

THE FUTURE'S EDGE

NEW JERSEY INSTITUTE OF TECHNOLOGY

PERIODIC REVIEW REPORT

PREPARED FOR:
THE MIDDLE STATES COMMISSION ON HIGHER EDUCATION
JUNE 2007

NJIT Vision Statement:

A preeminent technological research university known for innovation, entrepreneurship, and engagement.

NJIT Mission Statement:

*NJIT is the **state's technological research university**, committed to the **pursuit of excellence***

- in undergraduate, graduate, and continuing professional **education**, preparing students for productive careers and amplifying their potential for lifelong personal and professional growth;*
- in the conduct of **research** with emphasis on applied, interdisciplinary efforts encompassing architecture, the sciences, including the health sciences, engineering, mathematics, transportation and infrastructure systems, information and communications technologies;*
- in contributing to **economic development** through the state's largest business incubator system, workforce development, joint ventures with government and the business community, and through the development of intellectual property;*
- in **service** to both its urban environment and the broader society of the state and nation by conducting public policy studies, making educational opportunities widely available, and initiating community-building projects.*

NJIT prepares its graduates for positions of leadership as professionals and as citizens; provides educational opportunities for a broadly diverse student body; responds to needs of large and small businesses, state and local governmental agencies, and civic organizations; partners with educational institutions at all levels to accomplish its mission; and advances the uses of technology as a means of improving the quality of life.

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EXECUTIVE SUMMARY

In the April 2002 Middle States Self-Study, the visiting team described NJIT as a university that "now verges on being a major institution of research, a leader in the education of students from non-traditional backgrounds, and an engine of economic development for its region and state." The report also concluded that "NJIT is operating well when considered against Middle States guidelines. While the team has made a number of suggestions and recommendations, none of them represents a deep and critical problem that jeopardizes the future of the institution or would be difficult to solve."

The team complimented NJIT for a wide range of effective management practices. In particular, they cited, "a systematic and thorough approach to outcomes assessment [that] has been institutionalized at NJIT." This positive evaluation also applied to strategic planning, promoting diversity, and maintaining NJIT as a top value among technical universities. Programs to assess student learning directly were particularly impressive to the committee, as was the emphasis on systematic planning for institutional change and renewal. The strong emphasis on planning and assessment at NJIT continues.

The three recommendations offered by the committee covered the revision of the faculty handbook, managing and promoting research, and developing the university library. Today, NJIT reports substantial progress in all three areas, particularly on the first two. The faculty handbook has been largely revised and now clearly and rigorously addresses tenure and promotion policies in a manner consistent across all colleges and departments. The process of producing a final, highly readable document with a consistent structure from the all encompassing draft revision remains before us, but the challenge of designing changes and obtaining approval for them has been overcome.

Improving research administration has also progressed rapidly over the past five years. The Office of Research and Development has been thoroughly restructured into four key administrative units. These include: the Office of Sponsored Research Administration, the Office of Technology Development, the Office of Government and Military Affairs, and the Office of Strategic Initiatives. Together these offices oversee an active program to promote patents and licensing. They also administer a greatly expanded scope of research with improved success in competing for federal funding. This expanded research is focused in five general areas: health care systems, homeland security, information and communication technology, nanotechnology and sustainable systems technology.

The recommendation to increase library book holdings, increase the library staff, and expanding library facilities has proven challenging to the university in a time of resource constraints. Book purchases have increased substantially in the past five years, but more

is to be done. To a great extent the doubling of e-journals and databases compensates for this, particularly for an increasingly technology oriented population of students and staff. The committee praised the professional quality of the library personnel, and that high caliber remains, but the size of the staff has not increased as rapidly as the committee foresaw. The increased efficiency of operations, achieved through the more intensive use of technology, also compensates for this to a great extent. Finally, the library has expanded into the large admissions facilities formerly housed in the same building, but fully utilizing the space has been delayed by the temporary needs of renovation projects in other parts of the campus.

NJIT has taken concerted action on the full range of committee suggestions. This is especially true in the areas of planning and assessment. With the arrival of President Robert A. Altenkirch the strategic plan was restructured and refined to focus on specific strategies toward "attaining a national reputation for excellence." Metrics with annual targets have been built into the plan to mark progress toward achieving stated objectives in pursuit of this goal. The Office of Institutional Research and Planning has also expanded its involvement in university committees to disseminate the research studies it routinely conducts. Today, the impact of metrics and assessment is not a novelty but an expected part of the university discourse on continuous improvement.

The university has also improved its community outreach and distance learning programs. During the past five years it has expanded its array of pre-college and community outreach programs and developed new projects to work directly with high schools toward promoting technology in the curriculum. University committees have also been restructured to focus directly on the continuous improvement of educational quality. As part of this undertaking, a policy now articulates the role of e-courses in the education of on-campus residential students.

The university undertook dramatic action toward improving student and alumni life. In particular, the university restructured alumni relations to promote strong bonds between the institution and its alumni. This process involved: structural changes to promote and support increased alumni participation, improved communication between the university and alumni, and improved core programs and services. The university has also promoted the growth of the Honors College with rigorous adherence to high standards and a range of new programs to enhance the educational experience and promote future success for graduates. Among these enhancements is the broadly expanded availability of courses within the Honors College. Finally, the university has embarked on an ambitious project to move the university's athletics program to NCAA Division I and develop facilities consistent with the high standards of that division.

Significant changes at the university were focused on enhancing the university's national reputation by concentrating on core resources and strength. This entailed closing Mt. Laurel and the smaller management program at St. Etienne, France.

The university set forth a clear five-year program to move toward becoming a major institution of research. This is outlined in the 2004 strategic plan developed under the leadership of President Altenkirch. The plan includes the following goals:

- Enhance educational programs,
- Strengthen the sense of campus community,
- Enhance and focus research efforts,
- Impact the local and regional economy,
- Strengthen civic engagement,
- Enhance the revenue base.

These goals drive a set of strategic priorities that serve to guide resource allocation and focus staff efforts. These include:

- 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 and faculty from diverse national and international populations.

Guided by careful assessment and continuous improvement, NJIT will move toward achieving these priorities over the next five years. To do this, enrollment will be expanded to set a stable revenue base and projects will be undertaken within the limits of financial constraints. Much of the improvement in environment and facilities will be achieved through creative strategies and leveraged investments. The planned purchase of Central High School will greatly expand the available facilities, and the Campus Gateway project will dramatically enhance the student environment and expand the variety of facilities and amenities available.

INTRODUCTION

In the past 35 years, New Jersey Institute of Technology (NJIT) has transformed itself from a small engineering college into New Jersey's technology centered research university. This change depended on planning and a clear vision of the future.

Today, as a technology university, NJIT remains at the leading edge in planning, assessment, and future-oriented vision. The strategic planning process implemented by President Robert A. Altenkirch in 2004 reconceived the university and launched it toward becoming a nationally prominent institution taking the forefront in education, research, and community engagement. The plan for NJIT offers clear strategic priorities and measurable objectives linked directly to resources and metrics. Success is assessed annually and tactics are reconsidered as we move toward formal targets.

This planning process sets the tone for a university managed through data-driven internal assessment and the spirit of continuous improvement. Through the revolutionary web based portfolio assessment process developed by New Jersey School of Architecture and increasingly adopted by other schools at NJIT, assessing student learning outcomes has moved beyond static benchmarks or standardized testing. Using rigorous portfolio assessment, NJIT now continuously improves educational delivery and curriculum based on real student performance.

Portfolio assessment at NJIT advances the continuous improvement process beyond the rigorous analysis of student performance long conducted by the Office of Institutional Research and Planning. Studies of individual course effectiveness and the evaluations of distance learning systems continue to provide essential information for developing the curriculum and measuring success. By adding the direct assessment of student work, faculty and academic administrators can now more reliably close the loop between goals, action, assessment, and improvement.

In a time of shrinking state resources and increased reliance on student tuition, creating an enriching and satisfying student experience grows ever more critical. NJIT must not depend merely on successful educational approaches from the past. As technology advances, the curriculum and facilities must keep pace. Even with the best information and most foresighted decisions, changes must be assessed, programs revised, and plans redrawn. This is the heart of continuous improvement and the impetus behind the constant consultation with students through focus groups and surveys. Today's students are the active educational consumers of a new millennium and only through constant self-evaluation can NJIT keep pace with their ever-changing needs.

As the marvels of technology change the needs of our students and transform their learning styles, the university must respond. Planning, assessment, and continuous improvement are the keys to adapting to change. Leading at the future's edge means taking NJIT to where a prominent technology university should be.

I) NJIT'S RESPONSE TO RECOMMENDATIONS AND SUGGESTIONS

NJIT has acted vigorously toward implementing the recommendations and suggestions contained in the 2002 evaluation report. Some projects are complete while others are in progress. In many cases the suggestions made by evaluators require broader changes in the university and take time to implement. These changes are either under way or in advanced planning stages. In this chapter all suggestions and recommendations are addressed individually.

1) **Developing a New Strategic Plan**

Since the 2002 Middle States Review the appointment of a new top leadership team at the university created the opportunity to move forward in fresh ways and take different approaches to longstanding challenges. In summer 2002 Robert A. Altenkirch became President of NJIT. Within two years a new Provost, Priscilla Nelson, and a New Chair of the Board of Trustees, Kathleen Wielkopolski, also joined NJIT. This new team has implemented a broad set of changes aimed at reinvigorating the university mission and moving it toward its goal of national prominence.

Toward this end, NJIT initiated a new strategic planning process in 2003, ViSTa: Vision—Strategy—Tactics, developed with the university's Board of Overseers. A steering committee including all deans, senior staff, the heads of Library Services, University Information Systems, and Institutional Research and Planning headed the process. After revising the university mission statement, the committee then engaged in an extended discussion of NJIT's strengths, weaknesses, opportunities, and threats.

With these in mind, the committee drafted a set of goals and five strategic priorities. These strategic priorities guided the formulation of 19 university objectives. These were then referred to task forces representing relevant operational unit directors and a broad range of faculty, students, staff, and administrators. The task forces developed feasible targets for the objectives and the specific tactics required to achieve them. They also identified the resource requirements needed to achieve the targets. The steering committee then reviewed reports from each task force and adjusted the targets as necessary to match resource availability.

Finally, the steering committee, with input from the Office of Institutional Research and Planning, developed metrics and annual targets to measure the progress toward achieving stated objectives. Each target in the plan was then attached to evaluation metrics, and senior staff members were assigned direct responsibility for achieving objectives in their areas. Every year the steering committee reconvenes to evaluate the plan's progress and issues a scorecard summary of results. (Specific priorities and objectives of the plan and the scorecard's evaluation are discussed further in section II.)

2) **Restructuring the Office of Research and Development**

The Middle States review of April 2002 observed that NJIT was poised for rapid growth of its funded research and development program and that it would need to expand the administrative support for that function if it was to achieve those goals. In the five years since that report, NJIT has substantially re-organized institutional management of the research and development enterprise. It has increased the number of support staff; it

has developed or expanded functions that pertain to research support, and it has integrated elements that existed within the university to lead to a cohesive set of services with a single point of contact for faculty assistance.

The Office of Research and Development is comprised of four administrative units reporting to the Senior Vice President for Research and Development. These units are:

- i) Office of Sponsored Research Administration: OSRA is conceived as the single point of contact for lifecycle management of academic research. Led by Norma Rubio, the Director of Sponsored Research Administration (appointed 12/02), the office has a total of six full-time professional staff managing pre-award through post-award administration. The office has substantially expanded the scope of services from early stages of grant development to include a robust, formal program of management services for large-scale programs and support for investigators with large portfolios of externally sponsored work. Although grant accounting remains in the reporting line of the Senior Vice President for Finance and Administration, as it should by function, OSRA now serves as the faculty interface to that office as the provider of integrated services. In addition, the office also coordinates with the Office of the General Counsel, and facilitates the review and approval of non-disclosures, research contracts and other instruments.
- ii) Office of Technology Development: OTD has grown from a single position (vacant during the 2002 site visit) to an operation of three full-time professionals dedicated to commercialization activities. Led by Associate Vice President Judith Sheft (appointed 7/02), OTD has also taken on the managerial oversight of NJIT's three technology business incubators and the Defense Procurement Technical Assistance Center. Collectively, these programs provide additional opportunities for NJIT researchers to collaborate with the commercial sector. Along with the OSRA, the office also coordinates with the Office of the General Counsel, and facilitates the review and approval of non-disclosures, research contracts and other instruments.
- iii) Office of Government and Military Affairs: OGMA serves two important and related functions. It is the liaison with the university's team of external federal and state government affairs consultants. Federal appropriations, particularly in the defense appropriations bill, form an important element of the strategy for initiating new, large-scale R&D efforts that subsequently spin out competitive grant funding across the spectrum from single-PIs to centers of excellence. Led by Assistant Vice President William Marshall, B.Gen. (ret.) (appointed 1/03), the office provides the connections between faculty researchers and a wide range of military and homeland security related grant and contract opportunities. The Assistant Vice President also serves as Deputy Director of the New Jersey Homeland Security Technology Systems Center that is actively engaged in a number of large scale technology integration and demonstration projects throughout the state.
- iv) Office of Strategic Initiatives: OSI is leading important new initiatives that lie at the interface of technology and public policy. Led by Associate Vice President Robert Hughey (appointed 1/03), former Commissioner of the New Jersey Department of Environmental Protection under Governor Kean and later cabinet member for economic recovery under Governor Florio, the principal focus of the office has been

to develop a plan and secure large scale funding for New Jersey's expansion of Port Bayonne, Newark and Elizabeth as the primary deepwater port on the Atlantic Coast. Now designated as a \$100M "Corridor of National Significance" in the USDOT re-authorization, the group is matching NJIT research strengths in transportation planning with stakeholder groups across the region for the purpose of developing a coherent plan to build the infrastructure required to sustain this growth.

Beyond the administrative functions, research and development has also been re-organized at the faculty committee level. A new policy has been instituted creating a departmental research and development committee structure. The chairs of those committees then become delegates to the university-wide faculty research committee. This provides continuity of membership, ensures a more representative expression of viewpoints on the committee, and allows for more thorough dissemination of issues and findings at the grassroots level.

The faculty patent committee has also been replaced by two different committees established as part of a comprehensive patent policy adopted several years ago. NJIT's Intellectual Property Advisory Committee (IPAC) was created as a permanent advisory body entrusted with the responsibility to review actual practices for policy continuity and propriety, and to make formal recommendations for both individual case management and program enhancement. The committee is comprised of six faculty members, a representative from the Office of Technology Development, a representative from the Office of General Counsel and a representative from the Office of the Senior Vice President for Administration and Treasurer. The Executive Committee for Technology Development (ECTD) was established to bring together the appropriate university officers required to make the business decisions for the disposition of intellectual property derived from faculty research. Toward this end, ECTD consults with the Office of Technology Development, IPAC, independent scientific and technology transfer experts as needed and, as appropriate, other university officials to decide whether to file a patent application and what the appropriate manner and method of commercialization is. The ECTD is comprised of the following permanent members: Senior Vice President for Research and Development (Permanent Chair), Senior Vice President for Administration and Treasurer, and General Counsel, and is staffed by the Office of Technology Development.

In 2007 NJIT's activities in patents and licensing continued the upward trend established since the restructuring of the Office of Technology Development and the implementation of the new patent policy. Invention disclosures have more than doubled since 2003, as seen in Table 1. The number of patents issued is growing again as a consequence of the increased submission rate from 2003 to 2004 (note: there is typically a three-year time lag between submission and award; FY 2007 awards are a consequence of FY 2004 submissions). Budget restrictions along with a more rigorous front-end selection process have reduced the number of patent applications in FY 2007, but those submitted are deemed to have the highest likelihood of approval and commercial adoption.

Table 1. Patent Disclosure Statistics

	FY 03	FY 04	FY 05	FY 06	FY 07(YTD)
Invention Disclosures	28	47	53	70	42
US Patent Applications	40	50	57*	46*	11*
Issued Patents	5	5	5	2	7

* There is a three-year lag time between submission and awards

Even greater than the growth of patent submission has been the growth in license revenue in the last three years. A significant change in approach has been implemented through the efforts of the licensing professionals in the Office of Technology Development. They have built ongoing relationships with a number of technology venture firms that have licensed entire portfolios of patents – many of which have been dormant for some time. The revenue growth is shown in Table 2.

Table 2. License Statistics

	FY 03	FY 04	FY 05	FY 06	FY 07(YTD)
License & Option Agreements	6	19	25	40	23*
License Income	\$16,000	\$54,000	\$406,000	\$505,000	\$315,000

* Year-to-date

3) Expanding Research

Research and development is a fundamental component of the NJIT mission. NJIT is one of only three public research universities in the state system that are mission directed to offer a comprehensive array of Ph.D. programs, and the only one specifically oriented towards professional studies, including engineering, the physical sciences, computing sciences, architecture, and management. It is “New Jersey’s Science and Technology University.”

In spite of a steady decline in Federal funding for basic research in the university’s core-discipline areas of engineering and the physical sciences, NJIT has steadily grown the size of its funded research enterprise (see Table 3). Most notably, the Federal support for R&D that is the most used benchmark for research productivity has increased by almost 30% and is poised to exceed \$40M in FY2007. The phase-out of state funding for academic research under the aegis of the New Jersey Commission on Science and Technology is responsible for the notable decrease in state support, shown in the table below, while the university cost for supporting research has remained stable throughout the review period. Scaling FY2007 expenditures by FY2006 figures at the same point in time, we project external R&D expenditures to reach \$60 million and total R&D to surpass \$80 million – both all time highs for the university.

Table 3. Total R&D Expenditure (in \$000's)

Source of Funds	FY 02	FY 03	FY 04	FY 05	FY 06	% Change FY 02-06
Federal Government	\$27,500	\$30,535	\$30,995	\$35,716	\$35,489	29%
State and local governments	\$9,170	\$11,518	\$7,696	\$4,581	\$5,600	-39%
Industry	\$6,030	\$5,681	\$675	\$786	\$6,420	6%
All other sources	\$2,630	\$3,156	\$7,751	\$6,485	\$4,356	66%
TOTAL External	\$45,330	\$50,890	\$47,117	\$47,568	\$51,865	14%
Total Institution funds	\$23,770	\$22,774	\$27,881	\$29,352	\$25,718	8%
Institutionally financed organized research	\$16,600	\$14,800	\$19,950	\$22,066	\$18,538	12%
Un-reimbursed Indirect costs & related sponsored research	\$7,170	\$7,974	\$7,931	\$7,286	\$7,180	0%
TOTAL	\$69,100	\$73,664	\$74,998	\$76,920	\$77,583	12%

i) Rationale

While research activity may be viewed as an end unto itself, it also underlies all of the university's mission elements. Faculty members engaged in research bring real-world application and a contagious enthusiasm to the classroom, and in some cases even advance the technologies used in instructional activities. The competency built through independent scientific research allows the university to assist the state in a wide variety of public service activities that range from community planning and transportation policy to child-safe hand gun technology development. With strong roots in the application of scientific discovery to practical purpose that comes from a 125-year heritage in engineering, the university recognizes the importance of contributing to local, regional and national economic development. The university fosters an intimate connection between its faculty and student researchers and the business community in the form of formal partnerships with companies ranging from incubator start-ups to global original equipment manufacturers (OEMs).

Recognizing the importance of connecting with the community around it, NJIT research has focused on application areas of high impact: improved healthcare systems, enhanced homeland security, next-generation information and communications systems, nanotechnology and sustainable infrastructure.

ii) **Strategic Research Areas**

(a) **Healthcare Systems**

Amazing progress is occurring in the life sciences as improved understanding of the molecular origins of life move medicine from heuristic and statistical approaches to predictive models. This is the province of engineering, mathematics, physics, chemistry and computing that are the defining disciplines of NJIT. From miniaturized, implantable sensors and advanced imaging through new bio-inspired materials to biological and pharmaceutical drug discovery, NJIT has the disciplinary tools to break new ground. Some examples of NJIT research at the edge of healthcare systems follow.

NJIT was designated as the host institution for research collaboration designed to advance stem cell therapies. The Newark Institute for Regenerative Healthcare is dedicated to creating technologies to translate basic research in stem cell science into practical and deliverable therapies for patients. The Institute's vision is to create a stem cell industry from stem cell science, integrating efforts from across the state, the nation and the globe to accelerate the translation of research into cures. New medical equipment, sensor, control systems, information technology and service industries will be defined by these activities and will create a new stem-cell economy with the potential for extraordinary economic benefit to the state of New Jersey. A comprehensive pilot scale production center, state funded, and NJIT owned and operated will be the central element that supports the research, serves as a supplier of stem cell lines for basic research and clinical trials, and provides a test-bed for a wide variety of custom equipment manufacturers that will be drawn to the Newark Innovation Zone to gain regular access to the showcase operation. Innovation zones enjoy special state-funded incentives for business location.

(b) **Homeland Security**

The threat to national security represents a fundamental change to a society that has been built around the concept of invulnerability of our borders and defense against an enemy that shares the same hierarchical power structure and basic assumptions of self-preservation as we do. Responding to the new challenge requires a systemic re-engineering of physical and social infrastructure based on the new modality of threat. Technology is not a panacea, but it will be the key productivity gain that elevates our response to the level required without draining our human and financial resources and constraining our way of life. NJIT leads in this technology and brings back to the university and its incubator firms issues that demand new thinking and a structure of performance and interoperability standards that encourage competition and innovation.

One of the most significant spurs to the growth of NJIT's research program has been the university's emphasis on technologies to assist in homeland security. NJIT is home to New Jersey's Homeland Security Technology Systems Center. The center works to identify faculty expertise as well as technologies under study within the university that have the potential to assist in the nation's security programs and to facilitate partnerships with local, state, and federal agencies for homeland security initiatives. One of the first projects undertaken

by the Homeland Security Technology Systems Center was the smart camera surveillance system at the Garden State Plaza Mall in Paramus, directed by Donald H. Sebastian, the university's Senior Vice President for Research and Development. The system, developed as a national prototype, uses mall security cameras in combination with special software designed to search for suspicious objects or behavior and alert local authorities. With special funding from Acting Governor Richard Cody, a similar model system was installed at the Beatrice Gilmore School in West Paterson.

(c) **Information and Communication Technology**

The mass impact of computing technology and ultimate delivery on the promise of the digital world will only come when information is available anywhere, anytime and for anyone. The development of ubiquitous broadband connectivity will in turn drive transformational products based on distributed intelligence and novel human interface concepts.

Envisioning a future in which wearable computers help students locate their friends on campus and even facilitate introductions to new acquaintances with similar interests, a team of researchers led by the wireless communication and networking group in Electrical and Computer Engineering, and Quentin Jones, Assistant Professor of Information Systems, are working to make NJIT a national prototype SmartCampus. The project is supported by funding from the National Science Foundation and Hewlett-Packard. The team is developing a mobile, wireless NJIT campus community system along with the software and protocols to support a wide range of location-based computing services. The team is creating privacy-sensitive applications that make use of contextual factors — the properties of people and places and the relationships among them. The project will also enrich the curriculum — the team foresees the development of masters programs in human-computer interaction and information assurance and new courses in such areas as wireless security and wearable computing.

(d) **Nanotechnology**

Nanotechnology is neither a passing fad of the scientific community nor a clever repackaging of existing disciplinary knowledge. It is a disruptive technology that will influence product design and manufacture across the spectrum of every imaginable application. The projected impact of nanotechnology may have been an article of faith several years ago, but there is now evidence that “nano” has gone from frontier science to a practical technology. The most notable accomplishments have come in the limited field of carbon nano-tube (CNT) based systems. At NJIT, alone, our researchers have developed reliable technology to produce molecular scale “wires”, solar cells, and biologically fueled power cells based on CNT. This has wide-reaching implications for applications ranging from alternative energy to revolutionary, implanted medical devices.

(e) **Sustainable Systems Technology**

New Jersey is prototypical of many areas where the co-location of dense population centers and industrial systems need to be successfully managed to

maintain quality of life while promoting economic development. Preservation of air, water and land quality; efficient transportation systems for goods and people; affordable, environmentally benign housing and office space; disaster resistant infrastructure are all empowered through the technological developments at NJIT. The combustion of petroleum-based fuels is the least thermodynamically efficient technique for powering global demands for energy. The oil crisis of the 70's, repeated now, and the recognition that global warming due to the accumulation of the products of combustion has scientific merit underscores the need for the alternative energy research under way at NJIT.

4) **Revising the Faculty Handbook**

As a result of the 2002 visit, the accreditation team recommended "a systematic revision of the Faculty Handbook, with particular focus on ensuring that tenure and promotion policies are rigorous, clear and consistent across all colleges and departments." This underscored a need long recognized by NJIT constituents. As the institution evolved from being the Newark College of Engineering into the comprehensive New Jersey Institute of Technology, the Faculty Handbook failed to keep pace. Portions of the Handbook still referred to the institution as "Newark College of Engineering", even though the name "New Jersey Institute of Technology" was formally adopted in 1974.

Since the 2002 evaluation, NJIT has diligently addressed the problem and now clarifying language related to the promotion and tenure process has been incorporated into the Handbook. Moreover, a systematic revision of the entire Handbook is presently underway.

Regarding the promotion and tenure process, while there had been updates to such items as the composition of the university promotion and tenure committee, problems existed. The most evident of these was that the role of the college deans in the promotion and tenure process was not described. Therefore, they had no formal role, except where deans functioned as department chairs, as in the School of Management and the School of Architecture.

This situation was addressed through the incorporation of new language into the Handbook specifying the role of the deans in the promotion and tenure process. This language was first drafted by the Faculty Council, discussed at length with the administration and with the Faculty, and was revised and ultimately approved. It includes provisions addressing key issues:

- Deans and department chairs are directly involved in the tenure process,
- Deans may provide a written evaluation to be included in the candidate's dossier,
- If the department appeals a decision made by the university committee on promotion and tenure, the dean's written evaluation will be made available to all members of the department committee.

The more general problem with the Faculty Handbook remained, however. The entire document does not have a consistent style or numbering system. As a result, it is difficult to find relevant passages. In recognition of this, the Faculty Council undertook

a complete systematic revision of the Handbook, with financial support from the Office of the Provost. As historically many individuals on campus were leery of revisions proposed by members of the university community, it was decided to contract with an outside consultant. The following four items constitute the scope of the work for which the consultant was retained:

- i) Reformatting the existing NJIT Faculty Handbook into a single consistent style and adding a table of contents, an index, front matters (e.g., a page to record approval/authorization history, a page for endorsement by the NJIT Board of Trustees and/or President and/or Chair of Faculty Council, etc.). Production of both Word and PDF versions with linked references to various sections.
- ii) Proofreading the document and editing the document to correct any spelling, grammar, punctuation, and/or syntax errors. Recommend revisions and corrections to the text, especially where parts are inconsistent or missing, as appropriate.
- iii) Developing the format and framework for publishing the document on the web and producing a web-based document. The web version will also be cross-referenced in details for ease of access and use.
- iv) Identifying areas where the content requires changes for consistency. Reorganize the sequence for logic and readability to produce chapters, sections and paragraphs.

As of this writing, the first task has been completed, and the faculty have reviewed the work and approved it. The second task has also been completed, and is currently being reviewed. The consultant has commenced work on the third task, and the entire revision process is scheduled for completion later this year

5) **Disseminating Educational Research Studies**

During the past five years the Office of Institutional Research and Planning (IRP) has more actively distributed the results of educational research studies and assessment reports as suggested by the evaluation team in 2002. The mechanisms for disseminating information include all media for communication within the university. These range from committee presentations and paper reports, to a routinely updated website. IRP also maintains a policy of transparency under which virtually all reports are available to the university community, and most are available to the public at large.

Committee presentations: A synopsis of key studies is reported on a regular basis to the key committees actively involved in setting academic policy and practice. These committees include, primarily, the Committee on Academic Affairs and the Administrative Affairs Council, in addition to the Graduate Council, the Undergraduate Curriculum Review Committee, Planning Committees, and the Committee on International Programs. Other committees such as the ABET accreditation preparation committees and Master Teachers Committee request presentations as needed.

Website: The Office of Institutional Research and Planning maintains a comprehensive website where all studies appear in full length with all variables included. IRP also regularly updates a fact book containing key university information about the full range

of university activities from research to enrollment and endowment fundraising.

Publications: Studies by the Office of Institutional Research and Planning are also presented at conferences and published in academic journals on a regular basis. (In the past year studies have won two best-paper awards, one at a national and one at an international conference.)

6) **Expanding Pre-College Programs**

The 2002 evaluation team recommended the continued expansion of NJIT's Pre-College programs, which have been in existence since 1978. These programs provide initiatives to improve the quality of education at the elementary and secondary grades in the City of Newark, its environs, and the state of New Jersey. Simultaneously, collaboration and articulation between the pre-college initiatives and the university's academic programs contribute to its undergraduate and graduate programs. The programs focus on applied engineering principles, basic scientific and mathematical concepts, and problem-solving skills, critical areas for the successful pursuit of science, technology, engineering and mathematics (STEM) careers. Additionally, the programs' academic curricula follow state and national standards and, therefore, provide students with the opportunity to gain the skills and knowledge specified by these standards. But this only reaches the current generation of youngsters. NJIT's pre-collegiate models go further into the areas of elementary and secondary grade level teachers' training, curriculum reform, and technical services to schools and districts.

Most recently, NJIT has received an "Information Technology Experiences for Students and Teachers" (ITEST) grant from NSF. The project is designed to increase the opportunities for students and teachers to learn about, experience, and use information technologies within the context of science, technology, engineering, and mathematics (STEM), including Information Technology (IT) courses. Supported projects are intended to provide opportunities for both school-age children and for teachers to build the skills and knowledge needed to advance their study, and to function and contribute in a technologically rich society. Through this grant, NJIT will develop and implement strategies centered on the general topic of robotics. We will develop a set of educational materials that can be integrated directly into curricula-meeting standards. We will also work with teachers from Newark and other urban school districts to refine the materials and will train the teachers how to use the materials in existing courses. Finally, NJIT students will work with teachers in their schools as they use these materials to teach students.

In the past five years, the Center for Pre-College Programs and its leadership have received state and national recognition, including special recognition by the American Society for Engineering Education and the American Association of State Colleges and Universities.

The center's activities have been expanded and systematically reorganized to include:

- i) Impact the Classrooms of New Jersey: Aligning practice with standards for the inclusion of Real World Engineering and Technology in Classroom Instruction.
- ii) "Minding" the Technological Pipeline: Enrichment studies in science, mathematics and technology not normally available to students in elementary and secondary

schools, encouraging students to pursue careers in STEM fields as a meaningful and realistic goal.

- iii) “Engineering the Future” Program: This program promotes science, technology, engineering and mathematics careers through numerous programs (e.g. , Building an Engineer: Women in Engineering, Integrating Biomedical Engineering into High School Science, Electricity and Magnetism).
- iv) Partnerships with Businesses, Educational Systems, and Professional Organizations: Partnerships have been the backbone of the efforts of the Center for Pre-College Programs. Partnerships serve to promote science, technology, engineering and mathematics careers, while enhancing and enriching educational experiences for students.
- v) Evaluation and Assessment: Outcome measurements and assessments are an integral part of all pre-collegiate initiatives at NJIT.

7) **Establishing New Policies on the Role and Appropriate Use of E-Courses in the Education of On-Campus Residential Students.**

In 2002 the accreditation team suggested that “NJIT should establish a policy that articulates the role and appropriate use of e-courses in the education of on-campus residential students”. This topic has been the subject of ongoing discussion by two of the university's standing committees, the Distance Learning Advisory Committee and the Teaching, Learning and Technology Committee. Earlier this year they jointly produced a comprehensive report regarding this and other issues related to distance learning courses entitled “Recommended Goals, Strategies and Tactics for Distance Learning Courses and Programs at NJIT”. The ideas incorporated in this report were essentially all agreed upon by the university administration, and are being adopted.

A distinction is made between distance learning and digital learning. Distance learning courses can be taken by anyone anywhere; physical presence on campus is not necessary. Such courses generally make use of course management software, such as WebCT, to deliver the course material electronically and to provide a forum for class and instructor/student interaction. Digital learning refers to the use of such electronic resources in education, whether or not the course is taken via distance learning. Most traditional courses at NJIT now use resources such as WebCT to supplement the face-to-face class time.

The report makes several specific recommendations aimed at ensuring the quality and integrity of distance learning courses. These recommendations include the following requirements:

- Faculty members who offer such courses must be thoroughly trained in advance; students must receive complete information for the course prior to its start,
- Classes must be of an appropriate size to allow for individual attention to students,
- On-campus students must have an opportunity for face-to-face interaction,
- Steps should be taken to ensure a sense of campus and community for remote students.

8) **Developing New Approaches to Alumni Relations**

The 2002 evaluation team identified alumni relations as an area for improvement at NJIT. In response, the NJIT Office of Alumni Relations developed a detailed plan to improve alumni relations in a broad range of areas. During the past three years this plan has been progressively implemented, and the promotion of alumni relations has shown the positive effects.

i) **Structural and Organizational Changes that Promote and Support Increased Alumni Participation in the University.**

In order to enhance engagement opportunities for the school's 44,000 alumni, a super-organization called the President's Council of Alumni Advisors was formed, under which numerous special interest alumni groups such as the Young Alumni Club, Alumni Association of NJIT, Honors College Alumni Association, Regional Clubs, Corporate Clubs, and individual fraternities and sororities could be assisted directly by the Office of Alumni Relations and share best practices among each other as peer organizations – with participants focused on their specific areas of interest, while building a more significant and networked alumni community of support for NJIT.

ii) **Improving Communications between the University and Alumni, and among Alumni.**

To develop an accurate, comprehensive database of alumni information NJIT has increased its emphasis on developing the Web-for-Alumni system, the on-line alumni directory, and reunion anniversary questionnaires (currently yielding a response rate of over 10%, with individual classes between 3% and 26%).

In the last year, the Office of Alumni Relations has moved to on-line reservations (and payment), formatted emails with embedded hyperlinks, allocated pages for alumni special interest groups to offer on-line, archived pictures and narrative from past events that help document a program's successes and encourage an awareness among others who might consider starting similar club and chapter programs. Class Reunions, Golden Highlanders marching in Commencement, Regional Clubs, Corporate Clubs, Greek organizations, and the Soccer alumni group have all participated and benefited from their cooperative efforts with the Office of Alumni Relations.

iii) **Improving Core Programs and Services, and Add New Programs and Services.**

The use of class reunions has expanded as a tool for improving alumni relations. In the last two and half years, we have gone from a tradition of a single 50th Anniversary off-campus reunion in the fall, free to attendees including receptions and dinners paid for by the university with no campus based activities, to fourteen pay-to-attend class reunions conducted entirely on campus in the spring – developing a tradition of reunions occurring every five years for every class, beginning with a 5th Anniversary. Additional aspects of the improved reunion program include involvement of faculty and academic departments, student workers, and campus tours. With this past year's effort, alumni were also invited for the first time to spend a night in the residence halls and get an even better feel for life at NJIT today.

The 14 classes (with class years ending in 2/7) have been organizing for the last ten months for their reunions this spring, while the 14 classes (with class years ending in 3/8) began organizing in Dec 2006 for their Spring 2008 reunions – yielding an 18 month planning process for these 3/8 classes, similar to many other universities.

In the last two years, the Young Alumni Club has gone from a staff-driven program with no volunteer input to a volunteer committee that meets bi-monthly and develops all their own programs and events. Event attendance has continued to grow. Approximately 25% of any single event is comprised of first-timers.

In the Spring of 2005, we began a corporate program. We now have alumni clubs at Hatch Mott MacDonald, Shering Plough, PSE&G, UPS, Eng Wong Taub, and Langan Engineering.

In expanding NJIT's Alumni Regional Club program, the decision to start a club was contingent on the interest of alumni volunteers to staff a program, an adequate number of alumni in the area, and the office's ability to provide adequate staff-time to visit with groups on a regular-enough basis to develop a program beyond single staff driven events. Regional clubs include the following locations: Florida (attendance growing over several years, multiple events and locations), Monmouth and Ocean County (event last summer and steering committee has two events planned for Spring 2007), Washington, D.C. (event planned for Spring 2007 with a follow-up by fall), North Carolina and South Carolina (events this spring with a follow-up by fall, previous South Carolina event in 2005), New York City (event Spring 2007 with 2-3 events per year planned for the coming 2007-2008 year), Philadelphia (cultivation event in 2004 and Club scheduled activity for summer and fall 2007), and Boston (cultivation event in 2004, with a first Club meeting in 2006 and a follow-up event this spring/summer). Capital Campaign alumni cultivation events have previously been held in San Diego, Palo Alto, and San Francisco, California, and Fort Worth, Texas in 2004.

9) **Enhancing the Honors College**

The Middle States Evaluation team recommended that NJIT should expand the availability of Honors College courses and improve research opportunities for majors in the Honors College.

In response to this suggestion NJIT undertook a concerted effort to expand the number of Honors courses available. Now over 40 honors courses are available compared to 13 in 2001. The Honors College Strategic Plan for 2007-2012 identifies upper-level Honors courses as a major priority. This will be accomplished through the following means:

- Establish "Honors Liaisons" for each academic department, in order to identify opportunities for upper-level Honors courses,
- Challenge each academic department to build an Honors Track, encompassing undergraduate Honors courses among other opportunities,
- Work with academic departments and the five academic colleges to create interdisciplinary upper-division Honors courses in order to overcome the challenge of offering Honors courses in the majors, where enrollments would otherwise be smaller than in general education courses,
- Work with academic departments to create additional alternative Honors

experiences such as dual majors and minors, and study abroad.

There has been a significant increase in the number of research opportunities for Honors students and a corresponding increase in the number of students carrying out research projects, along with additional Honors-targeted grants, such as that from the Guidant Foundation in biomedical research. In the 2006-07 academic year, 61% of the honors scholars participated in research, industry projects or internships.

The 2007 Strategic Plan identifies increased research opportunities as another priority. This will be approached in multiple ways, including the following:

- Obtaining more research grants designated for Honors scholars,
- Increasing and strengthening contacts with industries, business, non-profit and government agencies,
- Including research as a part of the Honors Tracks mentioned above,
- Working with the above-mentioned Honors Liaisons to create additional research opportunities,
- Educating Honors scholars about the value of undergraduate research as a learning opportunity,
- Setting specific goals for increasing the percentages of Honors scholars carrying research at each level of study.

10) Honors College and a “National Reputation for Excellence”

The continued growth of the Honors College (an increase of 20% from 508 in fall 2001 to 609 in fall 2006), along with a rigorous adherence to high admissions and retention standards, has greatly improved the academic profile of NJIT. In addition, the performance of Honors scholars adds to our national reputation. For example, in the last few years, the Honors College has had two students win prestigious and highly competitive scholarships, the Truman and Goldwater.

Many other honors, awards, and student activities bring NJIT to national attention with the aid of the University Communications Office. These include:

- Research grants and internships at well-known prestigious companies including INTEL, Becton Dickinson, and Merck & Co. Inc.,
- Research funded through nationally competitive programs such as the NSF Research Experience for Undergraduates,
- Continued growth in the number of Honors scholars going on to nationally-recognized graduate programs such as Johns Hopkins, MIT, and Columbia University,
- Awards to Honors scholars of nationally competitive graduate fellowships such as the Bill Gates Millennium Scholarship,
- Service of Honors scholars in national societies and on national boards, such as the National Society of Black Engineers,
- Frequent presentations by Honors scholars at peer-reviewed professional conferences such as the annual Northeastern Biomedical Engineering Conference.

In order to further the goal of emphasizing global education, the 2007-2012 Strategic

Plan singles out global education in several ways. The Mission Statement includes a commitment to “Attract and retain the most highly motivated honors scholars and prepare them for professional careers, positions of leadership and service to the global community.”

The Strategic Plan establishes global education as a priority in an effort that will include study abroad, education about global issues, and encouragement of language training.

In 2006 a new Assistant Dean for Educational Programs who has broad international experience was hired. The new Assistant Dean has begun to use his international contacts to design new programs and create new opportunities, such as new study abroad programs and international academic partnerships.

11) Enhancing Athletics and Recreation Programs

As recommended by the 2002 evaluation team, NJIT continues the creative enhancement of intramural and recreational programs for the regular student. Through responsive developments in scheduling and event design, participation in recreational athletics has increased annually for the last three years.

For competitive, team-oriented students there is an ongoing challenge to support events in which students will participate, and times that encourage participation in greater numbers. Due to NJIT's intensive class schedule, we have limited options. Experience has shown that traditional intramural leagues do not work well in the NJIT environment. Therefore the university has begun a transition to leagues designed around a smaller time frame and single events based on one or two day competitions such as: two and four team basketball league style play over a 5-6 week period and three-on-three basketball, soccer, and volleyball tournaments. We also sponsor full-team, weekend tournaments in the above sports, plus dodge ball

For students who like competition, but do not like team sports, we have added an indoor triathlon, weight room contests, and racquetball tournaments. In addition we have increased the number of collaborative intramural activities by working with the offices for Greek life and residence life on floor vs. floor and fraternity vs. fraternity activities.

For students interested in athletics but not in competition, the recreation center is open sixteen hours a day during the week and a total of 96 hours every week of the semester. With the increased student enrollment, and the continued expansion of all of our programs, we constantly review the available hours. During the next five years we anticipate expanding the hours of operation during weekends, pending interest and resources.

NJIT has also initiated a program to improve the current athletic facilities. In the fall of 2004, we opened our refurbished outdoor facility—Lubetkin Field. It was converted from a natural grass facility to an artificial grass facility. This has allowed us to open the field to the general student body for more hours daily. The facility hours mirror those of the indoor facility. In addition to an improved field surface, a two lane all weather jogging track was installed around the edge of the field that has proven quite popular. We have also entered into a long term agreement to play our home baseball games at Newark's

Riverfront Stadium, which opens the on-campus facility to more recreational use by students.

Although no additional square footage was added, parts of our indoor facility have been renovated and enhanced. The reallocation of some programmable space allowed for a weight room expansion on the lower level, and larger studio area for dance and aerobic classes. With the addition of a more competitive fencing team we also anticipate substantial improvements in the multipurpose room.

The main NJIT gym saw its first major renovation in 40 years with the installation of a new wood floor, new lights, sound system, divider curtains, and bleachers. Phase two of the renovation is slated to occur during the summer of 2008. Locker room and office space areas in the gym have also been improved.

During the next two years, as NJIT settles into the rigors of Division I competition, the university will initiate discussions about a major overhaul of athletic facilities. This will include the development of a plan for the substantial expansion and renovation of all indoor facilities and the possible enhancement of the tennis courts.

12) Reorganizing the NJIT Library

The evaluation team offered a recommendation that NJIT create a plan to increase the library space and augment the book collection by 5,000-7,000 new titles annually. Redesigning the NJIT library to meet the needs of a state-of-the-art research university has proven challenging for the university during a time of fiscal constraints within the state.

In the last nearly five years since the Evaluation, the NJIT library has made vast improvements with increased books purchased, e-journal access, e-books, remote student assistance, information literacy and cooperative activities with New Jersey peer institutions.

The Middle States Evaluation recommended:

"Therefore, it is strongly recommended that: a) the library staff draw up a plan for adding 5,000-7,000 new book titles annually, identifying current titles that would have been purchased in recent years had adequate funding been available, and; b) the NJIT faculty and administration widely discuss the wisdom of implementing the plan."

The NJIT response said:

"There is a consensus among the librarians, faculty, students, and university administration that book acquisitions and space for the library need to increase, and plans to do so, within the constraints of the current university and New Jersey higher education budget issues, are progressing. We do not agree that library books are any longer the sole standard of library excellence, and we believe it is inappropriate to establish a specific, prescribed book acquisition level."

NJIT does recognize that books are still needed and read by students and faculty, and they are vital to conducting research, particularly in certain subject domains.

Toward meeting the goal of increased book accumulation the librarians put together a

list of over 10,000 retrospective core/classic titles, after consulting with faculty and students, that were not purchased prior to the Evaluation, but that might be candidates for purchase, and presented these to the Faculty Library Committee and then to the Provost and senior administration.

The university library has increased its book budget and also the number of books purchased during the last five years. NJIT bought an average of 2,185 books per year from FY 1998-FY 2002 through the year that Middle States visited, and 3,446 books per year in the four full years since, FY 2003-FY2006. This is a 58% increase in the number of purchased books per year. We have not concluded FY 2007 yet, but the number of new purchased titles is expected to be as high as FY 2006.

The library spent \$725,258 for monograph expenditures for 5 years, FY 1998-FY 2002, and is expecting to spend \$1,169,978 for 5 years, FY 2003-FY 2007, (\$946,658 actual though in FY 2006). This is a 61% increase in the book budget over the last five years.

While NJIT did not meet the 5000-7000 books recommended for planning purposes, we greatly increased the number of books purchased, and this did not include the books purchased with outside grant money. The architecture library ordered over 200 books using a grant from the masonry contractors of New Jersey. The library also purchased three rare books on Newark architecture using a grant from the Bay Foundation, and purchased 19 books from student memorial donations. Of course, the library also added a large number of donated books that were deemed useful to our students and faculty.

The NJIT University Librarian presented to the Provost a plan for increasing books purchased each year in 2003. The plan included 1) meeting with faculty and graduate students to identify potential missing titles in our collection, 2) identifying retrospective published titles that were not purchased in the years prior to the Middle States visit including those purchased by our peer institutions, 3) identifying currently published titles in NJIT disciplines that are appropriate candidates for purchase, including setting up approval plans with publishers, and 4) presenting these needs to the NJIT senior administration with the request to provide sufficient funds to purchase, catalog, process and store the additional books to the collection. It was estimated that purchasing 5,000 books per year would cost NJIT approximately \$70 each, excluding the cost of cataloging and processing each title or approximately a total of \$350,000 per year. The actual funds appropriated for monographs were \$233,400 per year. However, the library did 1) purchase more books during the last five years than it did in the five previous years and 2) did substantially increase book expenditures.

While more books are important, the Faculty Library Committee and focus groups of students and faculty strongly indicated that the library databases and journals were more important overall to their research and study. Most of the important databases and journals were and are purchased as annual subscriptions. NJIT has greatly expanded the number of electronic journal and conference proceedings available to our users as a direct result of faculty and student focus groups and the Faculty Library Committee. The faculty and students decided this was the highest priority for library materials. In FY 2002 during the Middle States visit, NJIT subscribed to 11,638 e-journals and databases, and this has increased to over 20,705 in FY 2007. The

extensive usage data, where available, prove that these e-journal subscriptions were extremely valuable to research and study.

The Middle States Evaluation said:

"Another problem is the small number of library staff, especially professional staff. The librarians are obviously a high-caliber group, and ably led, but they are stretched thin. It is suggested that the library director gather data on staffing levels at a small number of (agreed-upon) peer institution libraries, and present them to the administration. (NJIT's list of "benchmark institutions" will need to be modified for this purpose in order to be meaningful)."

The University Librarian provided the report (see appendix) to the Faculty Library Committee and NJIT senior administration comparing the staffing levels of NJIT with peer institutions. This report indicated that, among 19 peer institutions, NJIT was among the bottom third of institutions in the number of staff (5 per 1,000 students enrolled).

NJIT added a new position of Information Literacy Librarian in AY 2005, increasing the number of professional staff to 13, a net increase of one. In addition, the library has hired, as needed, part time professional catalogers to help with cataloging the increased book purchases.

The Middle States Evaluation said:

"The third issue is library space, for users and for collections. Space for users is particularly at a premium, as often all the seats are occupied; this is an area of concern for students and faculty alike, in part because of the growing emphasis on studying in groups. Apparently the library is slated to acquire some 4,000 sq. feet of space when the Admissions Office moves out of the building that houses the library. That will help, but only in the short run." p. 15."

The NJIT response said:

"There is a consensus among the librarians, faculty, students, and university administration that book acquisitions and space for the library need to increase, and plans to do so, within the constraints of the current university and New Jersey higher education budget issues, are progressing."

The university turned over the approximately 4,600 square feet of space previously occupied by the Admissions Department to the library. Today, the library staffs occupy a portion of the space, with the remainder slated to be remodeled into student group studies, a university library café and newsroom, and staff offices as resources become available.

During the past five years the university library also made many improvements, some of which are:

- Greatly expanded access to and increased usage of e-journals, as detailed above,
- Greatly expanded access by an additional 14,658 e-journals paid for by other agencies including the NJ State Library's NJKI (New Jersey Knowledge Initiative). The State Library and other library leaders throughout New Jersey, including University Librarian Richard Sweeney, were successful in getting the state of New Jersey to appropriate \$6,000,000 for NJKI. This increased both on-site and

- remote access to the entire NJIT community,
- Joined Q&ANJ, a 24x7 remote chat reference service, so that our students and faculty could get assistance at any time,
- Extended information literacy instruction to every NJIT freshman and many upperclassmen,
- Participation in a national Information literacy assessment program with Educational Testing Service on their ICT (Information Communication and Technology) Literacy Assessment,
- Expanded the number of electronic theses and dissertations to over 1,000,
- Expanded public library hours to 1:45am (from 10:45pm) during most parts of the semester.

The NJIT library has made great strides in meeting the informational needs of students and staff. Through electronic materials, targeted investments, and improved information literacy, library objectives in tight fiscal times within the state are being met.

13) Substantive Changes (Mount Laurel and St. Etienne)

In the past five years NJIT has focused operations to concentrate on its core mission as a technological research institution. This concentration has entailed the elimination of some branch projects that drew the university away from its core research and education priorities. From an educational perspective the two largest changes were the closing of additional locations at Mt. Laurel, New Jersey and St. Etienne, France. Although the closings contributed to a short-term enrollment decline, they allowed faculty to concentrate on locations rich with research resources, allowing the university to maintain high educational and research standards.

II) MAJOR CHALLENGES AND OPPORTUNITIES

1) Strategic Planning

The strategic planning process led by President Altenkirch and the Strategic Plan Steering Committee began with a rigorous analysis of conditions and challenges confronting the university. Key among the challenges was steadily declining state funding and the need to establish a stable revenue base driven by student tuition, externally funded research, corporate and alumni giving.

In recognition of these changing conditions, the strategic plan drafted in 2003 and 2004 set goals for NJIT intended to see the university through this transition. The goals established under the strategic plan are as follows:

- Enhance educational programs
- Strengthen the sense of campus community
- Enhance and focus research efforts
- Impact the local and regional economy
- Strengthen civic engagement
- Enhance the revenue base

Goals are only effective when they are moved into action. To do this the President and the Steering Committee developed five strategic priorities with specific objectives. The university budget then included dedicated funds intended only for use in achieving the specific objectives set by these strategic priorities.

2) Strategic Priorities

- i) *Enhance and enrich the quality of life of the university community and ensure a focus on the student.*
 - Develop and implement a landscaping/campus appearance enhancement plan, including improvement of the interior condition of buildings, by 2005 followed by completion of a facilities and infrastructure master plan by 2006,
 - Systematically re-engineer administrative and academic processes to improve customer and student satisfaction over the next five years,
 - Move the men's soccer program to NCAA Division I status by Spring 2005 as an integral part of the move of the university's intercollegiate athletics program from NCAA Division II to Division I,
 - Implement high-profile, intellectually stimulating on-campus events by 2005.
- ii) *Increase revenue from private sources.*
 - Increase the percentage of alumni donors from 11% to 18%,
 - Increase unrestricted gift revenue from private sources, exclusive of gifts-in-kind, by 5% annually for the next three years,
 - Successfully launch and complete two focused capital campaigns within the next three years,
 - Launch the quiet phase of a comprehensive capital campaign in three years.

- iii) *Develop a core of nationally recognized programs.*
 - Build three programs to national prominence by 2008,
 - Strengthen by 2005 three niche areas with high potential for NJIT and the state of New Jersey,
 - Develop and implement a marketing program by 2005 that impacts constituents and local, regional, and national media.
- iv) *Improve national rankings in research and intellectual property development.*
 - Double externally sponsored research and development expenditures over the next 5 years,
 - 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 Ph.D. graduates per year in 15 disciplines within five years.
- v) *Become nationally recognized for attracting high achieving students and faculty from diverse national and international populations.*
 - Increase enrollment by fall of 2008:
 - in the Dorman Honors College to 140 freshman
 - of newly admitted undergraduate students, excluding undeclared, to
 - o 25% women, and
 - o 15% African-American, and
 - o 15% Hispanic,
 - Increase the graduation rate of first-time, full-time freshmen (FTFTF) to 55% by fall 2010,
 - Increase the incoming freshman class to at least 750 students.

The 'Balanced Scorecard' is a summary of the detailed strategic assessment report prepared by the Steering Committee and appears for public view on the NJIT website. It also appears in the Appendix to this report. The scorecard shows that in the summary areas of community and engagement the university is well ahead of the strategic planning targets. In education, research, and resources, the university is moving well toward achieving or surpassing the final targets. The Assessment Report and the Balanced Scorecard set high standards and show the challenge of living up to the opportunity the strategic plan embodies.

3) **Planning the NJIT Environment**

The university is undertaking a concerted effort to improve the campus environment and transform the facilities in a direction consistent with goals laid out in the strategic plan. This involves enhancing the educational environment while strengthening civic engagement, improving the local economy and promoting campus spirit. Towards this end, NJIT has two major projects under way.

i) **Campus Gateway**

The NJIT Campus Gateway project is a multifaceted plan to revitalize an area around the NJIT campus, focused on Dr. Martin Luther King, Jr. Boulevard (MLK) between Central Avenue and Orange Street. The project will enhance four blocks of the MLK section of the James Street Historic District that includes Rutgers University's Newark

campus, as well as NJIT.

The project will provide many basic amenities essential to creating an exciting urban lifestyle for the area's thousands of university students, faculty, staff, and Newark residents. The program includes relocating the Greek organizations on MLK to a "Greek Village" at the southern end of the NJIT campus and the reuse of a vacant section of St. Michael's Hospital. The plan will consider retail opportunities and additional housing. In the coming months, the team of Jones Lang LaSalle Americas (JLL) and Elkus Manfredi Architects (EM) will be conducting feasibility studies in order to present its conceptual redevelopment plan to Newark's Municipal Council in late June. Robert Altenkirch states, "Enhancing the community that surrounds NJIT and campus life is important to both the growth of our university and the prosperity of the city as a whole." The plan has the support of the city of Newark and surrounding residents and property owners. The development team of JLL and EM has extensive experience in projects of this nature, completing similar projects at Ohio State, the University of Pennsylvania, and Georgia Tech.

ii) **Central High School**

NJIT is working with Newark Public Schools, the Schools Construction Corp., and the NJ Attorney General's Office to finalize the purchase of Central High School, the large facility currently operated by the Newark Public schools that is surrounded on three sides by the current NJIT campus. The proposal, which still requires final signoff, will bring the building under NJIT control no later than the end of 2012. This purchase will provide an ideal space for the diverse facilities needed to support a growing campus community.

4) **Planning and Development Processes**

i) **Academic Planning**

In 2005/2006, each of NJIT's five academic colleges underwent an in-depth self-study and development of a detailed academic plan for itself. This planning effort was coordinated across all of the colleges by the Office of the Provost and through the weekly meetings of the Deans' Council. The membership of this group includes the Provost, the Associate Provost for Undergraduate Programs, the Deans of each of the academic colleges, and the Dean of Graduate Studies. Each of the plans included the same elements:

- Curriculum and delivery, including degree programs and courses; general academic requirements; service courses; course delivery planning; assessment and continuous improvement; participation in the Honors College; educational research and innovation efforts; participation in university service and future plans,
- Academic environment and culture, including activities and assessment; diversity; international; quality of undergraduate life; quality of graduate life,
- Cooperation with New Jersey institutions, including UMDNJ, Rutgers-Newark, Montclair State, Essex County College, others; and articulation agreements, both in-state and out-of-state,
- Enrollment, including trends to date; projections; retention; recruitment; transfers; advising; student potential for achievement; diversity,

- Academic personnel; including instructional staff and their teaching assignments, other assignments and evaluations; other staff; graduate students,
- Research personnel; including faculty involvement; research staff,
- Research strategic directions, including relevance to university strategic plan; research focus; participation in research centers; participation with industry; other research areas; research equipment investments; plans for future research,
- Space, equipment and services, including instructional offices, administrative offices; instructional rooms; instructional technology; infrastructure; research offices and laboratories,
- Budget, including current year data and future projections,
- External advisory committee, including membership, activities, and potential new members.

Each of the college plans were shared among the Deans' Council and a single rolled-up academic plan was developed for the university. This plan is used to inform the President and other senior officers of the university in their development of the overall strategic plan for the university.

ii) **Campaign Planning and Fundraising**

- (a) **Campaign Planning** - As indicated in the strategic plan, NJIT is in the process of campaign planning and has moved aggressively to develop a full and successful effort. This process has involved the following steps
- Conducting an Annual Fund Audit,
 - Wealth screening rating and verification,
 - Hiring a Campaign Director,
 - Establishing a Needs Assessment Committee to identify, prioritize and communicate the needs of the university,
 - Providing an orientation for committee members and Deans,
 - Upon completing the Needs Assessment, the next steps will be to hire Campaign Counsel, conduct a Feasibility Study, develop an Insiders Case Statement, and a Campaign plan.
- (b) **Fundraising** -This is an ongoing process at NJIT, but the strategic plan calls for innovation and increased emphasis on effective fundraising techniques.
- Development Directors are assigned to specific colleges; one is currently responsible for two colleges. The goal of each development director is a 25% increase in fundraising over fiscal year 06,
 - Annual appeals have been enhanced this year – for the first time utilizing e-mail as an annual fund strategy (e-solicitations). Further expansion is planned,
 - In an effort to develop a more efficient approach to working with volunteers in areas related to fundraising, a number of established committees were consolidated into one Fundraising Committee,
 - The entire NJIT alumni database has been converted to Raiser's Edge, and this is part of an ongoing process to improve data quality and usability.

5) Enhancing Teaching and Learning

NJIT is proud of its reputation for excellence in teaching dating back to the days when it consisted only of the Newark College of Engineering. As the university has grown over the past thirty or more years and transformed itself into a public research university – New Jersey’s Science and Technology University – it continues to emphasize the quality of its educational programs and the learning experience for its students.

NJIT has long maintained that a good education depends on quality teaching, and quality teaching must be increasingly recognized and supported at all levels of the university. To underscore the importance of teaching, all colleges and some programs sponsor ceremonies to recognize special teaching accomplishments. These programs will be increased and expanded over the next five years.

Improving educational programs is also a continuous process at NJIT. Toward this end, a new position of Associate Provost for Undergraduate Programs was created within the Office of the Provost in 2005. This position is charged with implementing educational changes and maintaining educational standards. Six standing committees of the university also work collectively to ensure the quality of programs and to ensure that the educational environment for faculty and its students is as modern and as conducive to learning as possible. These committees include the following:

- Committee on Teaching, Learning and Technology (TLT)
- The Distance Learning Advisory Committee (DLA)
- Master Teacher Committee
- Undergraduate Curriculum Review Committee (UCRC)
- Graduate Council
- Committee for Department and Program Assessment

The Committee on Teaching, Learning and Technology (TLT) is a reconfigured committee with an active agenda. By its charge, the TLT Committee *“recommends policy and direction with respect to the support and improvement of teaching and learning at the university. Since the use of technology is critical to the continuous quality improvement of teaching and learning at NJIT, the committee also recommends policy and direction with respect to the general computing and information technology needs of the faculty, students, and academic support departments in support of their common goals of teaching and learning.”* With this charge, the TLT Committee meets regularly to discuss improving the pedagogy used in traditional classrooms and other learning venues, to organize workshops for teaching and learning, and to make recommendations about upgrading the computing resources on the campus.

The Distance Learning Advisory Committee (DLA) has a narrower focus, making recommendations only about distance learning. Areas of discussion include topics such as what course management software program best meets the needs of the NJIT community, pedagogical issues related to distance learning and/or hybrid courses, and distance learning courses taught in support of off-campus certificate programs.

The Master Teacher Committee consists of all faculty members who have previously received the designation of Master Teacher from the Provost. Its charge and

composition was revisited in 2005/2006. Previously, it had been a largely ceremonial committee, whose members “rolled off” after three years of service on the committee. Now, membership is permanent. The Master Teacher Committee has always conducted occasional workshops on good teaching practices, but now takes an active role in mentoring junior faculty, and improving their teaching. The committee also serves as a resource to any instructor on campus who desires teacher training.

The Undergraduate Curriculum Review Committee (UCRC) is responsible for review and approval of all new undergraduate courses, all minors, and all changes to curricula. It makes recommendations regarding all newly proposed degree programs (these must ultimately be approved at a general faculty meeting). UCRC also makes recommendations about issues such as the general university requirements, the placement testing process, and any other issue that impacts the undergraduate curriculum.

The Graduate Council has a similar charge to the UCRC. Its scope is perhaps a bit broader in that it also considers issues such as recruiting of students into our graduate programs and financial support of graduate students. The committee is chaired by the Dean of Graduate Studies.

The Review Committee for Department and Program Assessment is charged with ensuring that all degree programs undergo a periodic review. Such programs are first asked to do a formal self-study and then to undergo a formal review by the committee. The committee then makes recommendations to the program regarding areas of potential improvement, and also may make recommendations regarding the program to the Provost.

One newly created standing committee is the Committee on Academic Advising, created during this past academic year. Before its creation, there had been no single committee devoted to the improvement of the quality of advising on the campus. It has already addressed several issues of significance in its first year such as revising the transfer credit and advising process.

6) Developing the Living and Learning Environment at NJIT

As a student centered university NJIT works to improve the living and learning environment on a continuous basis. Most recently, this included the development of a new program designed to integrate NJIT students into the university experience. The program called "The Connections Program" will be implemented for the first time in Fall 2007. Pending assessment and review, it will be revised during successive years.

The program itself was developed to help new students:

- To make a successful transition to life at NJIT
- To identify with NJIT, our academic departments, and with one another
- To prepare them to be successful learners in order to develop social emotional and professional competence.

The Connections program is comprised of three major elements: Connections Miniversity, First Year Seminar and First Year Connections Events and Traditions. All three are organized through academic clusters. Every first year student is assigned to a

cluster, or a group of 12-17 students organized by college and/or discipline. Clusters are led by a trained upperclassman in the same discipline, known as the Cluster Coordinator.

i) **Miniversity**

Clusters are formed at orientation, or Miniversity. The Cluster Coordinator initially serves as an orientation leader for a two-day comprehensive program in early summer. Miniversity is designed to engage students, to give them the tools they need to navigate the university and its systems, to begin to establish an identity with NJIT and to make initial connections with one another. Students meet their Deans, their Academic Advisors and key administrators. They learn about the institution and our history, our plans for the future, and the city in which they will live. The bonds they begin to form at Miniversity are further developed by Cluster Coordinators, who connect their students virtually in summer and continue to work with their groups throughout the academic year. Given the size of our population, several Clusters exist for most of our fields.

ii) **First Year Seminar**

Seminar is organized by joining two clusters in a classroom setting for ten weeks of class time. It was designed to appeal to the learning styles of millennial students. As such, the Connections web site provides a weekly video stream presentation for students to watch at their leisure as well as a self-assessment instrument to complete and bring to class. Class time is used to process what they have learned and to work in small groups. Instruction will be shared by administrators, Connections Coordinators and college and departmental representatives. Large group sessions are held during unused common examination blocks by college, which serve as an introduction to their discipline. First Year Seminar is designed to achieve the following:

- (a) Engagement: To reinforce an identity and affiliation with NJIT.
- (b) Adjustment/Transition Issues: To provide support, encouragement and social engagement opportunities. Seminar introduces students to the legal realities of adult status, tips on financial management and techniques and approaches to time management and study skills. They further develop a relationship with their Academic Advisors.
- (c) Self Assessment and Goal Setting: Seminar encourages introspection and self discovery through assessment tools, instruction and processing. Areas for assessment include ethics and moral reasoning, relationships, managing stress, gender issues, group/team behavior and communication. When seminar is complete, students meet with their Advisors to develop a personal and an academic plan.
- (d) Understanding and Utilizing Campus Resources: During Seminar, students are introduced to Career Services, the Library and the Learning Center.

iii) **Connections Events and Traditions**

Throughout the academic year, the First Year Connections program organizes a series of events and encourages students to participate in NJIT traditions. All events and traditions are organized by Connections Coordinators under the supervision of the Center for First Year Students.

7) Assessing the Living and Learning Environment

i) **Student Satisfaction with Campus Environment**

Since 2000, the Office of Institutional Research and Planning has regularly conducted the Student Satisfaction Survey during the spring semester to assess and monitor the student environment at NJIT. The survey consists of questions about campus life, student life, safety, student services, available resources, academics, school policies and procedures, and advisement. There is a section that invites student comments on any issues or concerns that they feel must be addressed.

Each year after consulting with the Office of the Provost, Dean of Students and representatives from all the schools, a target area is identified, and specific questions are developed for inclusion in the survey. In Spring 2005, students were asked to assess the Van Houten and Littman libraries in terms of quality of the facilities, staff, book and journal collections, services as well as electronic database resources. Improvements to library services were instituted as a result (e.g. extension of hours of operations). For Spring 2007, on-campus food and academic development were the special focus areas. Questions addressed food quality, value, staff and operational issues. The academic development module consists of questions concerning academic program content, teaching in the student's program, feedback and grading, academic support, organization and management of the student's academic program, learning resources (e.g. library, computer, specialized equipment, etc.) and personal development.

The annual Student Satisfaction Survey provides NJIT students with a way to give the necessary feedback to aid senior administration, which results in continuous improvement of student life and learning at the university.

ii) **Student-Faculty Relations**

In addition to the Student Satisfaction survey, the Office of Institutional Research continually monitors students throughout their relationship with the university. Beginning with the Enrolling Students Survey, it continues with regular surveys until the Graduating Students Survey, and beyond with the Alumni surveys. NJIT also participates in the National Survey of Student Engagement (NSSE) every two years as a way to benchmark our institution nationally with our peers. NSSE addresses level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, and supportive campus environment. The results of the NSSE survey were disseminated to and discussed with senior administration, the Committee on Academic Affairs and the Retention Subcommittee to aid improving the student experience. The data for the 2006 NSSE survey revealed that NJIT out performed our selected peers and Carnegie Classification type in the area of active and collaborative learning and diversity (e.g. first-year students reported that NJIT encourages contacts among diverse students and serious conversations with students of another race or ethnicity). NJIT garnered high marks for discussing ideas from classes with faculty outside of class, making class presentations, contributions to class discussions, and writing reports of 20 or more pages.

8) Supporting Diversity

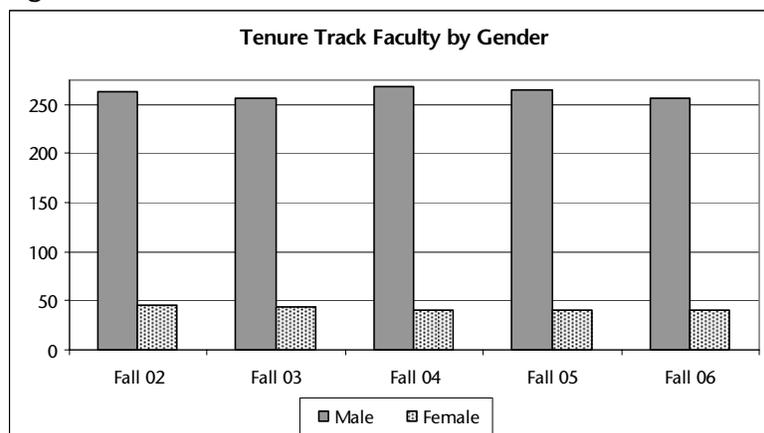
As the demographic profile of the country and the state of New Jersey changes, and as national security issues limit the number of international scientists who study and work in the United States, the need to diversify the domestic scientific and technological workforce at research universities has become urgent. NJIT has responded to that challenge by reinvigorating its commitment to increase the participation and success of women and minorities in science and engineering. The university's strategic plan identifies specific diversity goals for the recruitment and retention of ethnicity and gender for both faculty and students. Toward this objective, NJIT developed specific diversity tactics and metrics.

i) Advancing Women Faculty:

NJIT has implemented concerted plans to improve gender diversity at the university during the next 5 years. The university recently received an NSF ADVANCE Institutional Transformation grant for an innovative program designed to diminish the isolation of women faculty and increase synergy by facilitating collaborative interdisciplinary research networks. NJIT is also reviewing recently implemented programs that offer faculty and students resources to help them "strike an appropriate balance between academic and family life," including on-site childcare and parenting workshops funded by a grant from the Sarah Ward Foundation. In addition, NJIT has implemented a new program in the past year called a formal Active Service Modified Duties Policy. It allows a tenured or tenure track faculty member who is the primary caregiver of a newly born or newly adopted child to be relieved of university service assignments and classroom teaching responsibilities for one semester, without reduction in pay and with continuation of all rights and benefits of regular employment. The Active Service Modified Duties Policy includes an automatic one-year "tenure clock pause." (Women faculty are also eligible for active recruitment through a revolving fund described later in the section about Advancing Minority Faculty.)

The president and provost receive periodic reports from the Committee on Women's Issues and from the Murray Center for Women in Technology, a campus resource for research-based best practices in recruitment and retention of women.

Figure 1



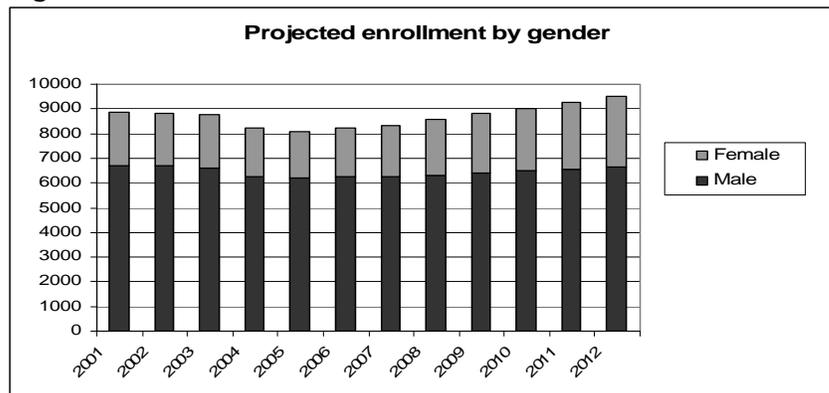
ii) **Advancing Women Graduate Students:**

Over the last ten years, NJIT has made dramatic progress in increasing the size and success of its women graduate student population. Today, nearly one-third of engineering Ph.D.s go to women, and the graduation rate for women Ph.D.s (62%) is 11 points higher than for men. To provide mentoring and encourage women graduate students to enter academia, the Murray Center offers a “WorkLife Network” program, linked to the NJIT ADVANCE women faculty network.

iii) **Recruiting and Retaining Women Students:**

Through the Murray Center and the Center for Pre-College Programs, NJIT is proactive in its outreach to young girls, encouraging them to consider STEM majors. Each summer more than 100 middle school girls participate in the Women in Engineering and Technology Initiative (FEMME) Program. The Murray Center also provides mentoring and networking programs for NJIT women students and is the hub for NJIT’s Society of Women Engineers student section, an award-winning, 100-member group that recently hosted the 2007 Eastern Regional SWE Conference. The Murray Center is also actively involved in the national Women in Engineering Programs and Advocates Network (WEPAN) and works closely with WEPAN co-founder Susan S. Metz.

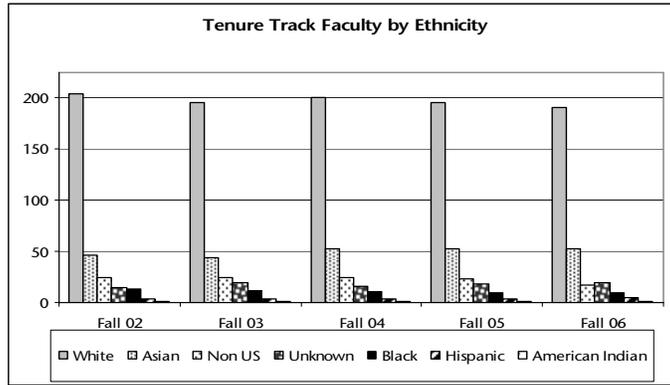
Figure 2



iv) **Advancing Minority Faculty:**

NJIT has undertaken a concerted program to recruit and retain minority faculty. Through efforts to integrate faculty more effectively into the NJIT campus environment and foster mentoring, the university strives to retain minority faculty members more effectively than it has in the past. The university has also established a proactive, revolving fund to facilitate hiring minority faculty when they are available rather than only when a routine vacancy becomes available. This fund allows departments to borrow against a future hire for an immediate opportunity position.

Figure 3



v) **Recruiting and Retaining Minority Students**

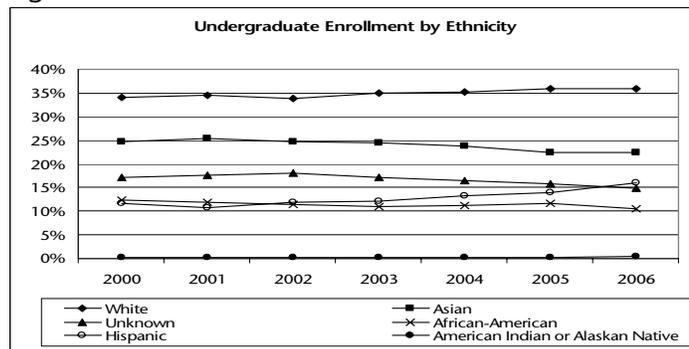
In the area of ethnicity, NJIT has also set metrics and targets for students and faculty. The strategic plan measures success against a 15% target for entering Hispanic and African-American students by Fall 2010. Already NJIT has achieved an increase of 4% to a 16% rate for Hispanic students since Fall 2004. This exceeds the average at universities nationally. The recruitment rate for African-American students remains stable but above the national average, at about 11%.

Through a broad range of programs focused on making a university education accessible to economically challenged youth, NJIT has maintained a substantial population of students from urban areas. Through programs like the Equal Opportunity Program (EOP), which emphasize the recruitment of urban students with great potential and limited opportunity, NJIT has brought many minority students into technical fields.

In conjunction with the recruitment of challenged students from urban areas, NJIT has developed an extensive mentoring and tutoring system to help these students adjust to the academic rigors of university life. Through consistent tutoring, NJIT has achieved retention and graduation rates among financially and economically challenged students that regularly exceed those of regular admission students and approach those of students in the Honors College.

Through this combination of recruitment and retention strategies NJIT continues to be one of the largest producers of minority engineers in the United States.

Figure 4

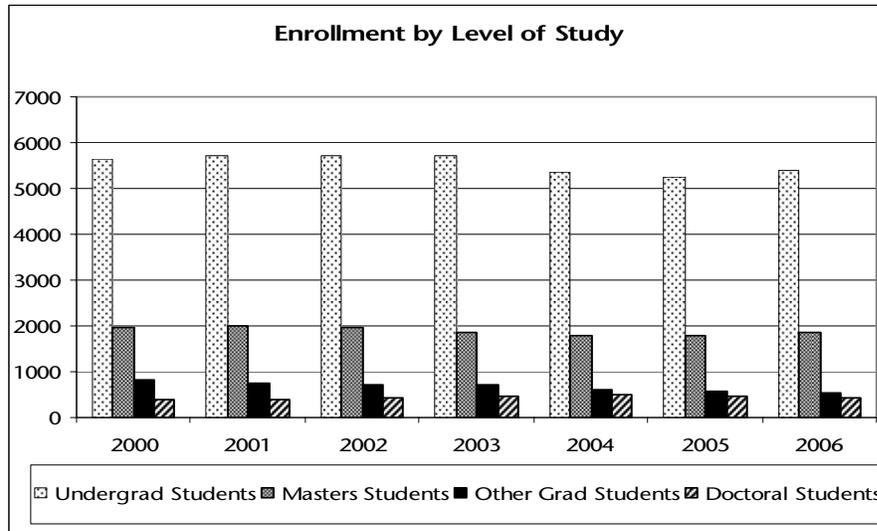


III) Enrollment and Finance

1) The Enrollment Challenge

Increasing the enrollment at NJIT during the past 5 years has challenged the university to find new strategies and innovations to increase the applicant pool and convert applicants into students. From 2002-2005 NJIT experienced an enrollment decline. As the figures indicate, this decline was centered primarily in the undergraduate population with less substantial declines in the graduate master's and graduate non-matriculated populations.

Figure 5



The enrollment decline did not have any single cause although closing the Mt. Laurel campus and the national decline in computer science enrollment contributed substantially. Correcting this decline did not have any single solution. After extended analysis, we concluded that the decline resulted from environmental and institutional causes, some of them the product of our own success in reducing the time to degree.

During the past 8 years the six-year graduation rate at NJIT has increased from 37% to 57%; during the same time, the average time to degree has fallen in all categories. This decline in time to degree meant that students spent fewer years studying at NJIT and had to be replaced by new admissions at a faster rate. The decision to close the Mt. Laurel location in 2002 also contributed to the decline because students studying there did not transfer to the main campus at the anticipated rate. It also decreased NJIT's presence in southern New Jersey and increased the challenges to recruitment.

These challenges alone may have proven insignificant had they not been combined with the impact of 9/11 and the burst of the dot-com bubble. As with many universities across the country, the number of new international students, especially graduate students, dropped in 2002-2004. The College of Computing Sciences also experienced a precipitous decline in applicants during the same period as students came to perceive that the computing field no longer offered the career promise it once had.

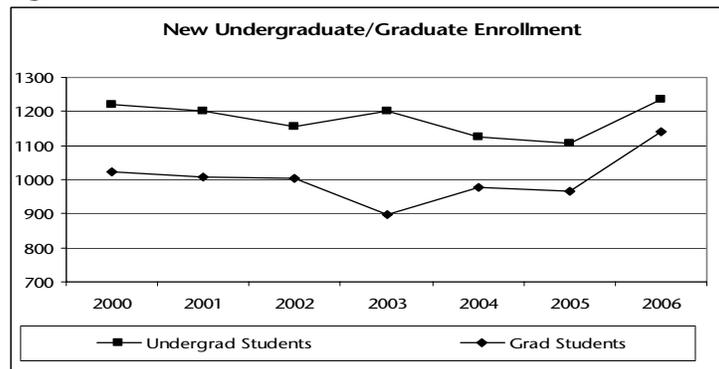
To address recruitment and enrollment challenges, the university created an Enrollment Task Force in Fall 2003. The task force was so well-received that it has been made a permanent university committee, the Enrollment Management Committee (EMC), comprised of key administrative and academic personnel. The EMC meets monthly to discuss and set recruitment and enrollment strategies, to suggest enrollment goals, assess the effectiveness of those plans by reviewing enrollment data, and effectively involve the entire university community in the recruitment and enrollment process.

In order to expand the applicant pool, the committee recommended expanding the university's appeal beyond the most specialized technological fields. To achieve this, a major in Information Technology, which combines the more technological field of computing with less technical majors (communication, media, social sciences, etc.), was created to appeal to a more diverse student population, especially students who prefer an education that includes technology but is not focused on math and physics. Other departments have followed that lead, and NJIT now is promoting majors in Biology, Chemistry, a program option in Teacher Certification, pre-medical and other pre-professional programs (BS/DPT, BA/Physician Assistant, both joint programs with UMDNJ), and Management. Even in engineering, the promotion of the newer Biomedical Engineering major has attracted a more diverse population than other engineering disciplines.

Another of the EMC's recommendations for addressing the decline in enrollment was to educate the marketplace about the misperception that computing was a dying program. Our Career Services staff prepared material that included statistics on the career growth in computing, the employability of our graduates in computing, and the long-term outlook for an upturn in the industry. The information was disseminated to prospective students and parents, and the industry upturn is in fact happening. Interest in computing is now rebounding. We have seen significant growth in the applicant pool, both undergraduate and graduate, in computing-related majors.

Efforts have paid big dividends already. As the figure 6 below indicates, there has now been a dramatic improvement in recruitment during the past year. With new undergraduate and graduate enrollment rising sharply, this increase appears in all categories of new students, except doctoral students. The committee is now turning its attention to that area. In order to reach the enrollment goal of 9,500 only slight continued growth is required. The greatest share of enrollment growth has already been achieved.

Figure 6



The marginal decline in transfer applicants from 2003-2005 was also a concern. In 2006 the number of new transfer students has increased, although transfer recruitment still requires attention. The decision to market the new majors more aggressively at the NJ community colleges is one strategy to face this challenge. Representatives of the EMC met with key personnel at 3 of the top "feeder" county colleges to explore relationships and communication efforts that should lead to an increase in our transfer prospect pool. In addition, the state of NJ has expanded its NJ Stars program (where students in the top 20% of their HS class may attend a NJ county college tuition free) to a program called NJ Stars 2. The NJ Stars students who have earned their associates' degree through this program are eligible to continue their education at a NJ 4-year institution also tuition free. The state provides annual scholarships of \$2,000 per semester for the students in addition to all other federal and state funding, therefore we anticipate an increase in the transfer population without incurring any significant additional cost.

We are seeing an increase in interest in the NJ School of Architecture, which presents both an opportunity and a challenge. The opportunity is that we offer the only undergraduate architecture program in New Jersey, and the program has a superb reputation among professionals and academics. The entire university gains in prominence when any division shines, and we have seen that kind of collateral interest in all of our programs. The challenge is that we have limited studio space, an essential part of any architectural program, so increasing the enrollment in NJSOA, while desirable, is not simple. NJSOA is responding by considering the possibility of adding related majors: interior design, landscape architecture, and others, which may not require the same commitment of studio space.

Also, the university's new branding helps create a visual image of NJIT that is more creative, modern and upbeat. Undergraduate publications have incorporated this branding, along with a design concept that is innovative and appealing to today's high school students. It is a non-traditional look that underscores our tag-line: the edge in knowledge.

Finally, the NJIT web presence has expanded dramatically in the past year with the creation of an Office of University Web Services. This office works closely with the admissions office, financial aid, the registrar's office, and the individual colleges to improve the functionality and appearance of the website. In addition to improving the design, the office has created new portals, virtual tours, and many podcasts intended to show NJIT in a technologically sophisticated and appealing light.

2) Planned Enrollment Growth

As figures 2 & 6 above indicate, NJIT intends to embark on a concerted plan for enrollment growth over the next five years. By 2012 the university intends to enroll 1500 more students, with growth evenly divided between the graduate and undergraduate levels. This can be achieved by only moderate increases in annual new enrollment. Most of the increase already took place in 2006.

Increasing the university to such an extent will entail the expansion of facilities and an increase in the efficiency of existing resources. Toward this end the university has

embarked on an extensive academic planning process combined with a comprehensive facilities plan. The results of this plan are slated for release by early 2008.

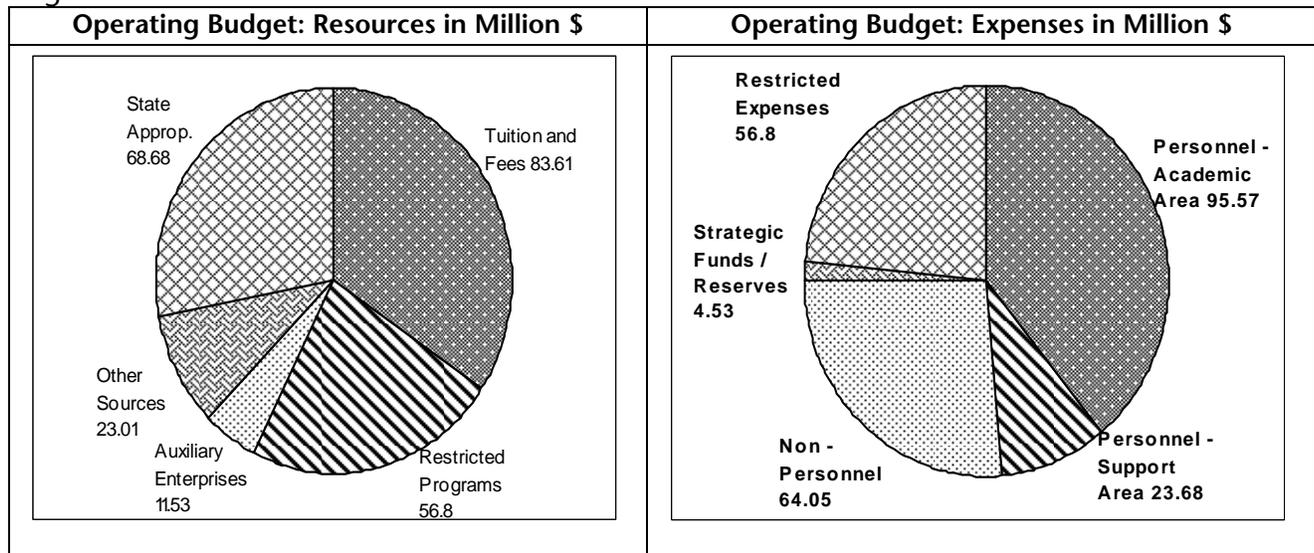
3) Budgetary Issues:

Prudent financial planning and resource allocation continue to support the university’s recognition of emerging trends in the economy, sciences and technology, anticipating their impact on society and development of appropriate educational and research programs. The university intends to continue their conservative philosophy in finance even as it pursues an ambitious academic agenda, builds a vibrant, more attractive and welcoming academic setting, and continues to be in the forefront of advances in research and technology. Based on the university’s strong financial status NJIT has a Standard and Poor’s debt rating of A and Moody’s rating of A-2.

i) Current Financial Status

The university’s working budget for FY2007 totals \$243.6 million, comprised of \$186.8 million in unrestricted funds and \$56.8 million in restricted funds (See Figure 7). A balanced budget will be achieved this year by taking a number of steps including: rate increases in tuition and fees, enrollment growth in core programs, strategic personnel decisions, and limitations on “other than personnel” expenditures. Contrary to the annual financial statement, the annual operating budget displays gross tuition, fees, and auxiliary revenue inclusive of student awards. Also, the operating budget does not include depreciation.

Figure 7



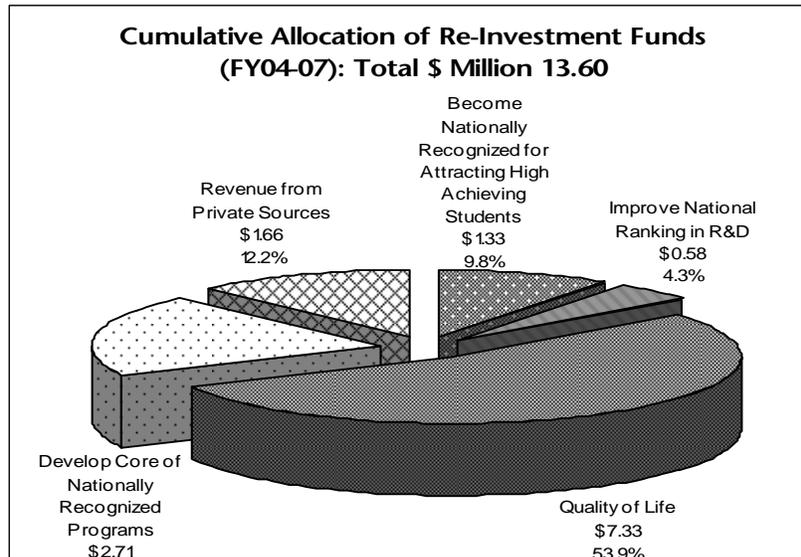
ii) Integrating Strategic Planning and Budgeting

Strategic planning is an essential element in the continuing evolution of NJIT. It assists in adapting to a changing environment, creates a vision for the future, and provides a basis for allocating resources. The university created a Strategic Planning Task Force in 2004 and developed the following Strategic Priorities:

- 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,
- Become nationally recognized for attracting high achieving students from diverse national and international populations.

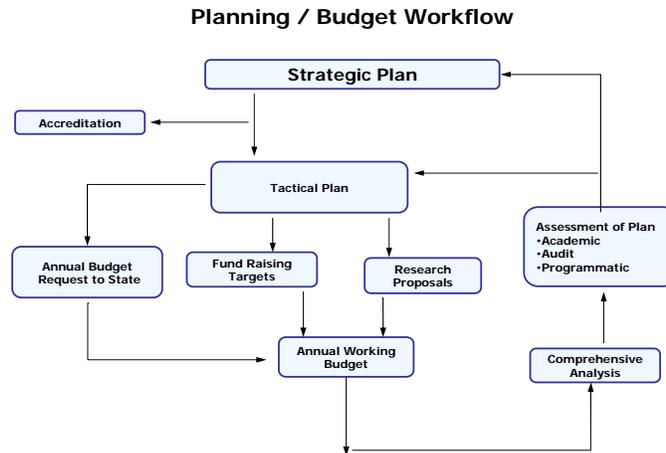
Figure 8



The above chart (figure 8) indicates the cumulative investment made in strategic priorities from FY2004 through FY2007. Fiscal resources are developed and allocated through the annual budget process pursuant to the university operating goals and objectives and incorporates strategic plan objectives. These goals and objectives are established by senior staff members and the Board of Trustees and are incorporated into the annual university budget process. This process is conducted on an on-going basis, closely aligned to the state of New Jersey fiscal cycle as seen in the chart below. NJIT's resource allocation process seeks to:

- Assess and determine how university-wide operational components relate to accomplishing the university's strategic objectives,
- Determine the financial requirements in order to allocate properly university resources to operations,
- Reallocate the university's financial resources for strategic planning on an annual basis,
- Assess results of operational programs and process financial results,
- Communicate results to the university community and constituency.

Figure 9



An on-line Budget Management System allows appropriate administrators to view the budget status of their respective area on a constant basis. This system provides summary level and drill down capability to the minor object code level. The university Budget Office, on an ongoing basis, analyzes revenue and expenditures relative to business plans and discusses results with appropriate management. In addition, the office conducts a major review of operations at the middle of the fiscal year as well as the end of the third operating quarter. The Senior Vice President for Administration and Treasurer is responsible for briefing the Boards of Trustees and Overseers at their respective meetings during the course of the fiscal year.

iii) **Revenue and Expenditure History and Projection**

Five Year Revenues and Expenditure History

Shown on Table 4 on the following page is a five year history of operating revenues, operating expenses, and changes in net assets based on the annual audits of the university conducted by KPMG as well as a five year projection for the same categories.

The university's financial position over the past five years, FY 2002 through FY2006, reflects increased revenues totaling \$21.1 million, \$19.2 million in expenditure increases, resulting in a \$1.9 million increase in net assets.

Major Five Year Historical Trends (FY2002 – FY2006):

Student Tuition and Fees, net of scholarship allowances: Fluctuations in annual enrollment, coupled with an average annual 8 percent tuition rate increase, has led to an overall increase in net tuition and fee revenue totaling approximately \$9 million.

Table 4. Five-Year Revenue and Expenditure History and Projection

NEW JERSEY INSTITUTE OF TECHNOLOGY

Periodic Review

(Dollars in thousands)

	Financial Statement - Year End Actual					5 Year Estimate				
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Operating revenues:										
Student tuition and fees, net of scholarship allowances (1)	49,745	51,422	55,613	55,716	58,752	67,101	73,158	77,340	81,747	86,391
Federal grants and contracts	29,777	33,946	33,744	38,477	38,265	42,092	44,933	47,966	51,203	54,660
State grants and contracts	17,675	20,247	16,892	15,954	15,194	14,726	14,284	13,999	13,719	13,444
Other grants and contracts	2,684	2,991	3,060	2,978	3,065	3,172	3,283	3,398	3,517	3,640
Auxiliary enterprises, net of scholarship allowances (2)	7,481	7,796	8,351	8,676	8,890	9,239	8,957	9,203	9,467	9,726
Other operating revenues	2,614	2,442	2,092	2,915	4,052	4,630	4,746	4,860	4,976	5,091
Total operating revenues	109,976	118,844	119,752	124,716	128,218	140,960	149,361	156,765	164,629	172,952
Operating expenses:										
Instruction	55,289	56,625	58,477	62,274	64,341	66,934	69,900	73,215	77,035	81,063
Research and programs	40,961	44,749	40,515	39,039	38,471	40,829	42,538	44,486	46,580	48,829
Public service	4,443	3,236	3,401	3,800	2,681	3,018	3,068	3,118	3,168	3,218
Academic support	18,615	17,845	17,622	18,546	17,958	20,791	21,647	22,586	23,650	24,764
Student services	8,745	9,035	9,386	10,524	11,048	11,190	11,688	12,228	12,837	13,472
Institutional support	20,873	20,669	22,221	24,712	25,540	26,193	27,020	27,927	28,955	30,031
Operation and maintenance of plant	14,666	12,970	12,884	14,289	15,810	16,712	18,454	20,429	22,692	25,236
Scholarships and fellowships	5,180	5,244	5,392	5,270	5,794	6,268	6,463	6,657	6,857	7,063
Depreciation and amortization	12,995	13,561	14,714	16,341	17,343	17,678	18,261	18,337	18,267	18,046
Auxiliary enterprises	3,304	4,242	5,001	5,195	5,265	5,780	6,292	6,616	6,960	7,301
Total operating expenses	185,071	188,176	189,613	199,990	204,251	215,393	225,331	235,598	247,002	259,022
Strategic initiatives			{a}	{a}	{a}	{a}	1,000	3,300	5,100	5,000
Total operating expenses and strategic initiatives	185,071	188,176	189,613	199,990	204,251	215,393	226,331	238,898	252,102	264,022
Operating (loss)	(75,095)	(69,332)	(69,861)	(75,274)	(76,033)	(74,433)	(76,970)	(82,133)	(87,473)	(91,070)
Nonoperating revenues (expenses):										
State appropriations	68,043	67,386	67,044	69,435	71,090	68,682	71,530	75,157	79,166	83,357
Gifts and bequests	5,288	3,975	3,842	3,675	3,993	4,000	4,080	4,162	4,245	4,330
Disposal of assets expense	(1,308)	(255)	(220)	(2,082)	(30)	(30)	(1,000)	(200)	(200)	(2,000)
Interest expense	(5,809)	(6,133)	(7,668)	(7,785)	(7,846)	(7,973)	(7,852)	(7,708)	(7,442)	(7,162)
Investment income	(930)	4,161	6,733	5,334	6,795	6,411	6,980	7,600	8,275	9,009
Other nonoperating revenues	537	410	945	2,163	1,534	1,582	1,652	1,738	1,834	1,934
Net nonoperating revenues	65,821	69,544	70,676	70,740	75,536	72,672	75,390	80,749	85,877	89,467
Gain (Loss) before other revenues	(9,274)	212	815	(4,534)	(497)	(1,761)	(1,580)	(1,384)	(1,596)	(1,603)
Other revenues:										
Capital grants and gifts	6,608	2,663	41,813	314	164	500	516	533	550	567
Additions to permanent endowments	1,765	2,274	1,874	1,125	1,317	1,343	1,370	1,398	1,426	1,454
Total other revenues	8,373	4,937	43,687	1,439	1,481	1,843	1,886	1,930	1,975	2,021
Increase (decrease) in net assets	(901)	5,149	44,502	(3,095)	984	82	306	546	380	418
Net assets, beginning of year	141,139	140,238	145,387	189,889	186,794	187,778	187,860	188,166	188,712	189,092
Net assets, end of year	140,238	145,387	189,889	186,794	187,778	187,860	188,166	188,712	189,092	189,510

{a} For the fiscal years FY2004 - FY2007, Strategic initiatives totaling \$13.6 million are distributed to their corresponding expense categories.

Federal, State, and Other Grants and Contracts:

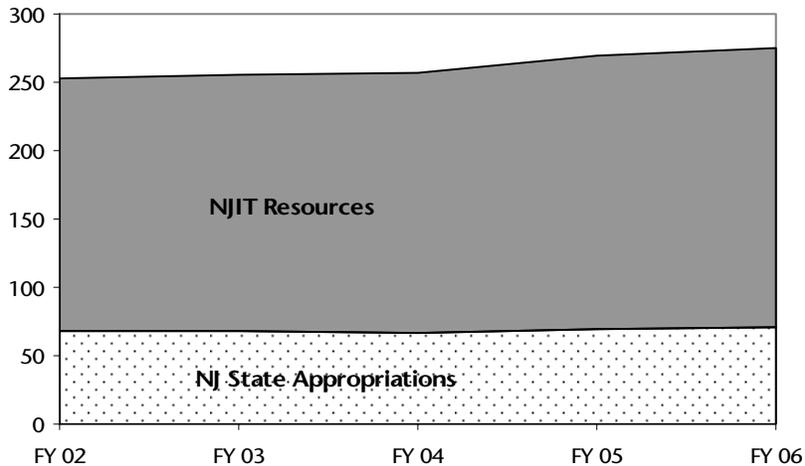
Federal grants and contracts have grown by approximately 30% (\$8.5 million) due to a strategic decision to develop a stronger base in Department of Defense programmatic funding and from steady growth in National Science Foundation peer reviewed grants. State grants and contracts have declined by 14% (\$2.5 million) primarily caused by a significant reduction in funding to, and as a result, by, the New Jersey Commission on Science and Technology. Other grants and contracts have remained relatively stable throughout this period.

State Appropriations:

Throughout this period, NJIT, and New Jersey higher education in general have faced significant budget restrictions due to state of New Jersey budget difficulties. Base state appropriation funding has decreased by \$ 0.9 million over the past five years while required state-supported fringe benefit funding has increased by \$3.9 million. Over this same period however, the University has continued a slow, steady growth primarily due to generating new revenue from non-state resources.

Figure 10

NJIT Resources vs State Appropriations (in Million \$)



Five Year Revenues and Expenditures Projections

Table 4 also projects financial results for the next five fiscal years. Table 5 displays the assumptions on which these projections are based.

Table 5. Revenues and Expenditures, Future Year Projections

GLOBAL ASSUMPTION:		INFLATION RATE BY FY:			
		2.50%	2.40%	2.40%	2.30%
INCOME ASSUMPTIONS					
	ANNUAL CHANGE	FY08	FY09	FY10	FY11
STATE APPROPRIATIONS					
BASE(\$)	Previous year value State appropriations	48,490	49,116	51,791	54,806
%SUPPORTED BY THE STATE		100.00%	100.00%	100.00%	100.00%
SALARY PROGRAM(\$)	As calculated for State Budget Request (BB-108)	3,877	4,350	5,031	5,311
%SUPPORTED BY THE STATE		16.15%	50.00%	50.00%	50.00%
	Total Salary Program supported by the State:	626	2,175	2,515	2,655
NEW PROGRAMS(\$)	Estimated support from the State for new programs:	-	500	500	500
%SUPPORTED BY THE STATE		100.00%	100.00%	100.00%	100.00%
FRINGES(\$)	Previous year value + 4.25% increase per year	22,414	23,366	24,359	25,395
%SUPPORTED BY THE STATE		100.00%	100.00%	100.00%	100.00%
SUBTOTAL STATE APPROP:		71,530	75,157	79,166	83,357
TUITION AND FEES					
	Previous year value + Base enrollment change + Tuition rate increase				
	Anticipated Enrollment Growth	FY07 YEAR	3.00%	2.00%	2.00%
		END PROJ	5.00%	3.00%	3.00%
	Tuition Rate Increase				
	Regular Tuition	75,408	81,554	85,680	90,016
	Other Tuition	2,609	2,822	2,964	3,114
	Other Fees	11,143	12,051	12,661	13,302
	Total Tuition and Fees	89,160	96,427	101,306	111,817
	Less: Tuition and Fees, Net of Scholarship Allowances (1)	22,059	23,268	23,966	24,685
	Net of Tuition and Fees (1)	67,101	73,158	77,340	86,391
FEDERAL GRANTS/ CONTRACTS	Estimated rate of increase	6.75%	6.75%	6.75%	6.75%
STATE GRANTS/ CONTRACTS/OTHER	Estimated rate of increase	-3.00%	-2.00%	-2.00%	-2.00%
OTHER SOURCES	Estimated rate of increase	3.50%	3.50%	3.50%	3.50%
AUXILIARY SOURCES					
		FY07 YEAR			
		END PROJ			
	Parking	1,080	1,119	1,147	1,175
	Bookstore	210	218	223	228
	Food Services	625	648	664	680
	Vending Machines	25	26	27	27
	subtotal other than residence halls:	1,940	2,010	2,061	2,110
	subtotal other than residence halls adjusted for inflation:	1,940	2,061	2,110	2,161
	Residence Halls				
	base adjusted for enrollment (500K less FY2008 due to remodelling of dormitory)	9,250	9,250	9,250	9,250
	base adjusted for inflation	9,750	9,481	9,756	10,049
	TOTAL AUXILIARY SOURCES:	11,690	11,542	11,866	12,210
	Less: Auxiliary enterprises, net of scholarship allowances (2)	2,451	2,585	2,663	2,743
	Net of Auxiliary Enterprises (2)	9,239	8,957	9,203	9,467
OTHER OPERATING REVENUE	FY2007 base adjusted for inflation	2.50%	2.40%	2.40%	2.30%
INVESTMENT INCOME					
	- Assume assets remaining at a relatively steady state	8.90%	8.90%	8.90%	8.90%
	- Used average investment income (2003-2006) compounded annually @ 8.9%.				
OTHER NONOPERATING REVENUE					
	Total nonoperating revenue:	82,590	86,919	91,686	96,695
	2% of all nonoperating revenue:	2,000	2,000	2,000	2,000
		1,652	1,738	1,834	1,934
CAPITAL GRANTS & GIFTS					
	- Applied 3.2% increase per year based on 5 year trend	3.20%	3.20%	3.20%	3.20%
ADDITIONS TO PERMANENT ENDOWMENTS					
	- Applied 2% increase per year	2.00%	2.00%	2.00%	2.00%
GIFTS & BEQUESTS					
	- Applied 2% increase per year	2.00%	2.00%	2.00%	2.00%

Table 5 [continued]. Revenues and Expenditures, Future Year Projections

GLOBAL ASSUMPTION: INFLATION RATE BY FY:		2.50%	2.40%	2.40%	2.30%
EXPENSE ASSUMPTIONS					
	ANNUAL CHANGE	FY08	FY09	FY10	FY11
INSTRUCTION					
previous year value + salary prog + inflation rate					
	total salary program(BB-108)	3,877	4,350	5,031	5,311
	Fringe Benefits 28%	1,086	1,218	1,409	1,487
	% salary program applicable to instruction	57.44%	57.44%	57.44%	57.44%
	total personnel expense increase for instruction:	2,851	3,198	3,699	3,905
	Non Personnel increases by the rate of inflation	2.50%	2.40%	2.40%	2.30%
	Non Personnel as % of total instructional expense	6.93%	6.93%	6.93%	6.93%
RESEARCH					
Increase in Fed/State/Private/Other revenues (\$ in thousands)					
		1,709	1,948	2,094	2,249
PUBLIC SERVICE					
previous year value + conservative growth of EDC & CPE					
		50	50	50	50
ACAD SUPPORT					
previous year value + salary prog + inflation rate					
	total salary program(BB-108)	3,877	4,350	5,031	5,311
	Fringe Benefits 28%	1,086	1,218	1,409	1,487
	% salary program applicable to academic support	13.59%	13.59%	13.59%	13.59%
	total personnel expense increase for acad support:	674	757	875	924
	Non Personnel increased by the rate of inflation	2.50%	2.40%	2.40%	2.30%
	Non Personnel as % of total acad support expense	34.96%	34.96%	34.96%	34.96%
STUDENT SERV					
previous year value + salary prog + inflation rate					
	total salary program(BB-108)	3,877	4,350	5,031	5,311
	Fringe Benefits 28%	1,086	1,218	1,409	1,487
	% salary program applicable to student services	7.01%	7.01%	7.01%	7.01%
	total personnel expense increase for student services:	348	390	451	477
	Non Personnel increased by the rate of inflation	2.50%	2.40%	2.40%	2.30%
	Non Personnel as % of total student services expense	53.57%	53.57%	53.57%	53.57%
SCHOLARSHIPS/ FELLOWSHIPS					
previous year value + percentage tuition increase + new awards					
	New student awards	-	-	-	-
	Total Student Awards FY07 (30,778) (\$ in thousands)	32,317	33,286	34,285	35,314
	Total percentage of student refunds to total student awards	20%	20%	20%	20%
	Total refunds made to students	6,463	6,657	6,857	7,063
	Total Scholarships and Fellowships less student refunds	25,854	26,629	27,428	28,251
INSTITUTIONAL SUPPORT					
previous year value + salary prog + inflation rate					
	total salary program(BB-108)	3,877	4,350	5,031	5,311
	Fringe Benefits 28%	1,086	1,218	1,409	1,487
	% salary program applicable to institutional support	13.35%	13.35%	13.35%	13.35%
	total personnel expense increase for institutional supp:	663	743	860	908
	Non Personnel increased by the rate of inflation	2.50%	2.40%	2.40%	2.30%
	Non Personnel as % of total institutional support expense	25.16%	25.16%	25.16%	25.16%
PHYSICAL PLANT					
previous year value + salary prog + inflation rate + increase for utilities					
	total salary program(BB-108)	3,877	4,350	5,031	5,311
	Fringe Benefits 28%	1,086	1,218	1,409	1,487
	% salary program applicable to physical plant	6.08%	6.08%	6.08%	6.08%
	total personnel expense increase for physical plant:	302	338	391	413
	Total Utilities Cost	9,200	10,580	12,167	13,992
	% increase in Utilities	15.00%	15.00%	15.00%	15.00%
	FY 07 budget for utilities eq. (\$8,000) (\$ in thousands)				
	Estimated Utilities Increase:	1,200	1,380	1,587	1,825
	Non Personnel increased by the rate of inflation	2.50%	2.40%	2.40%	2.30%
	Non Personnel as % of total physical plant expense	50.41%	50.41%	50.41%	50.41%
AUXILIARY SERVICES					
Auxiliary Direct Expenses (adjusted for inflation)					
	Parking	59	61	62	64
	Residence Halls	5,633	5,769	5,907	6,043
	Gourmet Dining Services	30	30	31	32
	Bookstore	2	2	2	2
	Student Center O&M	567	754	957	1,160
	Subtotal Auxiliary Expenses	6,292	6,616	6,960	7,301
DEPRECIATION & AMORTIZATION					
Straight Line Depreciation Method					
Depreciation expense (\$ in thousands)					
	- The Fixed Assets System calculated annual depreciation on 2006 assets for FY 2007 thru 2011.	18,261	18,337	18,267	18,046
	- New equipment additions projected at \$4.0M per year.				
	- New construction and renovation additions projected at \$4.0M per year.				
INTEREST EXPENSE					
Increase / (decrease) in interest expense per year					
	- Information taken from the 2006 KPMG Audited Financials FY2006 - Notes to Financial Statement pg. 26	(121)	(144)	(266)	(280)
STRATEGIC INITIATIVES FUNDING					
		1,000	3,300	5,100	5,000

The assumptions shown in Table 5 are generally conservative in nature. However, as part of the planning process, other factors such as enrollment, state appropriations, research funding, energy costs, and inflation may produce scenarios different than the ones projected here.

Major revenue assumptions:

Student Tuition and Fees, net of scholarship allowances: The projections in Figure 11 reflect the most recent estimates from various university offices and planning task forces. The tuition and fees revenue projections are mostly a function of the enrollment and student retention projections developed by the Office of University Admissions, which are consistent with the strategic plan. In addition to these projected enrollment changes, moderate tuition and fee rate increases are included.

State Appropriations: The projection anticipates the state funding 50 percent of the cost of negotiated collective bargaining unit contracts beginning in FY 2009. Also beginning in FY2009, the projection adds an additional \$500,000 supporting new program development. Throughout this period, it is assumed that the state will continue funding their share of fringe benefit expenses.

Federal, State, and Other Grants and Contracts: The Office of Research and Development projects that restricted grants and contracts will grow, on average, 5 percent per year. Federal grants will increase by approximately 7 percent per year. State grants project a slight annual decline averaging 2 percent per year. Foundation and corporate sponsorships are projected to increase at an average of 3 percent per year. Areas of expected research growth include improved healthcare systems, enhanced homeland security, next generation information and communications systems, nanotechnology and sustainable infrastructure.

Major expense assumptions:

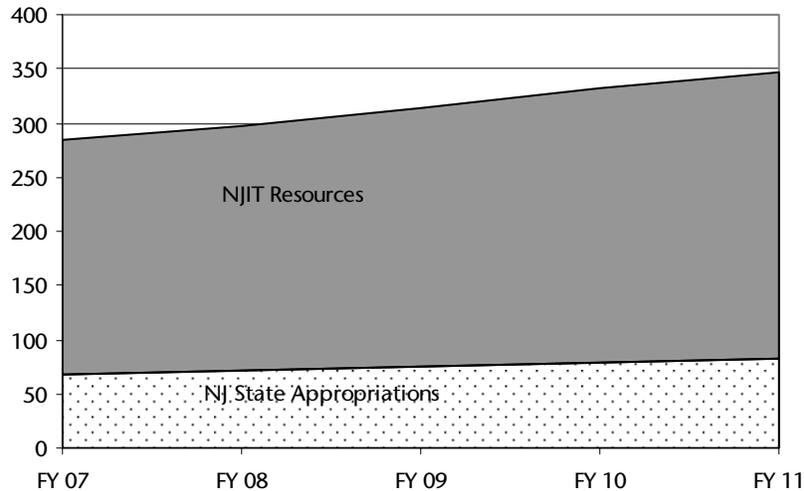
Personnel: Projections reflect continuation of existing personnel as well as the implementation of collective bargaining agreements.

Non-personnel: Projections reflect an annual inflation factor of approximately 2.4 percent, which is based on the CPI of the Northeast Urban region. In addition, based on a utility analysis, utility increases are estimated to be 15% annually.

Strategic Initiatives: This category anticipates continued investment in new programs identified through the ongoing strategic planning process. The annual increase will be determined by senior staff during the annual budget process and be predicated on available resources.

Figure 11

NJIT Resources vs State Appropriations Projection (in Million \$)



Therefore as displayed in the chart above, over the next five years, NJIT expects to see levels of modest growth in the levels of state appropriations and moderate growth in NJIT resources

iv) **Fund raising**

(a) **Endowment Growth**

Endowment investments include gifts from donors that are to be invested in perpetuity and the related income and appreciation. The university invests only in investment grade bonds rated at least BBB at the time of purchase and in repurchase agreements rated at least A1. There is no limitation placed on the ownership of U.S. Treasury or government agency bonds, but no more than 50% of the university's fixed income investments may be invested in mortgage-backed securities at any one time. The endowment investment policy establishes as an objective that the aggregate fixed income portfolio have an average of A or better.

(b) **Private Support**

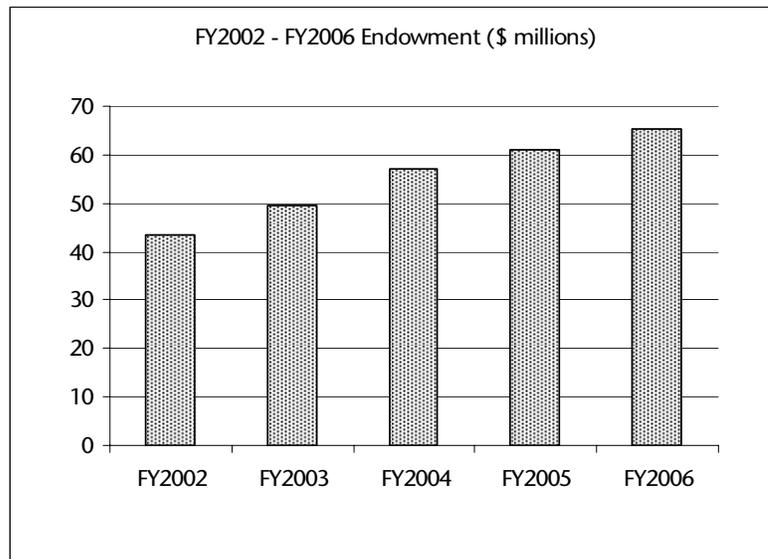
Private support is a major component in distinguishing one public university from another. In FY 2006 total donations amounted to \$5.7 million, and the average alumni gift size increased 23 percent. Private individuals giving \$100 or more increased 3 percent. Scholarships with living donors increased 19 percent over FY 2005. Corporate and foundation revenue increased 20 percent in FY 2006 over FY 2005. Increased alumni support signifies a greater number of alumni who are actively engaged with NJIT. Some national rankings of colleges and universities use the percentage of alumni who are donors as an indicator of graduates' satisfaction with the educational program.

(c) **Focused Fund raising Campaigns**

- Albert Dorman Honors College launched a campaign to raise \$20 million allowing the Honors College to increase enrollment. In April 2007, the Albert Dorman Honors College exceeded their goal by \$2.8 million making their total funds raised \$22.8 million. This campaign has increased enrollment by 111 students.
- In 2004 intercollegiate athletics launched a campaign to raise \$5 million. The campaign is currently at 60% of its goal and will be announced publicly in Fall 2007. This campaign supports facilities improvements for the campus community as well as athletic scholarships.

The university strives to increase the level of the endowment. Over the last 5 years (FY 2002 – FY 2006) our endowment has grown approximately \$20 million totaling \$65.2 million in 2006 (See figure 12 below).

Figure 12



v) **Facilities Management**

Improvements to the campus infrastructure continue to be a major initiative. All of the projects that were in design or construction at the time of the 1997 Periodic Review were successfully completed, on time, and within budget. The facilities master plan, a \$140 million dollar building program at NJIT, was completed in 2006. This program included a fifth residence hall, two additional parking garage levels, the new Campus Center, Fenster Hall, and a rehabilitation of the Historic Eberhardt Hall to serve as NJIT's Alumni Center and house offices for Alumni Relations and Development. NJIT is deeply committed to creating a vibrant, more attractive and welcoming academic setting for its students, faculty, staff, and alumni. The university is finalizing a new facilities master plan incorporating emerging academic, research, and athletic facility requirements. The university is also very committed to the continued development of the University Heights Science Park, and the historic James Street Commons areas.

IV) STUDENT LEARNING OUTCOMES ASSESSMENT

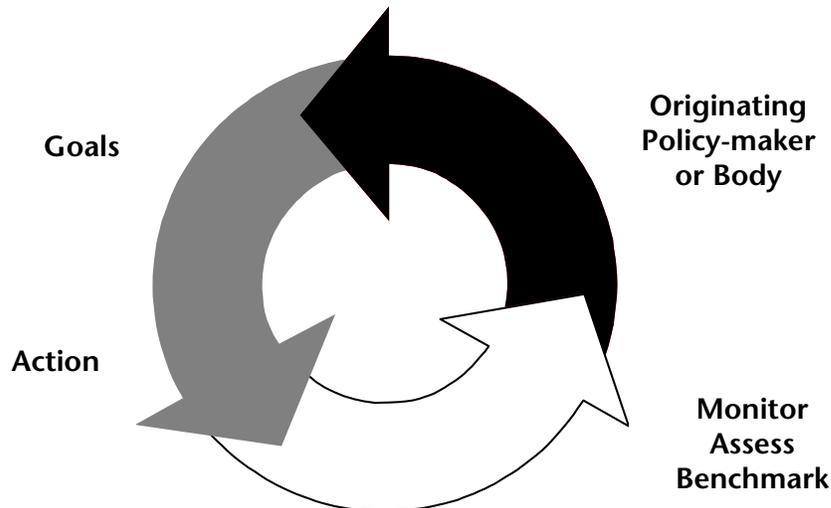
1) Teaching and Learning Outcomes Research

i) Continuous Improvement

NJIT's program of monitoring and improving institutional effectiveness and academic outcomes is the product of the longstanding and fundamental belief of its leadership in data-driven management and continuous improvement. Mechanisms to identify, collect, store, analyze, and use appropriate information and data have been built into the university culture and are treated as essential for decision-making and the review of program effectiveness.

In addition to forming the basis for solid initial decisions, data, information development and assessment are essential to the process of continuous improvement. By assessing the effectiveness of action against a benchmark of intended goals, policy should be continuously reviewed and improved as illustrated in figure 13.

Figure 13: Assessment Process



2) Outcomes Assessment Program Components

i) NJSOA Portfolio Evaluation

New Jersey School of Architecture (NJSOA) at NJIT is the first school in the United States to store all student design work electronically on a custom designed, web based information retrieval system known as the Kepler Project- A Transparent Coursework Review System. The name Kepler pays respect to Johannes Kepler (1571-1630), a German mathematician and astronomer who, among other achievements, discovered that planets travel about the sun in elliptical orbits. The Kepler system at NJSOA acknowledges that students have an elliptical relationship to their research, their influences, and to the work that they produce. By accepting this view, the Kepler system may help advance the field of architecture and architecture education by correcting foundational assumptions about the way that students observe, learn, and create. The Kepler system was beta tested in 2006 and fully implemented in the Spring 2007 semester.

This system provides students, faculty and administration access to all work produced in all NJSOA courses during the semester. The Kepler Project enables:

- Students to create easily a portfolio of some or all of their work
- Faculty to monitor better student achievements and to assess better their teaching outcomes
- The NJSOA administration access to the best work to highlight student achievements, do longitudinal studies, carry out outcome assessments, etc.

The new Kepler system is a communication tool and a record of student work. It has three components:

(a) ***Kepler Online***

This is a digital archive to be maintained by all students for all studio, non-studio and elective course work during their careers at NJSOA. Work must be uploaded during and at the conclusion of each semester. These low-resolution thumbnail images allow us to archive the massive amount of student work produced each year.

Documentation is organized to reflect graphically student projects' final presentation. Studio projects are a process of "learning by doing," and it is important to keep in sight both process and change as well as the final presentation.

Consistent with the emphasis in the students' current studio, documentation can include process documents (sketches, study models, etc.) edited to include those that most clearly explain the evolution of the design project as explained in the final presentation. To distinguish process documents from final presentation, labeling information is entered in the pull-down metadata section built into each Kepler file.

Kepler online can be accessed on campus within the NJIT website by typing "kepler" in the address line; off campus, it is accessed by typing <https://kepler.njit.edu>.

At the end of each semester, all courses are frozen, taken off line and digitally stored in order to make room for the next semester's work. With the exception of the projects displayed as "Featured Work" all student work is unavailable to the general NJSOA community except by express permission of the student and the administration.

(b) ***Kepler DVD***

In addition to Kepler Online, a data DVD with digital documentation is submitted at the end of each semester with all course work for the NJSOA archive. These disks will be stored in the NJSOA library. Access will be restricted to the student, the office of the Dean, and the undergraduate and graduate program directors. No other parties will have access without the student's express permission. This disk contains copies of the .JPG files students upload to Kepler Online, as well as other images documenting course work.

(c) ***Kepler u:drive***

This third, non-mandatory part of the Kepler Archive system is an opportunity offered by the school for students to organize and present their work in their own way. Kepler u: drive is a separate file system that provides each student with 1 GB of storage capacity on Kepler. It is intended to host a more synthesized and higher resolution presentation of a student's personal portfolio. This is a student's personal space and offers an opportunity to control the presentation of his or her design work in terms of context, sequence, and software applications including HTML or Flash. Kepler u: drive is the public interface for each student's portfolio and the mechanism for sharing their work with other students, faculty, friends and potential employers.

ii) **CSLA Portfolio Evaluation**

The use of portfolios can greatly enhance and capture the education experience of students, and serve as a tool for their entry into the workplace. Student portfolios can also provide a greater understanding and more in-depth lens for assessing academic program goals and educational outcomes.

Writing is an essential component of engineering education, and yet it is difficult to assess. At most universities, writing assessment centers on the evaluation of individual student ability for placement or gate keeping. The Department of Humanities in the College of Science and Liberal Arts has elected to focus on using assessment to evaluate the impact of our humanities curriculum on our students, and on discovering ways to improve that curriculum by the 'best paper' and 'portfolio' techniques.

Each semester, students submit best papers at the end of their courses in freshman writing, cultural history, technical writing, and the capstone seminars. Instructors inform their students that their papers will be evaluated by the stated criteria (e.g., thesis, organization, grammar, etc.) and, with their students, select the best papers for review. Instructors then meet at the end of each semester to review the papers.

Used within a series of courses offered from the freshmen to the senior year, portfolios are used to gain information about student performance in courses such as first-year writing, cultural history, technical writing, and senior seminars. The following criteria are used to assess portfolios: the ability of students to think critically; the ability of students to demonstrate a global perspective in their analytic writing; a demonstration of drafting as part of our writing-as-process departmental pedagogy; the ability to cite texts as demonstration of their documentation skills and as evidence of their ability to use multiple texts to support their analytic writing; the ability of students to make oral presentations (evidence of which would be found in slides or handouts within the portfolios); the ability of students to work collaboratively (evidence of which would be found in drafts or in multiple-authored documents); and an overall portfolio score, a holistically-derived evaluation. In relational terms, we believe that the ability to demonstrate critical thinking, to exhibit global perspective, to use writing-as-process, to cite sources, to deliver oral presentations, and to work collaboratively are associated with the ability to write in an academic setting. The lower the level, the more work would be needed to

strengthen the curriculum; the higher the level, the more the department could be confident that the curriculum meets the curricular goals embedded in the portfolio assessment instrument.

iii) **NCE Multiple Assessment Strategies**

(a) **Basic Engineering Skills Test (BEST Exam)**

The BEST exam is offered twice a year, once in the fall and again in the spring. It consists of 60 questions that must be answered in a 120 minute period. In its current form, the topics coincide closely with topics covered on the morning portion of the national Fundamentals of Engineering (FE) exam. In fact, in spring, the test is scheduled 10 days before the national exam in order to serve the dual purpose of providing practice for students who will sit for the national exam.

The original format of BEST was a paper test, but since 2003, NCE has implemented an online format in cooperation with a professional testing vendor. Questions are selected randomly from a bank of 1400 FE-type questions. The new on-line format greatly simplifies analysis, and it also provides students with immediate feedback about their performance upon test completion. It is generally observed that students do not study for the BEST per se, so it is believed that the test provides a useful assessment of their engineering science skills. In fall 2006 departments were given the option to amend the standard FE proportion of test questions in order to assess better student performance in specific topic areas.

Each semester the BEST results are summarized by the College and distributed to the departments for their use. Departments review the data to identify potential weaknesses and make adjustments in their course delivery. The exam is also used to assess the effectiveness of the implemented changes and to redirect as needed.

(b) **External Capstone Evaluation**

Departments throughout NCE are encouraged to adopt an external assessment program. Two departments implemented these programs prior to the 2007 ABET accreditation review, and others intend to follow within the near future.

As currently designed, these evaluations are conducted by external examiners, usually practicing engineers who are members of the NCE Board of Visitors. The external evaluators are provided with sets of rubrics reflecting the stated teaching goals of the program. Student projects produced in Senior Capstone courses are then individually evaluated by these external reviewers against the provided rubrics. This evaluation provides feedback to the students about the quality of their work when viewed by practicing engineers, and it offers a useful review of results for the individual program. Using the evaluations, students learn their strengths and weaknesses; in many cases they gain confidence about the quality of their preparation. Faculty members in each program are also able to adjust curricula and teaching techniques in the ways required to provide students with the skills necessary for currently practicing engineers.

iv) **Course evaluation**

(a) **Background**

Since 1999, Newark College of Engineering, the College of Science and Liberal Arts, New Jersey School of Architecture, School of Management and College of Computing Sciences have been using uniform, university-wide course evaluation forms for both face-to-face and distance-learning courses. The distance-learning form is offered online while the face-to-face form is a paper one and administered in class. The forms include universal items relative to the evaluation of instruction, the course, and course facilities and equipment, and incorporate a uniform rating scale for the entire university. Completed forms, once processed, are returned to faculty for review and to allow them to read open-ended responses, which are not to be electronically collected or reported. Reports of results are provided to each faculty member (for his or her own courses), department chairs, deans of the colleges, the provost and the president. The form was drafted and piloted by the Office of Institutional Research and Planning (IRP), in consultation with the Faculty Council.

All classes for both the fall and spring semester, in all of the university's schools, are included in the evaluation process. The forms are produced and processed centrally by the IRP office, including analysis and reporting of results. Development encompasses both the traditional classroom setting and distance learning. NJIT currently runs over 1,400 classes in the fall, and approximately 1,300 in the spring. The process is entirely electronic, handled by the OMR (optical mark reader) forms and using scanning technology to create electronic files for analysis and reporting. Crystal Report software is used to make reports clear and attractive to a broad and large constituency, including faculty, department chairs, deans, the provost and the president. In the future, IRP hopes that the face-to-face courses will also be completed via a web-based form. This would increase accuracy, simplify the process, streamline the procedure and make reporting the data more timely.

To make sure the forms' questions are related to the assessment purposes, analysis was performed of item validity and reliability, and then research was conducted to study the links between results for instruction, other aspects of the course, and student characteristics and demographics. These led to slight item refinements and affected some of the formatting and items reported in results. The classroom course evaluation system has now been fully implemented for the past six years. In Fall 2005 the form was redesigned with Magenta software that allowed shading, which makes the form easier and faster to complete as well as more accurate in capturing data.

For the distance-learning courses, the on-line instrument is being used for the last five years. Distance Learning faculty participated in refining items to apply to distance learning courses.

The Office of Institutional Research and Planning aggregates the information on the forms and prepares and distributes reports to the Provost and Deans.

The university-wide course evaluation process is driven by four main objectives: 1) achievement of consistency and reliability in the process, (2) maintaining strict confidentiality of faculty and students, (3) achieving maximum participation, and (4) a reporting process maximizing applicability of results.

In 2005/2006 academic year, IRP started distributing all reports in an electronic format via a secure server and introduced a new model for data analysis – each instructor is presented with histograms of overall teaching ability in addition to the summary score sheets.

(b) Applications

The chief use for course evaluations has been for faculty development. Results are reviewed by faculty, chairs and deans, and these individuals can identify the need for development and guidance for particular individuals. The colleges have instituted faculty development workshops, and established mentoring programs which pair master teachers with junior faculty. Media services in conjunction with Extended Learning Delivery and the colleges offer workshops in Distance Learning course development to educate and assist faculty about the technology to develop and optimize distance learning course instruction.

An individual faculty member also has the opportunity to review the original form, which includes student writing on open-ended questions. Student written comments have been very useful in illustrating possible problems that can be addressed, as well as instructor's strengths that can be applauded and emulated by others.

In addition, the university has come to rely on course evaluations as a meaningful component of the promotion and tenure process, as well as in course assignments, placement, and reappointment of adjunct faculty. The IRP office has also increasingly been asked to provide results for faculty being considered for special awards and recognition.

A university-wide system has allowed each college to benchmark its courses against other technical courses, programs and the university overall.

v) Program Review

The program review process is initiated by the provost, who chairs the Review Committee for Department and Program Assessment (RCDPA). The self-study groups are formed for designated programs. The dean of the school or college and the program self-study group chair are members on an ex-officio basis. The chair of the self-study group is selected by the dean of the school or college in which the program resides. The dean and the self-study group chair select internal self-study group members. The NJIT's Office of Institutional Research and Planning provides technical assistance, the necessary data to the program self-study groups and works with them on the reports.

The items included in the program review are as follows:

- Program goals and learning outcomes,
- Assessment for program improvement,

- Faculty diversity, appropriately credentialed and trained faculty, and sufficient faculty in number,
- Facilities adequately equipped and sufficient in size,
- Adequate program resources to support students.

vi) **Surveys**

The Office of Institutional Research and Planning conducts surveys and analyzes the data. The majority of the surveys, except for the Enrolling, Employer, and the Athletic exit interview/program evaluation surveys, are now web-based. IRP has an established annual survey schedule.

(a) **Enrolling Students Survey**

The Enrolling Student survey for the incoming freshman class for Fall 2006 was revised for deployment via the web. The survey instrument consisted of 40 questions concerning students' goals, enrollment decision, comparisons to other colleges, and commitment to finishing their degree.

The survey of enrolling students is conducted to meet five objectives:

- To describe the goals and desired outcomes of the fall class of first-time, full-time freshmen,
- To identify recruitment strategies effective with the current enrolling freshman class,
- To identify issues that relate to the continuing development of recruitment strategies for the admissions office,
- To increase understanding of the possible risk factors associated with success in persistence and graduation for the entering freshman class and to create a baseline for research on retention,
- To identify and summarize changes in the enrolling freshman class longitudinally.

A parallel Enrolling Student survey for graduate students was also created to gather a profile of incoming graduate students and information on their decision to enroll in NJIT.

(b) **Student Satisfaction Survey**

In the Spring of 2004, the Student Satisfaction survey was changed from a paper and pencil survey to a web-based survey, which allows all matriculated undergraduate and graduate students to participate. This survey provides key metrics for the strategic plan and for the internal evaluation of services.

(c) **Graduating Student Survey**

As of Fall 2003, the graduating student survey was changed from a mail survey to a web-based one. One benefit is that the response rate increased dramatically from under 20% to the high seventies. The instrument includes items relating to achievement of goals, self-assessment of acquired skills and knowledge, evaluating academic programs and student services. Graduates are also asked to describe current employment and educational plans and expectations as well as demographic information about themselves. The information from the survey is

reported to the schools and departments for continuous improvement of programs.

(d) Alumni Survey

In Fall of 2005, the Alumni Survey was changed from a mail survey to an annual web-based one. During the end of the fall semester, alumni who graduated 1, 2 and 3 years ago are emailed an invitation to participate in the online survey. They are asked to reflect and comment on:

- Relative strengths and weakness in their own academic achievements at NJIT,
- Preparation for careers and further education received at NJIT,
- Relative strengths and weaknesses of aspects of their academic programs and student services,
- General recommendations about NJIT to others,
- Employment status,
- Continuing learning experiences,
- Ongoing contact with NJIT, including knowledge of alumni activities.

There are plans to incorporate the annual Alumni survey into the new alumni website, which is under further development at this time, and expand the survey to include more questions about business sector hiring and geographic location of employment.

(e) Survey of Employers of NJIT Graduates

A mail survey of employers of NJIT graduates is conducted to capture employee opinions about: (1) the overall robustness of the regional business environment and (2) business and industry employee recruitment practices. These areas of information were developed to continue to improve advisement for NJIT students and graduates.

(f) Student Feedback System

At NJIT, each department conducts a “feedback session” every fall and spring semester to hear from students about their concerns. Students’ concerns are then relayed to relevant departments for follow up. The dean and the department chair meet to review the follow up during the following semester.

vii) Special Studies on Student Teaching and Learning Outcomes

(a) Distance Learning Platforms

This study compares software platforms (WebCT vs. Webboard /other types of e-communications), TLT (Teaching, Learning, Technology) training and teaching technology formats (multimedia only vs. text based only vs. mixed format of multi-media and text) to assess their impact on learning outcomes (student performance and satisfaction with the course and the instructor). The data provide evidence that students show better learning outcomes with the DL courses when instructors who consistently used WebCT had participated in TLT training and employed mixed formats).

(b) **Fundamentals of Engineering Design (FED)**

A study was conducted among faculty teaching the first year course in Fundamentals of Engineering Design to determine the effects of a new approach to teaching design fundamentals. The approach featured interdisciplinary applications, problem-solving based learning, and team teaching. Results showed positive gains for students using this approach, and the research has assisted in applying the methodology further to instructional strategies generally.

(c) **Barrier courses**

A study was conducted examining passing rates for students in entry level, discipline-specific courses as well as for general university requirement courses. This study analyzed the extent to which required courses represent “barriers” to student progress and completion of academic programs at NJIT. Analysis showed that for discipline-specific courses, the appropriate solution was faculty development and that for general university courses, content, sequence and instructional strategies needed general review, and these reviews are underway.

(d) **Evaluation of Distance Learning and Face-to-Face Courses in Electrical Engineering**

This study compared student performance in the next-level course for students completing each type of instructional experience.

(e) **Placement Examinations**

A full review of the placement examinations is currently being conducted by external consultants.

(f) **Fundamentals of Engineering Examination Preparation**

This research includes the development of a program and testing to prepare engineering students to succeed in passing the FE professional examination. This involves working with engineering faculty on a comparable, reliable, valid preparation course test.

(g) **Mechanics 234/235**

This study compared two cohorts of NCE students who took Mech 234/235 using different teaching strategies. The revised strategy improved student retention, performance, and subsequent course performance.

(h) **Introductory Physics Courses**

The longitudinal study of the outcomes of general university requirement (GUR) physics showed that some students were not performing well after the introductory course. This led to a revised placement strategy with less well prepared students taking a two semester sequence rather than the previous one semester course for all students.

viii) **Support for Faculty-Driven Outcomes Assessment Research**

Faculty-driven research on learning outcomes is widespread at NJIT, and many researchers have done landmark research and have published on learning outcomes.

This includes work by Roxanne Hiltz and Murray Turoff (distance learning), John Carpinelli (electrical engineering), Angelo Perna and Deran Hanesian (chemical engineering), Beau Farmer (physics), Geraldine Milano and Eugene Golub (statics and dynamics), Ronald Rockland (circuits analysis), Norbert Elliot (writing), Robert Lynch (writing), Nancy Coppola (humanities and social science), and others. The Director of Outcomes Assessment provides technical support and institutional data when this is helpful or useful for individual faculty study of outcomes, or for institutional projects, such as the Gateway Coalition (a national project studying engineering instruction reform).

Numerous assessment strategies are routine across the university within programs. Most programs, for instance, have a capstone course in place. In addition, formal practices to identify teaching objectives and methods of assessing student learning are also widespread within programs and disciplines, and the Office of Institutional Research and Planning routinely provides assistance to faculty in faculty-driven assessment projects. Core competencies, such as writing, math, and computer literacy, are regularly assessed within the framework of assessment of student performance. Specific measures and procedures are discussed and are available in accreditation and program review reports and at the department and program level.

ix) **National Benchmarking Studies**

In the spirit of continuous improvement, NJIT has made a concerted effort to benchmark our institution using national student surveys, in particular the National Survey of Student Engagement (NSSE) and the Educause Center for Applied Research (ECAR) study of Undergraduate Students and Information Technology. NJIT participates in NSSE in a rolling 2 year cycle. Since 2000, NSSE collects data from freshmen and seniors at four-year colleges and universities to identify best practices that are empirically linked to student learning, personal development, student satisfaction, persistence and graduation. NJIT participated in NSSE in Spring 2004 and Spring 2006. ECAR surveys freshmen and seniors at approximately 100 higher education institutions across the United States in order to assess students' technical skills, students' abilities to use technology for problems solving and students' technological preparedness for graduate school or the workplace.

x) **Enhancing Information Literacy Partnership with ETS**

Poor student information literacy does not result from a lack of hard copies of books or journals but rather the students' inability to locate, analyze, synthesize and interpret learning materials. The library is working aggressively to identify strategies for improvement. Recent calls for strengthening information literacy provided the occasion for a collaborative effort undertaken by colleagues from New Jersey Institute of Technology's Robert W. Van Houten Library, the Department of Humanities, and the Office of Institutional Research and Planning. NJIT has worked closely with Educational Testing Service (ETS) to develop, assess, and implement an information literacy exam.

As a result of long term collaboration, NJIT was invited by ETS to participate in a research project in which we administered the new ETS Information, Communication, and Technology Literacy Assessment (ICT) to the same students in our writing portfolio sampling plan as well as others (approximately 200 freshmen

and 200 non-freshmen undergraduates). This study demonstrated convergence between the results of portfolio assessment and the ETS exam.

As a result of this collaboration, NJIT representatives are serving on various ETS committees concerned with improving the new the Core and Advanced tests. The goal is the development of a reliable and valid tool for national standards and benchmarking.

This project continues to develop at NJIT. During the 2006-2007 academic year pilot surveys were implemented in the College of Computing Sciences and to a lesser extent in NCE. Pending an assessment of these results, NJIT intends to expand the program to reach students across all disciplines within the next five years.

xi) Other Outcomes Research

In addition to the categories of assessment research already cited, it is worth noting that numerous additional studies have been conducted by individuals with program oversight, and these have contributed to academic and management decision-making. As an example, an annual residential life survey is conducted among residential students, using a nationally based survey, comparing results against national norms for student assessment of residential life.

In summary, the process of setting goals, monitoring outcomes, and acting on results of assessment are built into the fabric of academic life at NJIT. Assessment is widely used for strategic planning and academic decision-making. Reports have been issued on all aspects of the program described and reports are routinely stored in the Office of Institutional Research and Planning for use by members of the university community.

CONCLUSION

Since the 2002 Middle States Evaluation, NJIT has undergone substantial changes. These have launched the university on the long road toward national prominence. At the same time, real challenges lurk along the way. The steady decline in state funding has challenged the university to find new sources of revenue and greater efficiency. The brief decline in enrollment experienced in 2004 and 2005 also forced the university to develop new markets to increase the applicant pool, and it required the administration to confront concerns about retention and graduation.

Consistent with the NJIT tradition of data-driven management, these challenges have been met by innovation with knowledge and reform through assessment. The strategic plan developed in 2004 offers a clear set of metrics and benchmarks to evaluate progress toward measurable objectives. At times these objectives may look more remote as the university falls short of its self-imposed targets. Such shortcomings are viewed as new demands for innovation as we strive to live up to our own goals.

The university also seeks to improve continuously the educational curriculum and the provision of student services. This begins with innovation and moves forward through the evaluation of programs followed by informed redesign. As expected, not all programs are continued but through assessment the university can make constant improvements toward meeting the needs of students and achieving the desired learning outcomes.

"The edge in knowledge" is the university tag line, which refers not only to the content of the educational curriculum but also to the quality of research, the dissemination of knowledge, the vigor of economic innovation, and the character of university administration. NJIT attracts high quality, technologically savvy students who do not accept outdated methods or programs designed for an older generation. NJIT is dedicated to innovation. Continuously responding to student needs is a requirement, not an option. Today's students demand it; they are at the leading edge of the future.