure plays in the nation. Indeed, it is the essential fabric of our civilization. And what are our critical infrastructure systems? They are the highly complex network of highways, streets, bridges, tunnels, airports, seaports, railroads, public buildings, flood control structures, water supply, power grid, communications systems, waste disposal, and more. When the systems are functioning smoothly, infrastructure is largely taken for granted, becoming almost invisible. However, the certainty of future natural disasters and terrorist acts demands our continued vigilance and investment to create a robust and resilient infrastructure, both here in New Jersey and throughout the nation.

Critical infrastructure and emergency response are intimately linked, since it is during times of disaster that systems are stressed to the maximum. However, fundamental research into the interdisciplinary science and engineering of disasters and how they affect our infrastructure is urgently needed. System interdependencies, coupled with the fact that we must maintain service from systems that are in a continuous state of expansion and replacement, explains why critical infrastructure represents one of the greatest engineering challenges of the 21st Century. And it is a challenge that must be met, since the very quality of life and economic future of the nation are at stake.

The investment required to upgrade the nation's 12 categories of infrastructure to acceptable levels was estimated in 2006 by the American Society of Civil Engineers (ASCE) to be $1.6 Trillion. Making the commitment to invest public and private funds in critical infrastructure is only part of the equation. The money must also be invested intelligently, taking full advantage of the latest technologies, materials, and management systems available, and when none are available, they must be invented. That is where the New Jersey Institute of Technology (NJIT), the state's science and technology university, will continue to play an increasing role in the creation of intelligent infrastructure systems.

NJIT RESEARCH CAPABILITIES

Over the last 15 years, NJIT has established a strong base of research and educational activity in critical infrastructure, including centers for Architecture and Building Science Research, International Intermodal Transportation, Communications and Signal Processing Research, Wireless Telecommunications, and the program in Transportation, Economic and Land Use Systems. In addition, NJIT houses strong faculty and staff clusters that are active in related areas, including Systems Reliability and Optimization, Smart Sensing Technologies, Human Behavior, Evacuation Planning and Modeling, Power Grid, and Pipeline Protection and Monitoring. High quality,

contract research has been conducted in all these areas for a wide variety of federal, state, and regional agencies, as well as for private industry. One of the reasons for NJIT's solid competency in infrastructure research is the campus's strategic location in Newark, which is at the heart of the largest transportation hub and industrial complex in the nation.

CRITICAL INFRASTRUCTURE AND EMERGENCY RESPONSE GRADUATE PROGRAM

NJIT is moving ahead by creating a new umbrella activity to be known as the Graduate Program in Critical Infrastructure Systems. A new senior faculty with a specialty in Critical Infrastructure was recruited and hired in 2006 to lead this effort. This program will include a Critical Infrastructure Systems Research Center (CISRC) that will have the mission to raise infrastructure research and education within the State of New Jersey to a higher, more intelligent level. A major function of the center will be to coordinate and foster interactions with government and industry, helping them to identify and respond to their infrastructure and emergency response problems. Interdisciplinary approaches and solutions will be a hallmark of CISRC, given the depth and breadth of NJIT's faculty and staff expertise. The Center will also focus on the interdependency of social and constructed systems, for, as the experience in New Orleans so aptly demonstrated, human and built environments cannot be separated if realistic solutions are to be found.

A centerpiece of the new center will be a multi-year effort to develop a Cyber-Infrastructure Monitoring System that will continuously monitor and record the status and health of critical infrastructure systems throughout New Jersey and beyond. The digital monitoring system which is to be developed using a phased approach, will be linked to a Data Warehouse so that data may also be accessed. In addition, investments in facilities and equipment are planned within existing NJIT laboratories in order to strengthen research capabilities in the area of infrastructure.

The new graduate program in Critical Infrastructure Systems and Emergency Response is responsive to the voids in leadership experienced at various levels during last year's Gulf disasters. Our recent national experience clearly indicates the necessity to educate a new generation of engineering, management, and emergency response professionals. Those entering this new profession need to be fully versed in sciences and technologies pertinent to complex human, social, natural and constructed systems. The interdisciplinary program will begin by offering an MS degree and add a Ph.D. later.

INVESTMENT REQUESTED

The investments required to strengthen Critical Infrastructure Systems and Emergency Response research and education are summarized below:

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

INVESTMENT REQUESTED FOR THE NJIT PROGRAM IN CRITICAL INFRASTRUCTURE SYSTEMS AND EMERGENCY RESPONSE

ACTION	RECURRING	ONE-TIME
Strengthen the critical mass of faculty expertise by hiring one Junior level faculty	$80,000	$20,000
Create a Cyber-Infrastructure Monitoring System and Data Warehouse for New Jersey's infrastructure		500,000
Upgrade research and educational capabilities by inviting resident scholars from government and industry	150,000	
Strengthen laboratory facilities and equipment investments		1,000,000
Total	**$230,000**	**$1,520,000**

Total Identified Needs ($000's) Critical Infrastructure Systems							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Total
Core	1.0	$80	$0	$0	$80	$420	$500
Priority	0.0	0	0	150	150	1100	1250
Grand Total	**1.0**	**$80**	**$0**	**$150**	**$230**	**$1,520**	**$1,750**

THE NEW JERSEY SCHOOL OF ARCHITECTURE

The New Jersey School of Architecture is embarking upon a period of growth in its undergraduate programs to better serve industry and the state. New degree programs are under development for approval in the following areas:

- B.A. Digital Design (pending 2008 approval).
- B.A. Interior Design (pending 2008 approval).
- B.F.A. Art (pending 2008 approval).
- B.S./B.A. Graphic Design (in development for 2010 approval).
- B.S. Landscape Architecture (in development for 2010 approval).

In addition, the school is focusing its future faculty hiring in the areas described below, supporting the program development areas identified above.

- For AY07/08 Hiring
  - Architecture (2)
  - Interior Design
  - Art
- For AY08/09 Hiring
  - Digital Design
  - Architecture

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

Specific areas for investment, in line with the established priority areas identified in the NJIT 2004-2010 Strategic Plan are described below, focusing on the strategies for the next five years of growth.

While we anticipate continued achievement moving forward, the next five years pose a number of challenges for the New Jersey School of Architecture. Chief among these are continuing reductions in State funding for Higher Education, resulting in enormous fiscal pressures. Each institution of higher learning therefore has had to reassess its priorities and resource allocations.

Fortunately, the NJSOA program remains a University priority primarily for two reasons:

- our trajectory to increase national prominence;
- our aggressive growth plan.

The growth plan has two components:

- the addition of new undergraduate programs, with a concomitant increase in the undergraduate population; and an increase in funded research, primarily through the Center for Architecture Building and Science Research.

The major impediments to implementing our strategic objectives are the lack of expansion space and limited faculty resources. The University is aware of these issues and is willing to allocate resources in part based on performance and enrollment.

- The Creation of a College of Design will expand offerings and degree programs to build a comprehensive design school. The impetus for this change lies in the many unfulfilled educational needs within the State that could effectively be addressed by such a configuration. Equally compelling is the synergy created by assembling parallel programs in design. This will provide enrichment and broader educational exposure for students as well as faculty. The College of Design will contain the present New Jersey School of Architecture as a discrete but related academic entity, but it will eventually add Industrial Design (2006), Interior Design (2008), Digital Design (2008), Fine Arts (2009) and Landscape Architecture (2010). Other disciplines under consideration include graphic design and sculpture.

- Building Information Modeling (BIM) will be folded into the curriculum and add an additional focus in the use of information technology in architecture. We believe that this data-driven information model, as well as the parametric nature and opportunities afforded by BIM, will have a transformative impact on the pedagogy and process of design, and may dramatically restructure the decision-making and building-delivery process. The introduction of BIM will require the most broad-based changes in the knowledge, skills, and attitudes of architects seen in many decades. As the largest provider of architectural graduates in the region, professional offices will look to our graduates to be competent in BIM techniques, and also to understand the implications of intelligent systems in the design and delivery process. Employers will expect our graduates to be the agents of change that will make their offices competitive in the new BIM-environment. The School's leadership in BIM has already been recognized: in July 2007, NJSOA received the Revit BIM Experience Award from Autodesk. NJSOA is the first educational institution, public or private, to be so honored. We expect to assume a national leadership role in this area.

- The importance of teamwork in the creation and implementation of complex projects will be increasingly emphasized. To this end, we are changing some curricular components to

ensure that all students have team experiences as a mandatory part of their education. First year undergraduate students are assigned team projects in analysis, reporting, and the preparation of common/shared pre-project information requiring them to work collaboratively in groups of two to seven persons. Other design team projects are those in the Masonry Design/Build Competition in second year. These projects are designed, produced and built by teams. We will continue the team approach for the course in building anatomy (see *Building Anatomy Studio* below). Although Industrial Design has been traditionally an individual pursuit, teamwork is becoming the norm and will therefore be incorporated into that curriculum as well.

- The Building Anatomy Studio will again introduce a team project to the student experience. Students in this course will analyze outstanding existing buildings by isolating each building system using BIM technology. This will aid in the comprehension of how buildings go together, provide examples of building systems, and act as a wonderful preamble to the comprehensive studio experience to follow. More importantly, it will create a visceral understanding of the component systems of a building and the techniques used to assemble them. Building Anatomy will be an effective pedagogical mechanism that will not only deepen our students' understanding of the building process, but also accumulate a library of BIM models of well-known buildings. The library of BIM models will become a resource to help gain an in depth understanding of the technical aspects of recent buildings. These may then be discussed as part of the building course, or used as precedents for design problems.

- The continued implementation of the Kepler System will have far-reaching effects on the School. This remarkable innovation was designed and developed by our own technical staff to store all student work in an online database, making it accessible to students, faculty, and administration. Kepler provides the School with a complete record of all student work – a present population of 831 students – for their entire academic careers. It enables students to generate a running portfolio and allows faculty to develop a teaching approach that responds more acutely to each student's individual needs. It enables administration to perform outcome assessments regarding teaching efficacies, and to carry out longitudinal studies to evaluate curricular changes and resource allocations.

- The development of proprietary designs and intellectual property will become a more prominent part of NJSOA. Already a part of the Industrial Design program, the Architecture program and CABSR also plan to focus on the development and exploitation of intellectual property. In order to foster this entrepreneurial spirit, in the future students will take an introductory management course entitled "From Idea to Implementation."

- Continued growth will take place on two fronts: the number of programs of study to be offered (with the eventual formation of a College of Design); and the number of students. The primary growth will be in undergraduate programs. Since the architecture student intake is finite, most of the proposed growth will be in programs in related design fields. The aim is to capture a good percentage of potential design students who now opt to go out of state.

- Faculty development and augmentation is a high priority. The total number of full-time faculty appointments has shrunk despite a very significant increase in the total student population. Positions are being sought that can help offset this problem and play a role in the shaping of the progress and administration of our many initiatives.

- Curriculum development will continue as a matter of great importance and we are currently in the midst of a major reorganization which includes both content and pedagogy. We do

not, however, expect much change in the key principles and shared vision of where we are going. The calibration and recalibration of the curricula follow a set of principles and guidelines that was established by a faculty Curriculum Advisory Group two years ago.

Information Technology and the computing capabilities of NJSOA are essential to our pedagogical goals. NJSOA maintains an educational environment representative of the professional atmosphere in which students can expect to practice. Every student has a desktop computer connected to a secure dedicated network domain which allows for extensive customization and access to up-to-date digital and graphic programs in accordance with our restricted licenses.

As the NJSOA pedagogical focus extends into BIM, digital fabrication and virtual environments, we face a number of challenges in maintaining our digital preeminence. Dedicated specialty labs, such as the NJSOA Teaching Lab and the Video/Animation Lab, present greater maintenance, upgrade and expansion needs. Network storage solutions must evolve to keep pace with growth of the Architecture and Industrial Design programs. Further investment in expanded and improved computing services will be needed in order to provide our students with the most advanced digitally competitive environment.

In order to achieve this, the following strategies are being pursued:

- *Regular periodic investments* are being made in hardware for the Imaging Lab to ensure sufficient capability, peripherals, servers and post-production facilities.
- *Continuous upgrading of software* is ongoing so that students are trained on the latest versions of relevant programs. The programs are all on the School server and can be freely accessed from each student desk.
- *Training opportunities are available for faculty* to take full advantage of the pedagogical opportunities offered by a computer intensive environment.
- *An annual allocation of funds is made from the NJIT technology fee revenue* to replace the former NJSOA computer lab fees. The funding is used to defray costs associated with software updates, supplies and replacements of parts.

NJSOA is keenly aware that while many students will choose employment in traditional architecture offices, a significant number of our graduates will migrate into related fields. We view this trend as positive: it provides the basis for a healthy and broadly based academic program without compromising its efficacy as an excellent preparation for the profession of architecture.

NJIT is well positioned to combine design and technology. The discipline of design combined with cutting edge technology is inextricably intertwined in the development of breakthrough products. The spirit of invention combined with an entrepreneurial bent is one of the hallmarks of an NJIT education. The NJSOA faculty has the pedagogical skills necessary to develop the new innovative curricula. Introduction of additional knowledge and research based studios will prepare students to expand the traditional role of the profession of Architecture and provide the skills needed to participate and compete in a new line of inquiry. NJSOA has a rapidly increasing profile in research as applied to large-scale planning and infrastructure design. It is anticipated that through these educational shifts, NJSOA expects to be able to more than double the external support for community design studios from approximately $100,000 per year to approximately $250,000 per year.

Enrollment Projections (does not include Ph.D.)

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Undergraduate	486	505	571	634	653	685	700	**700**	**700**
SAT Average	1135	1171	1146	1153	1178	1154	1200	**1205**	**1210**
Graduate	82	106	105	121	120	130	110	**115**	**120**
Total	568	611	676	755	773	815	810	**815**	**820**

Projected Number of Graduates

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Undergraduate	84	79	67	88	80	101	105	**135**	**140**
Graduate	24	25	30	26	25	24	26	**26**	**26**
Total	108	104	97	114	105	125	131	**161**	**166**

The present NJSOA research funding is on a positive trajectory. The research volume has almost doubled in the last three years. However, in order to keep at this present rate of growth, additional resources are required. In the area of large scale planning and infrastructure design, future growth in research funding will be directly proportional to the number of qualified faculty members.

Research Volume Projections For NJSOA / CABS ($000's)

2000	2001	2002	2003	2004	2005	2006	2007	2008
406	994	562	1,250	1,500	1,750	2,000	2,250	2,500

INVESTMENT REQUESTED FOR
THE NEW JERSEY SCHOOL OF ARCHITECTURE

ACTION	RECURRING	ONE-TIME
Establish a Distinguished Visiting Professor position for invited architects in residence	$120,000	
Establish two graduate research fellowship positions to support digital design and fine arts	75,000	
Establish four positions of Professors of Practice	280,000	
Hire a Network Manager into a new staff position	70,000	
Graduate Teaching Assistant Positions (4)	150,000	
Research Experience for Undergraduates (REU)	40,000	
Recruiting and web development	15,000	
Equipment		75,000
Total	**$750,000**	**$75,000**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

Total Identified Needs ($000's) THE NEW JERSEY SCHOOL OF ARCHITECTURE							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	5.0	$350	$0	$15	$365	$75	$440
Priority	7.0	345	0	40	385	0	385
Grand Total	**12.0**	**$695**	**0**	**$55**	**$750**	**$75**	**$825**

COLLEGE OF SCIENCE AND LIBERAL ARTS

The College of Science and Liberal Arts (CSLA) is continuing in its strategic plan to develop new and innovative undergraduate and graduate programs to better serve industry and the state. The college is embracing the developments in media by reinvigorating the curriculum in Communication and renaming the degree the B.A. in Communication and Media. New degree programs are under development for approval in the following areas:

- B.S. Computational Sciences (pending 2008 approval)
- M.S. Biostatistics (pending 2008 approval)
- M.S. Pharmaceutical Chemistry (in development for 2009 approval)
- B.A. Law, Technology and Culture (in development for 2009 approval)
- B.S. Biophysics (in development for 2010 approval)
- B.S. Biochemistry (in development for 2010 approval)

In addition, the college is focusing its future faculty hiring in the areas described below, supporting the program development areas identified above.

- For AY07/08 Hiring
  - History, to support Law, Technology and Culture
  - Humanities to support Communication and Media
  - Biostatistics
  - Biology

- For AY08/09 Hiring
  - Biofluid Dynamics
  - Math Biology/Biostatistics
  - Biochemistry

Specific areas for investment, in line with the established priority areas identified in the NJIT 2004-2010 Strategic Plan are described below.

DEPARTMENT OF MATHEMATICAL SCIENCES

The Department of Mathematical Science (DMS) has been an exemplary focus for strategic investment on the NJIT campus. Through this focus and its committed activities, the faculty has been successful in continuing to elevate the national status of the department. Major efforts will be made to build upon existing research strengths to increase research productivity and funding, with focus on three strongest research components in DMS: (1) Mathematical Biology, (2) Mathematical Fluid Dynamics, and (3) Nonlinear Optics and Waves.

NEW PROGRAM NEEDS

For example, under the initial funding of an NJIT strategic initiative award, in 2004 and 2005 the department convened two major international conferences on Frontiers in Applied and Computational Mathematics. The 2005 conference was attended by over 250 prominent researchers, junior faculty, postdoctoral fellows, and graduate students. Attendees and speakers included members of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Royal Society as well as recipients of the National Medal of Science and the Wolf Prize.

DEPARTMENTAL MISSION

The goal of DMS is to be ranked among the top research Applied Mathematics departments in the US. Thus, DMS must provide and participate in the full spectrum of research activities in such departments. DMS strives to provide national leadership in undergraduate, graduate, and postdoctoral research education. Ethnic and gender diversity in personnel is actively pursued in all DMS activities. The listing below includes key items that are essential to expanding research activities in DMS that will broaden and heighten its national prominence. These items are:

- Establish a Visiting Distinguished Professor Program. Select one or two internationally recognized leaders in Mathematical Biology and/or Mathematical Fluid Dynamics to spend a year at NJIT.
- Establish three Postdoctoral Fellowships in the Mathematical Sciences. Collaboration between the postdoctoral fellows and faculty would greatly increase research productivity. Successful training and placement of postdoctoral fellows will promote the prominence of the DMS program in the community.
- Establish one NJIT Doctoral Fellowship in the Mathematical Sciences. A highly competitive NJIT Doctoral Fellowship stipend will be awarded to an excellent domestic PhD student who is interested in pursuing research in Mathematical Biology, Fluid Dynamics, or Wave Propagation.
- Establish six positions for Research Experience for Undergraduates *(REU)*. The Undergraduate Biology and Mathematics Training Program, one of the first eight funded by NSF, has undergraduates in high level quantitative biological research. The number of highly qualified undergraduates going into industry and graduate schools will be increased by extending these research opportunities to six students in fluid dynamics and waves.
- Organize Conference on Frontiers in Applied and Computational Mathematics and host the Industrial Mathematics Summer workshop. The successful Frontiers in Applied and Computational Mathematics conferences in 2004 and 2005 will be continued in 2007 and 2008. An industrial mathematics workshop will be added to these activities.
- Renovate the Second Floor of Cullimore Hall. As in top tier departments, DMS will have modern, comfortable, functional facilities to create a positive work environment for faculty members to interact with students within the department and with researchers from outside NJIT.
- Establish a Center for Theoretical and Experimental Fluid Dynamics. The Mathematical Fluid Dynamics group collaborates with the Fluids Group in Mechanical Engineering (ME). Theoretical expertise in DMS/ME will be combined to raise NJIT's profile in this area to national prominence.
- Expand Industrial Research/Academic collaborations. Strengthen and expand the significant research/academic partnership with Novartis Pharmaceutical.
- Collaborative Applications for Training Grants. A graduate training grant from NJIT, UMDNJ, and Rutgers-Newark has been funded by the Howard Hughes Medical Institute. This collaboration will be expanded.

NEW PROGRAM NEEDS

INVESTMENT REQUESTED

To support this important agenda of activities, the amounts listed in the table below are requested from FY09 funds.

INVESTMENT REQUESTED FOR
MATHEMATICAL SCIENCES

ACTION	RECURRING	ONE-TIME
Hire one Distinguished Visiting Professor	$75,000	
Hire one Post Doctoral Fellow	50,000	
Graduate Student Stipends (2)	70,000	
Research Experience for Undergraduates (REU)	48,000	
Facilities Renovation		200,000
Conference and Workshop	60,000	
Total	**$303,000**	**$200,000**

Total Identified Needs ($000's) Department of Mathematical Sciences							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	1.0	$75	$0	$0	$75	$0	$75
Priority	3.0	120		108	228	200	428
Grand Total	**4.0**	**$195**	**$0**	**$108**	**$303**	**$200**	**$503**

TEACHER EDUCATION AT NJIT

The future economic success of the state and the nation requires an abundant source of high-quality, technically-astute science, math, and technology teachers. There is a pressing need to strengthen the quality and quantity of high school graduates prepared to pursue careers in high tech fields. A good place to begin making progress on this front is with teacher education programs. It is clear that the "crisis" in education, while dire, also presents an opportunity to bring new teachers with better preparation, new ideas and new practices into the profession and into the nation's classrooms.

Over the years, a number of NJIT graduates have gone on to pursue teaching careers. Although these students did not earn teaching certification at NJIT, the State of New Jersey has allowed them to become teachers through the Alternate Route Process. The individuals who have become teachers through this process have expertise in the field in which they are teaching, but have learned educational theory and practice on the job. There is a good deal of experience at NJIT in training students for careers in teaching, though not all the formal requirements are offered. However, NJIT has recently been granted the authority by the State of New Jersey to offer its students teaching certification in partnership with Rutgers - Newark. Thus, NJIT students can now participate in an education program and complete an undergraduate degree (in Applied

NEW PROGRAM NEEDS

Mathematics, Applied Physics, Biology, Chemistry, Communication-literature, Environmental Science, History, or Science/Technology/Society) and receive their teaching certification.

NJIT plans to institutionalize this initiative by establishing the Program in Science, Technology, Engineering, and Mathematics (STEM) Education. The Program aims to improve the quality of teaching and learning in these disciplines in New Jersey schools. The main goal of the Program is to: 1) play a key role in increasing the number of people uniquely trained to pursue teaching careers in mathematics, science and technology, 2) improve the quality and effectiveness of STEM teacher preparation, and 3) provide for teachers' continuing professional development. Putting more highly qualified and prepared teachers in New Jersey's classrooms will lead to an increase in the preparedness and in the number of New Jersey's students opting for further study in mathematics, science, and technology at the college level. This, in turn, will result in an increase in the number of scientifically trained citizens who will form the foundation of the skilled workforce for New Jersey and the United States to remain competitive in the global marketplace.

WHY TEACHER EDUCATION AT NJIT?

NJIT offers strong curricula to students in mathematics, science, and technology with an educational experience that incorporates sophisticated knowledge of subject matter, high-level analytical thinking skills, and the ability to confront and analyze complex problems. By focusing on these skills and the content areas of student interest NJIT can develop an education program that will produce a cadre of teachers who will be able to meet the challenges of today's schools: teachers who are competent in their field, eager to bridge disciplinary boundaries, able to think creatively, and have the skills and tools to stimulate students to question incisively and be innovative in their solutions to new problems. NJIT students are enveloped in an environment of advanced technology and will be uniquely able to incorporate newly developing educational methodologies and technologies, bringing with them the mindset to integrate knowledge of aspects of rapidly expanding technological advances into the classroom environment.

NJIT can create new and advanced degree programs that will produce the education professionals that we need for the New Jersey workforce of the future. In five years, we expect to achieve:

- Strong and networked faculty that work collaboratively with state-wide teacher education programs, including at other institutions in New Jersey through NJEDgeNet.
- State-of-the-art educational and training programs and facilities, including access to experimental and computational facilities, and distributed cyber-resources.
- Strong relations with local, regional, state and national organizations and agencies, industry and other organizations that will provide support, continuing feedback and interactions, information resources.
- Education and training of a group of uniquely qualified graduates who are provided with strong technical and leadership capabilities in the important profession of mathematics science, and technology education.

IMPACT ON REGIONAL ECONOMY

Teacher education is of great importance to the State of New Jersey, and building strength in capability and knowledge will prepare the State to take a leadership position regarding workforce skills. The NJIT program will collaborate with local and regional schools, and we are well-poised to make a tremendous impact state-wide in the particular area of STEM education. The materials,

resources, and graduates produced through the NJIT program will support continued development of high technology products designed and produced by New Jersey industry, and will supply the workforce needed to maintain the strength of the state in emerging industries.

INVESTMENT REQUESTED

The investment strategy is as follows: (1) administrative support for STEM teacher education and training program development; (2) outreach activities to prospective students, schools and school districts including recruitment materials, travel to begin collaboration with other programs state-wide; (3) develop the campus-based cyberinfrastructure system that will support advanced learning and full utilization of NJEDge.Net, including provision of IT equipment and supplies, smart classroom development; and (4) enhance the visibility of the program and promote collaboration by instituting a resident faculty program to involve local, regional and state education leaders and bring them in residence at NJIT for sustained collaboration.

The investment strategy is summarized in the table below.

INVESTMENT REQUESTED FOR TEACHER EDUCATION AT NJIT		
ACTION	RECURRING	ONE-TIME
Administrative support for STEM programs – 2 FTE	$90,000	
Outreach activities	15,000	5,000
Campus cyberinfrastructure	50,000	100,000
Resident faculty and leader programs	80,000	
TOTAL	**$235,000**	**$105,000**

Total Identified Needs ($000's) Teacher Education At NJIT							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	2.0	$90	$50	$95	$235	$5	$240
Priority	0.0	0	0	0	0	100	100
Grand Total	**2.0**	**$90**	**$50**	**$95**	**$235**	**$105**	**$340**

SCHOOL OF MANAGEMENT

The School of Management is embarking upon a reorganization and reinvigorization of its graduate programs to better serve industry and the state. New degree programs are under development for approval in the following areas:

NEW PROGRAM NEEDS

- M.S. Financial Engineering (pending 2008 approval).
- B.S./M.S. International Business (pending 2008 approval).
- B.S./M.S. Enterprise Development (pending 2008 approval).
- M.S. Management Information Systems (in development for 2009 approval).
- M.S. Health Systems Management (in development for 2009 approval).
- B.S. Financial Engineering (in development for 2009 approval).
- B.S./M.S. New Media Business Development (in development for 2010 approval).

In addition, the school is focusing its future faculty hiring in the areas described below, supporting the program development areas identified above.

- For AY07/08 Hiring
  - Corporate Finance/Financial Engineering
- For AY08/09 Hiring
  - International Business/Enterprise Development

The School of Management completed its reaccreditation through AACSB in AY07/08, and is poised to expand its enrollment. The School has developed a strong partnership with the College of Computing Sciences and developed new undergraduate and graduate programs in the areas of Computing and Business and Business and Information Systems. The School plans to continue to develop international research and education opportunities, and to involve post-doctoral, graduate, and undergraduate students in these efforts.

INVESTMENT REQUESTED FOR SCHOOL OF MANAGEMENT

ACTION	RECURRING	ONE-TIME
Establish a Distinguished Visiting Professor position for international invited visitors	$120,000	
Establish two Post Doctoral Fellowship positions to support international and entrepreneurial research	120,000	
Graduate Student Positions (6)	225,000	
Research Experience for Undergraduates (REU)	40,000	
Conference Facilities Equipment		50,000
Total	**$505,000**	**$50,000**

Total Identified Needs ($000's) SCHOOL OF MANAGEMENT

	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	3.0	$240	$0	$40	$280	$0	$280
Priority	6.0	225	0	0	225	50	275
Grand Total	**9.0**	**$465**	**0**	**$40**	**$505**	**$50**	**$555**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

COLLEGE OF COMPUTING SCIENCES

The College of Computing Sciences has established a new focus for program development, one in close partnership with the School of Management. New degree programs are under development for approval in the following areas:

- B.S./M.S. Computing and Business (pending 2008 approval): developed for students who want to develop, use and manage software applications and systems in a business environment. In addition to core computing expertise, the program provides students with a solid understanding of business fundamentals.
- B.S./M.S. Business and Information Systems (pending 2008 approval): developed for students who want to analyze information systems and know how to design and deploy computer applications in business. Includes both information systems and business fundamentals.

In addition, the college is focusing its future faculty hiring in the areas described below, supporting the program development areas identified above and also the new program area of Bioinformatics that has recently received approval for the B.S/M.S degrees.

- For AY07/08 Hiring - Computing and Business and Bioinformatics
- For AY08/09 Hiring - Bioinformatics

The College of Computing Sciences completed its reaccreditation through ABET in AY07/08, and is poised to expand its enrollment. The College has developed a strong partnership with the School of Management and developed new undergraduate and graduate programs in the areas of Computing and Business and Business and Information Systems. The College plans to continue to develop its bioinformatics and Smart Campus research and education opportunities, and to involve post-doctoral, graduate, and undergraduate students in these efforts.

INVESTMENT REQUESTED FOR
COLLEGE OF COMPUTING SCIENCES

ACTION	RECURRING	ONE-TIME
Establish a Distinguished Visiting Professor position for invited visitors in Bioinformatics	$100,000	
Establish two Post Doctoral Fellowship positions to support the developing partnership with the School of Management	120,000	
Graduate Student positions (4 students)	150,000	
Research Experience for Undergraduates (REU)	40,000	
Total	**$410,000**	

Total Identified Needs ($000's) COLLEGE OF COMPUTING SCIENCES							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	3.0	$220	$0	$0	$220	$0	$220
Priority	4.0	150	0	40	190	0	190
Grand Total	**7.0**	**$370**	**0**	**$40**	**$410**	**0**	**$410**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

INTERDISCIPLINARY GRADUATE PROGRAMS

The state and the nation have need of fundamental research that addresses the compelling and complex questions of our times. Many of these can be uniquely addressed by researchers and faculty at NJIT, and we also believe that we can create new and needed degree programs that will produce professionals that are greatly needed in the workforce of the future. Therefore, NJIT plans to develop graduate curricula and degrees, together with vibrant research programs in the following areas:

1) Security and emergency response
2) Biological and health care informatics
3) Environmental systems – distributed sensing and sustainability
4) Cyberinfrastructure, and integration of Information Technology into learning, social and business environments
5) Science and design of new materials, and manufacture and building with new materials.

In five years, we expect to achieve:

- Strong and networked faculty in each of these interdisciplinary graduate programs, including faculty on campus, at other institutions in New Jersey through NJEDge.Net, and national and international faculty who join us through joint appointments.
- State-of-the-art research programs and facilities in each of these interdisciplinary areas, including experimental and computational laboratories, field facilities, distributed sensing networks, database resources that will serve as a resource for the solution of specific industrial problems.
- Intellectual property with commercial potential including materials, devices, control systems, analytical and visualization software, and database resources.
- Strong relations with state and national agencies, industry and other organizations that will provide research support, continuing feedback and interactions, information resources; and
- Education and training of a group of uniquely qualified graduate students, postdoctoral researchers, and professionals who are provided with strong technical and leadership capabilities in these important areas.

IMPACT ON REGIONAL ECONOMY

Each of these areas is of great importance to the State of New Jersey, and building strength in capability and knowledge will prepare the state and the nation to lead in the solution of critical issues facing our society. NJIT research teams will collaborate with regional companies, and we are well-poised to make a tremendous impact on the defense sector, which already funds several related and supporting areas of research. The materials, data resources, and software developed by these teams will support continued development of high technology products designed and produced by New Jersey industry, integrated planning tools needed by New Jersey agencies, and will supply the workforce needed to maintain the strength of the state in emerging industries.

INVESTMENT REQUESTED

The investment strategy is as follows: (1) administrative support for student and researcher recruitment, curriculum development, program development; (2) to strengthen the critical mass of the faculty in the program by hiring in addition to establishing joint appointments; (3) develop the campus-based and distributed cyberinfrastructure system that will support advancement in these

critical areas; (4) enhance the research focus and the visibility of the program by instituting a resident faculty and researcher program to involve leaders from government and prominent universities and corporations; (5) strengthen the infrastructure through investment in facilities and equipment. This investment is summarized in the table below.

INVESTMENT REQUESTED FOR
INTERDISCIPLINARY GRADUATE PROGRAMS

ACTION	RECURRING	ONE-TIME
Support staff - 2 FTE	$140,000	
New faculty and start-up funding – 4 FTE @ $100K	400,000	800,000
Graduate student positions – 10 FTE @ $17.5k (Stipend) + $20k (Tuition)	375,000	
Cyberinfrastructure for software and database resource development		300,000
Strengthen research and educational laboratory and field experimental facilities		500,000
Total	**$915,000**	**$1,600,000**

Total Identified Needs ($000's) Interdisciplinary Graduate Programs							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Priority	16.0	$715	$0	$200	$915	$1,600	$2,515

MATERIALS SCIENCE AND ENGINEERING, GRADUATE EDUCATION AND RESEARCH

The Materials Science and Engineering program (MTSE) at NJIT was established as an interdisciplinary graduate program in the mid-1990's that combined the interests of faculty from the College of Science and Liberal Arts with faculty from the Newark College of Engineering. Now into the 21st century, MTSE has established itself as a productive program, graduating 45 Master's students since 1998 and 17 doctoral students since 1999.

The MTSE program supports active and important research in biomaterials, nanomaterials, particulate materials, electronic and photonic materials, and polymer materials. For the Fall of 2006, the program has 13 MS and 20 PhD (not determined) students, and is coordinated by an interdisciplinary committee and an Academic Director whose duties are partly within his home department and partly within MTSE. With program expansion and identification of unique and important research activities, the program can be made increasingly diverse by attracting U.S. students and under-represented minorities. Expansion and increased utilization of existing facilities are also important to make the program more attractive.

NJIT plans to expand its programs to reflect the increasingly interdisciplinary nature of materials technology. The MTSE program is an example of one program that has immediate growth potential through wider participation of faculty from other academic areas and enhanced opportunities for external funding. Faculty from Architecture, Biomedical Engineering, Chemical Engineering, Chemistry, Civil Engineering, Computer Science, Electrical Engineering, Environmental Engineering, Environmental Science, Mathematical Sciences, Mechanical Engineering, and Physics

have already become participants in the expanded program by accepting joint faculty appointments in Materials Science and Engineering in addition to their primary appointments within the more traditional academic departments. Faculty at nearby New Jersey universities and elsewhere will be invited to participate in the program.

Extensive connections with industry and national laboratories are an integral part of the MTSE program. The industrial advisory board represents a variety of New Jersey material processors, manufacturers, and users. NJIT faculty members collaborate with Lucent in nanofabrication using the e-beam lithography facility at the Lucent New Jersey Nanofabrication Center. Successful, proposals have been funded in collaboration with this center. In addition, NJIT students participate in collaborative research with this center and the materials research group at Lucent. Faculty of the MTSE program also has strong relationships with the Polymer Processing Institute located at NJIT that conducts research on polymeric materials and processes for industry.

NJIT faculty has collaborative research programs with major government research laboratories in the Metropolitan New York area including the Brookhaven National Laboratory and Picatinny Arsenal. A number of MTSE students are employed in regional industry and work on research supervised by NJIT faculty. The importance of materials research and development pervades technology and its applications. Important current applications and needs relate to homeland security, energy, environment, information technology, and medical uses. The pace of development of materials with unique characteristics often limits many necessary advances. NJIT faculty is currently working on solutions to many major problems in the context of materials development and characterization.

In order to compete for major research grants such as NSF engineering center grants, NJIT must complement its capabilities for characterization with facilities and in-house expertise in the synthesis of materials. Important areas include the preparation of nanoscale powders and nanoscale films and nanoscale patterning of bulk materials. A rigorous program will require the acquisition of major instrumentation including pulsed laser deposition (PLD) chambers for oxides and treated carbon nanotubes, chemical vapor deposition (CVD) systems for the synthesis of carbon nanotubes, and an ion beam mill for nanoscale patterning of materials. The upgrade of the optics in the clean room lithography system to produce nanoscale patterns will also complement this effort.

NJIT also lacks dedicated facilities for simulation and predicting the properties of materials. Although computing facilities exist at NJIT (even recently purchased ones), current facilities do not have adequate CPU power and memory to compute properties of complex systems. In addition, there are no personnel dedicated to managing both hardware and specialized materials properties software. We recommend the acquisition of a dedicated cluster for research and teaching as well as a specialist to manage it. The system will be a cluster-based system with approximately 100 nodes - each with more than 4 Gb/node. Software relevant to research in optical, biological, magnetic and engineering materials will be acquired and adapted to the system.

INVESTMENT REQUESTED

The investment strategy is as follows: (1) provide administrative and academic support for the MTSE program including a TEM technician, a PLD technician, a cluster manager and graduate assistantships for U.S. citizens and underrepresented minorities; (2) provide maintenance and supplies for use with the characterization and synthesis facilities; (3) sponsor on-campus seminars – including monthly events with invited speakers; (4) develop brochures and marketing items; (5)

strengthen the laboratory infrastructure through investment in facilities and equipment by purchasing PID and a Pre-CVD Chambers; and (5) upgrade optics of the clean-room lithography system, acquire an ion mill for nano-patterning of bulk materials, a 100 node computer cluster for materials simulations, and simulation software. This investment is summarized in the table below:

INVESTMENT REQUESTED FOR
MATERIALS SCIENCE AND ENGINEERING

ACTION	RECURRING	ONE-TIME
Provide administrative and academic support for MTSE program growth	$200,000	
Graduate student positions – 2 FTE @ $17.5k (Stipend) + $20k (Tuition)	$75,000	
Facilities maintenance	50,000	
Seminars and Program materials	15,000	
PID and Pre-CVD Chambers		500,000
Equipment and instrumentation upgrade	250,000	
Total	**$590,000**	**$500,000**

Total Identified Needs ($000's) Materials Science and Engineering							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	2.0	$35	$0	$305	$340	$0	340
Priority	0.0	0	250	0	250	500	750
Grand Total	**2.0**	**$35**	**$250**	**$305**	**$590**	**$500**	**$1,090**

HOMELAND SECURITY

In a new era characterized by global challenges of extraordinary magnitude, New Jersey faces an array of terrorist threats that will test its leadership and capacity for effective response. The State established the Homeland Security Technology Systems Center at New Jersey Institute of Technology.

The Center has an Advisory Board of seven members including designees of the Attorney General, the Commissioners of the Departments of Health and Senior Services and Transportation, the Director of the Office of Counter Terrorism, the Adjutant General, the President of the Board of Public Utilities, and the Executive Director of the Commission on Higher Education. The Chair of the Advisory Board shall be appointed by the Governor.

The Center's full agenda of activities is comprehensive and will require a dedicated revenue stream to sustain its program. This is not a part-time effort, and thus there is an immediate need for funding to support a full-time executive director with administrative support. The Director then needs to build a program staff as the scope of operations expands.

As part of the start-up, initial funding of $0.6 million has been identified within the Treasury Department. NJIT requests that an additional $1.0 million be added to enable a more expeditious start to this vital program.

NEW PROGRAM NEEDS

Total Identified Needs ($000's) Homeland Security							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	4.0	$300	$0	$0	$300	$200	$500
Priority	0.0	0	0	0	0	500	500
Grand Total	**4.0**	**$300**	**$0**	**$0**	**$300**	**$700**	**$1,000**

STEM CELL PROCESS TECHNOLOGY DEVELOPMENT

There are a growing number of demonstrations of stem cell technology that are moving into clinical trials. These are based on "adult stem cells" and range from synthesis of cardiac tissue to bone and tendon grafts through bladders suitable for transplant surgery. The fact that these treatments are derived from stem cells present in a mature donor is one similarity. Another is that the technology used to grow replacement tissue and organs from an isolated stem cell consists of manual, labor intensive and often un-reproducible laboratory operations. NJIT is leading an effort to develop the rigorous, reproducible, and scalable technologies to move stem cell from the Petri dish to the patient. This is an activity that will catalyze the formation of stem cell, or more broadly, regenerative medicine, as an industry involving: equipment manufacturers, chemical suppliers, instrumentation and controls, information systems developers, biotechnology firms and others that combine to form the vertically integrated supply chain that is required to bring cellular biology to the market.

NJIT has stem cell researchers that are poised to take the next step from lab to clinical testing and in so doing lay out a template for broader commercial practice. Their particular focus on osteopathic applications can yield breakthroughs in ruptured tendon repair, spinal disk injury treatment, and joint replacement technologies. NJIT needs the budget support to equip its laboratories, now, in order to accomplish that goal. With this equipment, our researchers will create a demonstration of the generalized activity that is planned for the Newark facility approved for construction under Public Law 2006, Chapter 102. Our researchers have demonstrated great success in developing peer-reviewed grant funding to support their work in these areas, but the grant agencies presume the physical infrastructure is already in place to conduct any work proposed. This is highly specialized bio-materials and bio-process technology and not part of the university's pre-existing equipment plant.

Funding this initiative will yield immediate benefits – both empowering an increase in federal grant funding and in fostering a scale of operation and integration that is compatible with industrial needs. Together, with the equipment complex planned for the Newark Institute for Regenerative Healthcare, this will create a continuum of capabilities that spans traditional laboratory work all the way up to pilot-scale industrial production. As such, it will be a unique resource that will attract co-location of the full spectrum of companies that both need the outcomes and can co-contribute innovative technologies that will define a new industrial sector for New Jersey.

Research Laboratories

Standard Cell Culture Equipment	
Biological Safety Cabinets ($10K each, 4 items)	40,000

NEW PROGRAM NEEDS

CO_2 Incubators ($8K each, 8 each)	64,000
Water baths ($500, 2 items)	1,000
Centrifuges ($10K each, 2 items),	20,000
Microfuges ($7K each, 2 items)	14,000
Pipettes ($2K per pack, 10 packs)	20,000
Stir plates ($500 each, 4 items)	2,000
Vortex ($500 each, 4 items)	2,000
Sonicator ($1K, 1 item)	1,000
Standard inverted tissue microscopes ($10K each, 2 items)	20,000
Epi-fluorescence inverted tissue microscope with image analysis system ($30K each, 1 item)	30,000
Ultracentrifuge ($50K each, 1 item)	50,000
80C Freezer ($15K each, 1 item)	15,000
Refrigerators ($10K each, 2 items)	20,000
Refrigerator/Freezer units ($3K each, 3 items)	9,000
-20C Freezers ($5K each, 2 items)	10,000
Water purification system ($15K each, 1 item)	15,000
Bioreactor systems ($25K each, 2 items)	50,000
	383,000

Characterization Equipment for General Use – Clinical and Research

Confocal Microscope ($450K, 1 item)	450,000
Flow Cytometry ($100K, 1 item)	100,000
Real-Time RT-PCR ($40K, 1 item)	40,000
UV/Vis Spectrophotometer ($30K, 1 item)	30,000
Fluorescence Plate Reader ($20K, 1 item)	20,000
Mechanical Tester (Biological Samples) ($50K, 1 item)	50,000
Electrophysiology (e.g. patch-clamp) ($55K, 1 item)	55,000
Histology – microtome and cryotome ($60K, 1 item)	60,000
Mass Spectrometer/HPLC ($50K, 1 item)	50,000
	855,000

Characterization Core Facilities for Clinical Use (including QA/QC)

Flow Cytometry ($100K, for cell sorting use, 1 item)	100,000
Real-Time RT-PCR ($40K, 1 item)	40,000
UV/Vis Spectrophotometer ($30K, 1 item)	30,000
Fluorescence Plate Reader ($20K, 1 item)	20,000
Water purification system ($15K each, 1 item)	15,000
	205,000

Cryopreservation Facility

Cryostorage Tanks (dedicated for research and clinical) ($10K each, 3 items)	30,000

NEW PROGRAM NEEDS

Refrigerator, -80 and –20C Freezers ($30K, 1 item each)	30,000
	60,000

GMP Facilities for Cell Processing

Standard Cell Culture Equipment	
Biological Safety Cabinets ($10K each, 4 items)	40,000
CO_2 Incubators ($8K each, 8 each)	64,000
Water baths ($500, 2 items)	1,000
Centrifuges ($10K each, 2 items),	20,000
Microfuges ($7K each, 2 items)	14,000
Pipettes ($2K per pack, 10 packs)	20,000
Stir plates ($500 each, 4 items)	2,000
Vortex ($500 each, 4 items)	2,000
Sonicator ($1K, 1 item)	1,000
Standard inverted tissue microscopes ($10K each, 2 items)	20,000
Epi-fluorescence inverted tissue microscope with image analysis system ($30K each, 1 item)	30,000
Bioreactors ($25K each, 2 items)	50,000
	264,000

Biomaterials (Scaffold) Processing and Characterization

Environmental Chambers ($10K each, 2 items)	20,000
Fourier Transform Infrared Spectroscopy ($30K each, 1 item)	30,000
Lyophilozer ($20K, 1 item)	20,000
Electrospinning ($20K, 1 item)	20,000
Wet/Melt Spinning ($30K, 1 item)	30,000
Diamond saw and polisher ($20K, 1 item)	20,000
	140,000

Total Identified Needs **1,907,000**

Total Identified Needs ($000's) Stem Cell Process Technology Development							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Total
Core	0	$0	$0	$0	$0	$1000	$1000
Priority	0	0	0	0	0	907	907
Grand Total	**0**	**0**	**0**	**0**	**0**	**$1,907**	**$1,907**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST

NEW PROGRAM NEEDS

PHYSICAL PLANT SUPPORT SERVICES

State, university, corporate and individual support have built a sizable campus. The replacement value of the campus is approximately a half billion dollars. To protect this investment, the university needs to strengthen the preventive and standard maintenance of the facilities. In addition, owing to the sophisticated nature of some facilities, e.g., computerized air handling systems in the Otto York Center and in the Microelectronics Center, constant vigilance must be maintained to ensure proper operation for the safety of employees and students, and for environmental protection.

The size of NJIT's custodial and grounds staff has not kept pace with facility usage and growth, making it increasingly difficult to maintain facilities at appropriate levels of cleanliness. Currently, gross square feet totals 2,641,257, an increase of 77% from FY92, at which time gross square feet totaled 1,496,933.

State appropriations over the past few years have not taken inflation into account, thereby diminishing the purchasing power of the university. Electrical, water and fuel costs continue to rise, requiring the university to address these price increases by reallocation of limited existing resources. In addition, the tremendous growth of added square footage and increased use of the campus to seven days per week add to increases in energy costs. Further, due to record energy prices, the cost of campus utilities will continue to dramatically increase in the future.

As part of an aggressive energy management plan, the university has installed energy management systems in all of its 29 buildings. Each building reports to a central monitoring location staffed by an energy engineer.

In order to protect the investment in plant, a preventive maintenance work order system has been implemented that automatically issues work orders on a weekly basis for predetermined preventive maintenance work to be performed. With an increased usage and complexity in our new buildings, energy management and associated controls a significant amount of work is necessarily done by outside contractors leaving the NJIT HVAC and craft staff free to respond to emergencies, minor repairs and 24 hour campus monitoring. This increased demand has necessitated the use of higher-level technicians for repair and maintenance resulting in higher labor costs.

Physical Plant Support Services Request:	FTE	Total $
Custodial Staff	8	$272,000
Utilities – (Rate Increases)	0	850,000
Total Identified Needs	**8**	**$1,122,000**

Total Identified Needs ($000's) Physical Plant Support							
	FTE #	Salary	Equipment	Non-Salary	Total Recurring	One-Time	Grand Total
Core	0.0	$0	$0	$0	$500	$0	$500
Priority	8.0	272	0	350	622	0	622
Grand Total	**8.0**	**$272**	**$0**	**$350**	**$1,122**	**$0**	**$1,122**

NEW JERSEY INSTITUTE OF TECHNOLOGY
FY2009 BUDGET REQUEST
CRITICAL, CORE AND PRIORITY NEEDS POSITION DETAIL
$(000's)

	CRITICAL NEEDS NEW POSITIONS		CORE NEEDS NEW POSITIONS		PRIORITY NEEDS NEW POSITIONS		TOTAL NEW POSITIONS	
AREA/PROGRAM	FTE (1)	$	FTE (1)	$	FTE (1)	$	FTE (1)	$
INSTRUCTION								
Faculty			8.0	655	13.0	1,390	21.0	2,045
Administrators			11.0	770	5.0	315	16.0	1,085
Postdoctoral Fellows & Researcher			4.0	240	9.0	450	13.0	690
Graduate Assistant Health Insurance Benefit Plan	444.0	3,592					444.0	3,592
Graduate Assistants			2.0	35	26.0	770	28.0	805
Graduate Research Fellows					2.0	75	2.0	75
Authorized FTE's	109.0						109.0	0
SUBTOTAL - INSTRUCTION	**553.0**	**3,592**	**25.0**	**1,700**	**55.0**	**3,000**	**633.0**	**8,292**
RESEARCH								
Executive Director							0.0	0
Administrative Support Staff							0.0	0
Authorized FTE's	5.0						5.0	0
SUBTOTAL - RESEARCH	**5.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5.0**	**0.0**
PUBLIC SERVICE								
Authorized FTE's	2.0						2.0	0
SUBTOTAL - PUBLIC SERVICE	**2.0**	**0**	**0.0**	**0**	**0.0**	**0**	**2.0**	**0**
ACADEMIC SUPPORT SERVICES								
Professional Staff							0.0	0
Authorized FTE's	32.0						32.0	0
SUBTOTAL - ACADEMIC SUPPORT SERVICES	**32.0**	**0**	**0.0**	**0**	**0.0**	**0**	**32.0**	**0**
STUDENT SUPPORT SERVICES								
Authorized FTE's	25.0						25.0	0
SUBTOTAL - STUDENT SUPPORT SERVICES	**25.0**	**0**	**0.0**	**0**	**0.0**	**0**	**25.0**	**0**
INSTITUTIONAL SUPPORT								
Authorized FTE's	53.0						53.0	0
SUBTOTAL - INSTITUTIONAL SUPPORT	**53.0**	**0**	**0.0**	**0**	**0.0**	**0**	**53**	**0**
PHYSICAL PLANT								
Custodian					8.0	272	8.0	272
Authorized FTE's	23.0						23.0	0
SUBTOTAL - PHYSICAL PLANT	**23.0**	**0**	**0.0**	**0**	**8.0**	**272**	**31.0**	**272**
GRAND TOTAL	**693.0**	**3,592**	**25.0**	**1,700**	**63.0**	**3,272**	**781.0**	**8,564**

(1) Reflected in Critical, Core and Priority Needs Detail.

SECTION 7.

CAPITAL BUDGET

Department Priority Summary Report- General Funds

Department Priority	Project Title	Organization	Org Code	Project Number	FY 2009	FY 2010	FY 2011	FY 2012 - 2015	Total
75 C	**New Jersey Institute of Technology**								
1	MATH/SCIENCE TEACHER EDUCATIO	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	630	$8,625	$23,000	$23,000	$14,375	$69,000
1	MAJOR MAINTENANCE	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	838	$5,000	$5,000	$5,000	$5,000	$20,000
1	STEM CELL FACILITY	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	839	$50,000	$0	$0	$0	$50,000
2	YORK ENVIRONMENTAL CENTER EXF	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	026	$5,427	$5,427	$0	$0	$10,854
2	MULTIPURPOSE BUILDING	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	027	$16,750	$44,667	$44,667	$27,916	$134,000
2	CLASSROOM LABORATORY BUILDIN(	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	318	$8,543	$22,780	$22,780	$14,237	$68,340
2	CLASSROOM TECHNOLOGY UPGRAD	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	320	$4,020	$4,020	$0	$0	$8,040
2	LIBRARY EXPANSION	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	324	$2,010	$5,360	$5,360	$3,350	$16,080
3	THEATER REHABILITATION	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	020	$502	$2,680	$838	$0	$4,020
3	LAND ACQUISITION, INSTRUCTIONAL	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	024	$4,800	$4,800	$0	$0	$9,600
3	LABORATORY UPGRADES	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	321	$5,360	$5,360	$5,360	$0	$16,080
4	CONFERENCE CENTER	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	030	$0	$6,365	$33,947	$10,608	$50,920
4	EXPAND ELECTRICAL & COMPUTER E	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	038	$0	$938	$5,003	$1,563	$7,504
5	PARKING FACILITY	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	322	$0	$0	$18,600	$18,600	$37,200
6	RESIDENCE HALL	NJIT - NEW JERSEY INSTITUTE OF TECHN	2630	323	$0	$0	$7,146	$14,294	$21,440
				TOTALS:	$111,037	$130,397	$171,701	$109,943	$523,078

Project Status Report

Capital Improvement Projects FY2001 - FY 2007

(000's)

New Jersey Institute of Technology

NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY

Project Name	Proj No.	Start Year	Status	Total Available	General	Bond	Federal	Other
RESIDENCE HALL V	22	2001	Completed	17,200	0	0	0	17,200
ENHANCED UNIVERSITY CENTER	25	2001	Completed	52,000	40,500	11,500	0	0
ACADEMIC BUILDING	26	2001	Completed	31,500	6,500	25,000	0	0
MULTI-LEVEL PARKING	23	2001	Completed	6,000	0	0	0	6,000
EDC III	24	2002	Completed	16,730	1,530	0	1,800	13,400
CULLIMORE HALL	28	2003	Completed	5,800	5,800	0	0	0
EBERHARDT HALL	29	2003	Under Construction	13,000	13,000	0	0	0
ELECTRICAL ENGINEERING EXPANSION	27	2004	Planning	4,000	0	4,000	0	0
TOTAL FOR: NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY				**$146,230**	**$67,330**	**$40,500**	**$1,800**	**$36,600**
Department Totals				**$146,230**	**$67,330**	**$40,500**	**$1,800**	**$36,600**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**630**	***Project Title:***	MATH/SCIENCE TEACHER EDUCATION CENTER
Project Type:	**E03** Construction-Renovations and Rehabilitation	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**1**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

NJIT surrounds an existing school (Central High) on three sides for which a replacement high school building is now under construction at new site. Project entails acquisition of building and a complete rehab of the high school. Uses include classrooms, pre-college and Math/Science Teacher Education programs.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$1,714	$0

EXPLANATION:

Added space will increase operating and maintenance costs.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$51,492
FURNISHING AND FIXTURES	$10,299
OTHER	$3,090
FEES	$4,119
Total Estimated Cost:	**$69,000**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$8,625	$23,000	$23,000	$14,375	$69,000
	TOTALS	**$8,625**	**$23,000**	**$23,000**	**$14,375**	**$69,000**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**838**	***Project Title:***	MAJOR MAINTENANCE
Project Type:	**A06** Preservation-Other	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**1**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NJIT NEWARK

PROJECT DESCRIPTION AND JUSTIFICATION

Annual maintenance of major systems and upgrade to facilities.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$0	$0

EXPLANATION:

Cost avoidance by installing more energy efficient equipment and systems. If funds are not available, tuition rates will be increased to cover required repairs.

PROJECT PHASE	***ESTIMATED COST (000's)***

Total Estimated Cost:

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$5,000	$5,000	$5,000	$5,000	$20,000
	TOTALS	**$5,000**	**$5,000**	**$5,000**	**$5,000**	**$20,000**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**839**	***Project Title:***	STEM CELL FACILITY
Project Type:	**E02** Construction-New	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**1**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NJIT NEWARK

PROJECT DESCRIPTION AND JUSTIFICATION

Construction of a stem cell research facility of approximately 100,000 square feet is proposed. It is expected the entire facility will be constructed as a sterile facility. Extensive bio-safety cabinets, building scale de-ionized water services, clean-room facilities (Class-1000), Un-interrupted Power Supply (UPS), and high capacity back-up power generation will be required. Additional service laboratories will be required to support shared analytic and synthetic needs of the research program.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$0	$0

EXPLANATION:

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$38,000
FURNISHING AND FIXTURES	$7,000
OTHER	$2,000
FEES	$3,000
Total Estimated Cost:	**$50,000**

PRIOR YEARS' APPROP.	FUND TYPE	FY-2009	(000's) FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$50,000	$0	$0	$0	$50,000
	TOTALS	**$50,000**	**$0**	**$0**	**$0**	**$50,000**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**26**	***Project Title:***	YORK ENVIRONMENTAL CENTER EXPANSION
Project Type:	**E03** Construction-Renovations and Rehabilitation	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**2**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	YORK CENTER

PROJECT DESCRIPTION AND JUSTIFICATION

A major building addition is needed to accommodate the expanded functions of Otto York Engineering and Environmental Science Center. Adds approximately 1/3 more research space to this facility.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
Yes	$129	$0

EXPLANATION:

Added space will increase operating and maintenance costs.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$8,100
FURNISHING AND FIXTURES	$1,620
OTHER	$486
FEES	$648
Total Estimated Cost:	**$10,854**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$5,427	$5,427	$0	$0	$10,854
	TOTALS	**$5,427**	**$5,427**	**$0**	**$0**	**$10,854**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**27**	***Project Title:***	MULTIPURPOSE BUILDING
Project Type:	**E04** Construction-Other	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**2**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEWARK

PROJECT DESCRIPTION AND JUSTIFICATION

A new multi-purpose facility, constructed in a phased approach to meet current and projected demand - providing much needed instructional, research, academic and technical support space for a growing array of disciplines and multi-disciplinary areas of activity. Such disciplines, (in cooperation with other universities, public agencies and private enterprise), will include Health and Life Sciences, Telecommunications, Urban Infrastructure and Information Sciences.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
Yes	$1,714	$0

EXPLANATION:

Additional operating and maintenance costs.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$100,000
FURNISHING AND FIXTURES	$20,000
OTHER	$6,000
FEES	$8,000
Total Estimated Cost:	**$134,000**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$16,750	$44,667	$44,667	$27,916	$134,000
	TOTALS	**$16,750**	**$44,667**	**$44,667**	**$27,916**	**$134,000**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**318**	***Project Title:***	CLASSROOM LABORATORY BUILDING
Project Type:	**E02** Construction-New	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**2**	***Facility Name:***	CLASSROOM BUILDING
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

Construction of new facility to provide large, smart classrooms, added laboratory capabilities, offices for faculty and other technology instructional needs. The facility will support highly successful pedagogy of hands-on, student-team projects.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$1,286	$0

EXPLANATION:

Additional operating and maintenance cost.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$51,000
FURNISHING AND FIXTURES	$10,200
OTHER	$3,060
FEES	$4,080
Total Estimated Cost:	**$68,340**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$8,543	$22,780	$22,780	$14,237	$68,340
	TOTALS	**$8,543**	**$22,780**	**$22,780**	**$14,237**	**$68,340**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**320**	***Project Title:***	CLASSROOM TECHNOLOGY UPGRADES
Project Type:	**E03** Construction-Renovations and Rehabilitation	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**2**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

Upgrade classrooms, incorporating the most current technology for distance learning, remote access, audio-visual and network and wireless communications.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$0	$0

EXPLANATION:

Additional operating and maintenance cost.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$6,000
FURNISHING AND FIXTURES	$1,200
OTHER	$360
FEES	$480
Total Estimated Cost:	**$8,040**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$4,020	$4,020	$0	$0	$8,040
	TOTALS	**$4,020**	**$4,020**	**$0**	**$0**	**$8,040**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**324**	***Project Title:***	LIBRARY EXPANSION
Project Type:	**E02** Construction-New	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**2**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

Planned expansion of existing library to expand capacity and provide added stack, study carrels and on-line/multimedia library material and access.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$343	$0

EXPLANATION:

Additional operating and maintenance cost.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$12,000
FURNISHING AND FIXTURES	$2,400
OTHER	$720
FEES	$960
Total Estimated Cost:	**$16,080**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$2,010	$5,360	$5,360	$3,350	$16,080
	TOTALS	**$2,010**	**$5,360**	**$5,360**	**$3,350**	**$16,080**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**20**	***Project Title:***	THEATER REHABILITATION
Project Type:	**E03** Construction-Renovations and Rehabilitation	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**3**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	KUPFRIAN HALL

PROJECT DESCRIPTION AND JUSTIFICATION

Complete rehabilitation of the existing 1967 facility. Renovation of the existing academic program theater would include replacement seating, HVAC; stage upgrades of lighting and audio are required to meet instructional and program needs.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$0	$0

EXPLANATION:

Renovation to existing space.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$3,000
FURNISHING AND FIXTURES	$600
OTHER	$180
FEES	$240
Total Estimated Cost:	**$4,020**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$502	$2,680	$838	$0	$4,020
	TOTALS	**$502**	**$2,680**	**$838**	**$0**	**$4,020**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**24**	***Project Title:***	LAND ACQUISITION, INSTRUCTIONAL AND RESEARCH
Project Type:	**D04** Acquisition-Other	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**3**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEWARK

PROJECT DESCRIPTION AND JUSTIFICATION

Acquisition of land is necessary to provide building sites for facilities needed to accommodate growth and programmatic needs in science and technology.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$0	$0

EXPLANATION:

PROJECT PHASE	*ESTIMATED COST (000's)*
ACQUIRE LAND	$9,600
Total Estimated Cost:	**$9,600**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$4,800	$4,800	$0	$0	$9,600
	TOTALS	**$4,800**	**$4,800**	**$0**	**$0**	**$9,600**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**321**	***Project Title:***	LABORATORY UPGRADES
Project Type:	**E03** Construction-Renovations and Rehabilitation	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**3**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

Major rehabilitation to departmental laboratories including HVAC & environmental system for wet labs.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$343	$0

EXPLANATION:

Additional operating and maintenance cost.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$12,000
FURNISHING AND FIXTURES	$2,400
OTHER	$720
FEES	$960
Total Estimated Cost:	**$16,080**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$5,360	$5,360	$5,360	$0	$16,080
	TOTALS	**$5,360**	**$5,360**	**$5,360**	**$0**	**$16,080**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**30**	***Project Title:***	CONFERENCE CENTER
Project Type:	**E02** Construction-New	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**4**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEWARK

PROJECT DESCRIPTION AND JUSTIFICATION

Facility for conferences, seminar space, and symposia to serve the needs of NJIT, other higher education institutions in the proximate area and the University Heights Science Park Project. Issues would generally focus on New Jersey economic development interests in a global economy.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
Yes	$857	$0

EXPLANATION:

Added facilities will increase operating and maintenance costs.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$38,000
FURNISHING AND FIXTURES	$7,600
OTHER	$2,280
FEES	$3,040
Total Estimated Cost:	**$50,920**

(000's)

PRIOR YEARS' APPROP.	FUND TYPE	FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$0	$6,365	$33,947	$10,608	$50,920
	TOTALS	**$0**	**$6,365**	**$33,947**	**$10,608**	**$50,920**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**38**	***Project Title:***	EXPAND ELECTRICAL & COMPUTER ENGINEERING
Project Type:	**E03** Construction-Renovations and Rehabilitation	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**4**	***Facility Name:***	ELECTRICAL ENGINEERING
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

Complete planned expansion by adding the two floors the structure was initially designed to accommodate. Will provide needed laboratory facilities.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
Yes	$137	$0

EXPLANATION:

Increase in square footage requires associated increase in cost of $8.57 / Sq. ft.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$5,600
FURNISHING AND FIXTURES	$1,120
OTHER	$336
FEES	$448
Total Estimated Cost:	**$7,504**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$0	$938	$5,003	$1,563	$7,504
	TOTALS	**$0**	**$938**	**$5,003**	**$1,563**	**$7,504**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**322**	***Project Title:***	PARKING FACILITY
Project Type:	**E02** Construction-New	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**5**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

Provide structured parking to accommodate students, faculty, staff and visitors. Essential for urban campus and not fully supportable by fee-based revenues.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$0	$0

EXPLANATION:

Additional operating and maintenance cost.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$30,000
FURNISHING AND FIXTURES	$3,000
OTHER	$1,800
FEES	$2,400
Total Estimated Cost:	**$37,200**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$0	$0	$18,600	$18,600	$37,200
	TOTALS	**$0**	**$0**	**$18,600**	**$18,600**	**$37,200**

Capital Project Report by Org & Priority

11/29/2007

Project Number:	**323**	***Project Title:***	RESIDENCE HALL
Project Type:	**E02** Construction-New	***Department:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
		Organization:	NJIT - NEW JERSEY INSTITUTE OF TECHNOLOGY
Department Priority:	**6**	***Facility Name:***	NEW JERSEY INSTITUTE OF TECHNOLOGY
New Project:	Yes	***Project Location:***	NEW JERSEY INSTITUTE OF TECHNO

PROJECT DESCRIPTION AND JUSTIFICATION

400 bed facility to be constructed on campus owned property.

PROJECT ANNUAL OPERATING IMPACT (000's)

IMPACT	INCREASE	DECREASE
No	$857	$0

EXPLANATION:

Additional operating and maintenance cost.

PROJECT PHASE	*ESTIMATED COST (000's)*
CONSTRUCTION	$16,000
FURNISHING AND FIXTURES	$3,200
OTHER	$960
FEES	$1,280
Total Estimated Cost:	**$21,440**

PRIOR YEARS' APPROP.	FUND TYPE	(000's) FY-2009	FY- 2010	FY- 2011	FY 2012 - 2015	TOTAL PROJECT COST
	General	$0	$0	$7,146	$14,294	$21,440
	TOTALS	**$0**	**$0**	**$7,146**	**$14,294**	**$21,440**