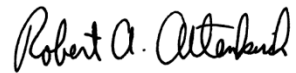

Institutional Profile Report *2011*

Prepared by the Office of Institutional Research and Planning
New Jersey Institute of Technology

September 2011

Statement of Accuracy and Completeness

The information contained in this report is, to the best of my knowledge, complete and accurate.

A handwritten signature in black ink that reads "Robert A. Altenkirch". The signature is written in a cursive style with a large initial 'R' and 'A'.

Robert A. Altenkirch

President

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A. Introduction

NJIT enrolled 8,934 students in Fall 2010. NJIT also awarded 1,962 degrees including baccalaureate through doctorate in the 2009-2010 fiscal year in an array of engineering and technology disciplines, computer and information science, architecture, management, applied sciences, mathematics and biotechnology. The university offers Ph.D. programs in nineteen professional areas, master's programs in fifty six specialties, and fifty six baccalaureate degree programs; conducts research with important commercial and public policy applications; and performs a broad spectrum of economic development and public service activities. NJIT has one of the most computing-intensive campuses in America. NJIT also contributes significantly to New Jersey's economy and economic development. NJIT's students have provided 150,000 hours of community service over the past five years, and the university serves more than 5,000 elementary and secondary school students and teachers annually through an array of pre-college programs.

NJIT was founded in 1881 as the Newark Technical School. Today, the university has six schools and colleges: Newark College of Engineering (1919), the College of Architecture and Design (1973), the College of Science and Liberal Arts (1982), the School of Management (1988), the Albert Dorman Honors College (1993), and the College of Computing Sciences (2001). From the beginning, NJIT has provided government, industry, and the larger community with a technologically educated workforce. Today's emphasis on graduate studies and research builds upon the fine undergraduate programs that have distinguished the institution since its earliest days. Currently, about one-third of NJIT's students are enrolled in master's and doctoral programs.

NJIT's evolution as a significant research university has been achieved through an aggressive faculty recruitment plan matched by an extensive building effort that doubled the size of the main campus over the past decade and added major research facilities for environmental engineering and science, advanced manufacturing, and microelectronics. Annual research expenditures are now more than \$92 million. The strong applications orientation of the university's research program has allowed NJIT to respond to state, federal, and industrial initiatives, to help address pressing public policy issues, and stimulate economic growth. Research activities, often carried out by interdisciplinary teams of investigators, are focused especially on manufacturing systems, infrastructure, information technologies, environmental engineering and science, architecture and building science, and management. Major funding for instructional and research programs is obtained from leading corporations, foundations and government agencies including the National Science Foundation, the United States Department of Defense, the U.S. Environmental Protection Agency, the U.S. Department of Transportation and many others.

NJIT's 45 acre, computing-intensive, residential campus is located in the University Heights section of Newark, less than 10 miles from New York City and Newark International Airport. It is easily reached by interstate highways and public transportation. Graduate, undergraduate, and continuing education classes are offered at the main campus, at extension

sites at colleges and other locations throughout New Jersey and increasingly through a variety of electronically mediated distance learning formats.

B. NJIT Mission Statement

NJIT is New Jersey's science and technology university, committed to the *pursuit of excellence*

- in *service* to both its urban environment and the broader society of the region, state, and nation by conducting public policy studies, making educational opportunities widely available, and initiating community-building projects.
- in undergraduate, graduate, and continuing professional *education*, preparing students for productive careers and amplifying their potential for lifelong personal and
- in the conduct of *research* with emphasis on applied, interdisciplinary efforts encompassing architecture, design, the sciences, including the health and life 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

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.

As defined in The Statewide Plan for Higher Education (1981), the programmatic mission of NJIT is:

... to provide undergraduate and graduate education in architecture, engineering, engineering technology, applied sciences, management, and related professional fields, and doctoral education specifically, in engineering, the sciences, mathematics, management and related areas. The programs in architecture should be offered solely by NJIT in the public sector. In addition, the university should offer the opportunity for practitioners in the industrial community to pursue part-time evening degree programs from the baccalaureate through the master's to the doctoral degree. It should also play a leadership role in continuing professional education, providing courses ranging from state-of-the-art offerings in new fields to more formal certification programs for state or municipal licensure. NJIT's research programs, as well as its public service activities, should be primarily, but not exclusively, applications oriented.

C. Undergraduate Recruitment and Admissions Policies

As a public institution, NJIT strives to achieve three complementary and mutually reinforcing goals through its undergraduate recruitment and admissions policies:

- To attract highly talented students who are fully prepared for the university's rigorous curricular demands and can satisfy the highest academic standards;
- To enroll students from population groups that are under-represented in the professions, while providing the extra academic support they may need; and
- To recruit and admit students who will successfully complete one of NJIT's curricula in numbers large enough to make a substantial contribution toward meeting state and national demands for technological and managerial professionals.

These three goals are complementary and mutually reinforcing. They clearly reflect the responsibilities of a public institution with a public mission. And they are consistent with NJIT's long-range vision of joining the ranks of the nation's leading technological research universities.

There are four avenues to undergraduate admission:

- Admission to the Albert Dorman Honors College
- Regular admission
- Admission to the Educational Opportunity Program (EOP)
- Admission as a transfer student from another college or university

NJIT uses multiple methods to determine an applicant's admissibility. No single measure is sufficient to predict success. Therefore, all of the following are considered: high school transcripts and rank-in-class data; college or university transcripts where applicable; recommendations; SAT scores; interviews of candidates seeking admission to the Honors College or admission through the Educational Opportunity Program; and portfolios for candidates seeking admission to the College of Architecture and Design.

The *Albert Dorman Honors College* program is designed to attract exceedingly able and highly motivated students to NJIT, to provide a rich and challenging educational experience, and to prepare them for positions of leadership. Some NJIT courses are open only to honors students, but most include both honors and non-honors students; by participating in classes and laboratories with others, the honors students raise the level of discourse in all of NJIT's curricula. The SAT profile of the honors students (required minimum composite score of 1250) falls within the range that many people believe is not served by New Jersey's institutions. Enrollment in the *Albert Dorman Honors College* increased from 209 scholars in Fall 1993 to 662 in Fall 2010. The university's plans call for further significant expansion of the Honors College.

NJIT also has outstanding *Educational Opportunity Program* (EOP) with an enrollment of 625 undergraduates in Fall 2010. It is a program of extraordinary importance to the state and nation because the people it typically serves are under-represented in the fields which NJIT prepares students to enter, and successful completion of an NJIT degree program generally leads to a productive career. The success of EOP graduates over a quarter century is further proof that multiple criteria should be used in determining who can benefit from the higher education experience. It should also be noted that the state, through its Educational Opportunity Fund, has by regulation required institutions to admit educationally and economically disadvantaged students in numbers equal to at least ten percent of the New Jersey high school graduates in each entering class. Because of NJIT's specialized mission and sense of commitment, NJIT has historically exceeded this percentage. NJIT firmly believes holding open this door to opportunity is one of the strengths of our state system of higher education.

NJIT is proud of the results achieved with its undergraduate recruitment and admissions policies. *Diversity* is a hallmark of the campus community. As the state's public technological research university, NJIT admits individuals who want to study in the fields it offers, regardless of personal background or family finances. NJIT selects those who indicate a strong desire to succeed. For those who do succeed, the experience is life transforming. We believe this is what a public university should be about in a democratic society.

D. Vision Statement

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

Core Values

Our core values reflect our beliefs, guide our behavior, shape our culture, and in so doing establish a sense of community and common purpose.

Service Oriented

We pride ourselves in being an engaged partner in enhancing in the communities in which we live.

Excellence

We pursue excellence in all that we do and will be satisfied with nothing less than meeting and sustaining the highest standards of performance.

Integrity

We are honest and ethical in all we do, keep our promises, and acknowledge our mistakes.

Student Centered

We care for our students as individuals and make every effort to build enduring relationships by responding to their needs.

Civility

We treat each other with respect and with dignity and communicate frequently and with candor.

Diversity

We celebrate the diversity of our university community and are sensitive to cultural and personal differences. We do not tolerate discrimination of any form.

Value Proposition

NJIT provides accessible, affordable education for the technological professions to a diverse student body, delivers practical research results to its sponsors, and is an active participant in the life of the community in which it lives.

Goals

NJIT's goals are to 1) enhance our educational programs, 2) enhance and focus our research efforts, 3) strengthen our sense of community, 4) enhance our financial position, 5) impact the economy, and 6) evoke an image of innovation, entrepreneurship, and engagement.

Strategic Priorities and Objectives

➤ ***Enhance the quality of academic and campus life for the university community.***

- Review, revise, and further implement elements of the Landscape Master Plan
- Improve the interior condition of buildings with an emphasis on Tiernan and Faculty Halls including laboratories, classrooms, and technology upgrades
- Reengineer administrative processes to improve customer and student satisfaction
- Inculcate in the university community a desire to adhere to Core Values
- Refine outcomes assessment efforts in student learning to achieve continuous curricular improvement
- Implement a performing arts component of campus life
- Complete the initial block of Greek organization housing (Phase I) in a Greek Village and provide replacement parking
- Implement the NJIT Campus Gateway Plan according to the Redevelopment

➤ ***Sustain a base of private support.***

- Develop and implement a communications and messaging plan focusing on selected key messages
- Increase alumni participation in the Annual Fund to the benchmark for public peer institutions over the next five years
- Successfully meet the proposed timeline to launch the quiet phase of the planned
- Increase unrestricted annual gift revenue to \$1,500,000 per year over the next five years

➤ ***Be nationally recognized for thematic core areas of integrated research and learning in: Sustainable Systems; Life & Healthcare Science and Engineering; Digital "Everyware". For each core area:***

- Demonstrate increase in scholarly activities relating to thematic areas as measured by: (a) increased sponsored research (in thematic areas) by 10% compounded per annum (60%) net; (b) increased publication and conference presentation count (in thematic areas) by 60%; (c) increased active Ph.D. dissertation projects (in thematic areas) by 60%
- Demonstrate penetration of thematic area subject matter into 60% of courses offered at NJIT
- Demonstrate expanded relations with relevant professions as measured by: (a) at least 2 major public events per year associated with each thematic area; (b) 60% increase in the headcount of non-student, non-employee visits to campus; (c) 60% increase in the number of NJIT-hosted professional society events on campus; (d) 60% increase in faculty reported consulting agreements (unique company relations)
- Implement at least one campus-wide integrative, demonstration environment in each of the thematic areas (6)

➤ ***Be nationally recognized for attracting high achieving students and faculty from diverse populations.***

- Achieve an overall enrollment of 11,000 with an increasing percentage of graduate enrollment
- Achieve an enrollment mix for undergraduates that is:
 - as reflective as possible of the demographics of New Jersey
 - at least 25% women
- Develop a market-driven inventory of a minimum of:
 - 12 online MS degree programs
 - 6 one-year MS degree programs
 - 20 graduate certificate programs.
- Increase the middle 50th percentile (25th-75th) for enrolled FTFTF from 480 (25th)-580 (75th) for Critical Reading to 500-600 and for Mathematics from 550-650 to 570-670
- Benchmark current GRE and GMAT levels and establish admission criteria targets
- Actively recruit women and minority faculty and university lecturer candidates in an effort to achieve a hiring rate of at least 25% women and minorities for the most qualified candidates

- Maintain a minimum in the entering freshman class of:
 - 15% Dorman Honors Scholars
 - 15% Education Opportunity Program
- Achieve an FTFTF retention rate of 86% and a graduation rate of 60%

II. Data by Category

II.A. Accreditation Status

II.A.1. Institutional Accreditation

- The Middle States Association of Colleges and Schools (2002)
 - Additional Middle States accredited site in Beijing, China

II.A.2. Professional Accreditation

- American Assembly of the Collegiate Schools of Business (AACSB)
- Computer Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC/ABET)
- Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET)
- National Architecture Accrediting Board (NAAB)

II.B. Number of Students Served

II.B.1. Number of Undergraduate Students by Attendance Status

| Table II.B.1: Undergraduate Enrollment by Attendance Status, Fall 2010 | | | | |
|---|------------|------------------|------------|--------------|
| <u>Full-time</u> | | <u>Part-time</u> | | <u>Total</u> |
| <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | |
| 4,979 | 81.6% | 1,124 | 18.4% | 6,103 |
| Source: IPEDS Fall Enrollment Survey | | | | |

II.B.2. Number of Graduate Students by Attendance Status

| Table II.B.2: Graduate Enrollment by Attendance Status, Fall 2010 | | | | |
|--|------------|------------------|------------|--------------|
| <u>Full-time</u> | | <u>Part-time</u> | | <u>Total</u> |
| <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | |
| 1,628 | 57.5% | 1,203 | 42.5% | 2,831 |
| Source: IPEDS Fall Enrollment Survey | | | | |

II.B.3. Number of Non-Credit Students Served

NJIT served 950 non-credit students in fiscal year 2010.

II.B.4. Unduplicated Number of Students for Entire Academic Year

| | <u>Headcount Enrollment</u> | <u>Credit Hours</u> | <u>FTE</u> |
|---------------|--|----------------------------|-------------------|
| Undergraduate | 6,643 | 166,122 | 5,537 |
| Graduate | 3,552 | 44,196 | 1,842 |
| TOTAL | 10,195 | 210,318 | 7,379 |

Source: IPEDS 12-Month Enrollment Survey

II.C. Characteristics of Undergraduate Students

II.C.1. Mean Math, reading and writing SAT Scores

| | Full-Time Students | | | | | | Part-Time Students | | | | | |
|----------------|--------------------|----------|----------------|----------|----------------|----------|--------------------|----------|----------------|----------|----------------|----------|
| | <u>Math</u> | <u>N</u> | <u>Reading</u> | <u>N</u> | <u>Writing</u> | <u>N</u> | <u>Math</u> | <u>N</u> | <u>Reading</u> | <u>N</u> | <u>Writing</u> | <u>N</u> |
| Regular Admits | 602.5 | 854 | 537.3 | 854 | 528.2 | 854 | 509.3 | 73 | 440.1 | 73 | 449.7 | 73 |
| EOF Admits | | | | | | | | | | | | |
| Special Admits | | | | | | | | | | | | |
| All Admits | 602.5 | 854 | 537.3 | 854 | 528.2 | 854 | 509.3 | 73 | 440.1 | 73 | 449.7 | 73 |
| Missing Scores | | 18 | | 18 | | 18 | | 3 | | 3 | | 3 |

Source: SURE Fall Enrollment file

II.C.2. Enrollment in Remediation Courses by Subject Area

NJIT

II.C.2 ENROLLMENT IN REMEDIATION COURSES

Total Number of Undergraduate Students Enrolled in Fall 2010

| <u>Total Undergraduate Enrollment</u> | <u>Number of Students Enrolled in One or More Remedial Courses</u> | <u>% of Total</u> |
|---------------------------------------|--|-------------------|
| 6,103 | 238 | 3.9% |

Total number of First-time, Full-time (FTFT) students enrolled in remediation in Fall 2010

| <u>Total Number of FTFT Students</u> | <u>Number of FTFT Students Enrolled in One or More Remedial Courses</u> | <u>Percent of FTFT Enrolled in One or More Remedial Course</u> |
|--------------------------------------|---|--|
| 875 | 0 | 0.0% |

First-time, Full-time students (FTFT) enrolled in remediation in Fall 2010 by subject area

| <u>Subject Area</u> | <u>Number of FTFT Enrolled In:</u> | <u>Percent of all FTFT Enrolled In:</u> |
|---------------------|------------------------------------|---|
| Computation | 0 | 0.0% |
| Algebra | 0 | 0.0% |
| Reading | 0 | 0.0% |
| Writing | 0 | 0.0% |
| English | 0 | 0.0% |

Source: SURE Fall Enrollment file

II.C.3 Race/ Ethnicity, Gender, and Age

Table II.C.3.a
Undergraduate Enrollment by Race/Ethnicity, Fall 2010

| | <u>White</u> | | <u>Black</u> | | <u>Hispanic</u> | | <u>Asian*</u> | | <u>American Ind.</u> | | <u>Alien</u> | | <u>Race Unknown*</u> | | <u>Total</u> | |
|-----------|--------------|------------|--------------|------------|-----------------|------------|---------------|------------|----------------------|------------|--------------|------------|----------------------|------------|--------------|------------|
| | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> |
| Full-time | 1,715 | 34.4% | 454 | 9.1% | 885 | 17.8% | 1,000 | 20.1% | 44 | 0.9% | 260 | 5.2% | 621 | 12.5% | 4,979 | 100.0% |
| Part-time | 302 | 26.9% | 137 | 12.2% | 219 | 19.5% | 175 | 15.6% | 7 | 0.6% | 40 | 3.6% | 244 | 21.7% | 1,124 | 100.0% |
| Total | 2,017 | 33.0% | 591 | 9.7% | 1,104 | 18.1% | 1,175 | 19.3% | 51 | 0.8% | 300 | 4.9% | 865 | 14.2% | 6,103 | 100.0% |

* Note: Asian includes Pacific Islanders and Unknown includes 2 or More Races.

Table II.C.3.b
Undergraduate Enrollment by Sex, Fall 2010

| | <u>Full-time</u> | | | | | <u>Part-time</u> | | | | | <u>Total</u> | | | | |
|--|------------------|------------|---------------|------------|--------------|------------------|------------|---------------|------------|--------------|--------------|------------|---------------|------------|--------------|
| | <u>Male</u> | <u>Pct</u> | <u>Female</u> | <u>Pct</u> | <u>Total</u> | <u>Male</u> | <u>Pct</u> | <u>Female</u> | <u>Pct</u> | <u>Total</u> | <u>Male</u> | <u>Pct</u> | <u>Female</u> | <u>Pct</u> | <u>Total</u> |
| | 3,890 | 78.1% | 1,089 | 21.9% | 4,979 | 857 | 76.2% | 267 | 23.8% | 1,124 | 4,747 | 77.8% | 1,356 | 22.2% | 6,103 |

Table II.C.3.c
Undergraduate Enrollment by Age, Fall 2010

| | | <u>LT 18</u> | <u>18-19</u> | <u>20-21</u> | <u>22-24</u> | <u>25-29</u> | <u>30-34</u> | <u>35-39</u> | <u>40-49</u> | <u>50-64</u> | <u>65+</u> | <u>Unknown</u> | <u>Total</u> |
|-----------|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|----------------|--------------|
| | | Full-time | Num | 22 | 1,523 | 1,598 | 1,272 | 386 | 98 | 35 | 30 | 15 | 0 |
| | Pct | 0.4% | 30.6% | 32.1% | 25.5% | 7.8% | 2.0% | 0.7% | 0.6% | 0.3% | 0.0% | 0.0% | 100% |
| Part-time | Num | 92 | 143 | 139 | 236 | 222 | 125 | 59 | 73 | 24 | 1 | 10 | 1,124 |
| | Pct | 8.2% | 12.7% | 12.4% | 21.0% | 19.8% | 11.1% | 5.2% | 6.5% | 2.1% | 0.1% | 0.9% | 100% |
| Total | Num | 114 | 1,666 | 1,737 | 1,508 | 608 | 223 | 94 | 103 | 39 | 1 | 10 | 6,103 |
| | Pct | 1.9% | 27.3% | 28.5% | 24.7% | 10.0% | 3.7% | 1.5% | 1.7% | 0.6% | 0.0% | 0.2% | 100% |

Source: IPEDS Fall Enrollment Survey

II.C.4. Numbers of Students Receiving Financial Assistance under Each Federal-, State-, & Institution-Funded Aid Program

**Table II.C.4:
Financial Aid from Federal, State & Institution-Funded Programs, AY 2009-10**

| | <u>Recipients</u> | <u>Dollars(\$)</u> | <u>\$/Recipient</u> |
|--------------------------------------|-------------------|--------------------|---------------------|
| <u>FEDERAL PROGRAMS</u> | | | |
| Pell Grants | 2,045 | 8,558,000 | 4,184.84 |
| College Work Study | 424 | 517,000 | 1,219.34 |
| Perkins Loans | 0 | 0 | - |
| SEOG | 472 | 272,000 | 576.27 |
| PLUS Loans | 125 | 1,416,000 | 11,328.00 |
| Stafford Loans (Subsidized) | 2,390 | 10,085,000 | 4,219.67 |
| Stafford Loans (Unsubsidized) | 2,293 | 8,458,000 | 3,688.62 |
| SMART & ACG or other | 324 | 644,000 | 1,987.65 |
| <u>STATE PROGRAMS</u> | | | |
| Tuition Aid Grants (TAG) | 1,695 | 12,059,000 | 7,114.45 |
| Educational Opportunity Fund (EOF) | 399 | 475,000 | 1,190.48 |
| Outstanding Scholars (OSRP) | 3 | 14,000 | 4,666.67 |
| Distinguished Scholars | 147 | 134,000 | 911.56 |
| Urban Scholars | 94 | 84,000 | 893.62 |
| NJ STARS | 36 | 97,000 | 2,694.44 |
| NJCLASS Loans | 304 | 3,630,000 | 11,940.79 |
| <u>INSTITUTIONAL PROGRAMS</u> | | | |
| Grants/Scholarships | 1,747 | 15,537,000 | 8,893.53 |
| Loans | 12 | 58,000 | 4,833.33 |

Source: NJIPEDS Form #41 Student Financial Aid Report

II.C.5. Percentage of Students who are New Jersey Residents

**Table II.C.5
Fall 2010 First-time Undergraduate Enrollment
by State Residence**

| <u>State Residents</u> | <u>Non-State Residents</u> | <u>Total</u> | <u>% State Residents</u> |
|------------------------|----------------------------|--------------|--------------------------|
| 883 | 68 | 951 | 92.8% |

Source: IPEDS Fall Enrollment Survey

II.D. Student Outcomes

II.D.1. Graduation Rates

II.D.1.a. Four-, Five- and Six-Year Graduation Rate by Race/Ethnicity

Table II.D.1.a
Four-, Five- and Six-Year Graduation Rates of Fall 2004 Full-time First-time Degree-Seeking Undergraduates by Race/Ethnicity

| | <u>White</u> | | <u>Black</u> | | <u>Hispanic</u> | | <u>Asian</u> | | <u>Alien</u> | | <u>Other *</u> | | <u>Total</u> | |
|-------------------------|--------------|------------|--------------|------------|-----------------|------------|--------------|------------|--------------|------------|----------------|------------|--------------|------------|
| | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> | <u>Num</u> | <u>Pct</u> |
| Fall 2004 Cohort | 268 | | 60 | | 88 | | 130 | | 27 | | 95 | | 668 | - |
| Graduates after 4 years | 43 | 16.0% | 7 | 11.7% | 6 | 6.8% | 26 | 20.0% | 10 | 37.0% | 16 | 16.8% | 108 | 16.2% |
| Graduates after 5 years | 123 | 45.9% | 17 | 28.3% | 24 | 27.3% | 65 | 50.0% | 17 | 63.0% | 46 | 48.4% | 292 | 43.7% |
| Graduates after 6 years | 150 | 56.0% | 22 | 36.7% | 37 | 42.0% | 81 | 62.3% | 20 | 74.1% | 54 | 56.8% | 364 | 54.5% |

* Other includes American Indian and Unknown Race.

Source: IPEDS Graduation Rate Survey

II.D.2. Third-Semester Retention Rates

II.D.2.a. By Attendance Status

Table II.D.2
Third Semester Retention of First-time Undergraduates, Fall 2009 to Fall 2010

| <u>Fall 2009</u> <u>First-Time</u> <u>Undergraduates</u> | <u>Full-Time</u> | | <u>Retention</u> <u>Rate</u> | <u>Part-Time</u> | | <u>Retention</u> <u>Rate</u> |
|--|--|-----|---------------------------------|--|----|---------------------------------|
| | <u>Retained</u> <u>in</u> <u>Fall 2010</u> | | | <u>Retained</u> <u>in</u> <u>Fall 2010</u> | | |
| | 926 | 746 | 80.6% | 68 | 56 | 82.4% |

SOURCE: IPEDS Fall Enrollment Survey, Part E

II.E. Faculty Characteristics

II.E.1 Full-Time Faculty by Race/Ethnicity, Sex, Tenure Status and Academic Rank, Fall 2010

Table II.E.1:

Full-Time Faculty by Race/Ethnicity, Sex, Tenure Status and Academic Rank, Fall 2010

| | <u>White</u> | | <u>Black</u> | | <u>Hispanic</u> | | <u>Asian*</u> | | <u>American Ind.</u> | | <u>Alien</u> | | <u>Race Unknown*</u> | | <u>Total</u> | |
|-----------------|--------------|-----|--------------|-----|-----------------|-----|---------------|-----|----------------------|-----|--------------|-----|----------------------|-----|--------------|-----|
| | Men | Wom | Men | Wom | Men | Wom | Men | Wom | Men | Wom | Men | Wom | Men | Wom | Men | Wom |
| Tenured | | | | | | | | | | | | | | | | |
| Professors | 31 | 25 | 3 | 8 | 3 | 5 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 42 |
| Associate Prof. | 28 | 21 | 6 | 7 | 4 | 3 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 36 |
| Assistant Prof. | 13 | 12 | 4 | 7 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 25 |
| All Others | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 72 | 58 | 13 | 22 | 7 | 12 | 9 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 101 | 103 |
| Without Tenure | | | | | | | | | | | | | | | | |
| Professors | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Associate Prof. | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 |
| Assistant Prof. | 10 | 15 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 17 |
| All Others | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 12 | 19 | 2 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 22 |
| Total | | | | | | | | | | | | | | | | |
| Professors | 32 | 25 | 3 | 9 | 3 | 5 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 43 |
| Associate Prof. | 29 | 25 | 6 | 7 | 4 | 3 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 40 |
| Assistant Prof. | 23 | 27 | 6 | 8 | 1 | 4 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 42 |
| All Others | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 84 | 77 | 15 | 24 | 8 | 12 | 10 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 117 | 125 |

Source: IPEDS Human Resources

Survey

* Note: Asian includes Pacific Islanders and Unknown includes 2 or More Races.

II.E.2. Percentage of Course Sections Taught by Full-Time Faculty

| II.E.2 Percentage of Course Sections Taught by Full-time Faculty | | | | | | |
|---|-----------------------------|---------|-----------------------------|---------|-------------------|---------|
| Fall 2010 | | | | | | |
| Total Number of Course Sections | Taught by Full-time Faculty | | Taught by Part-time Faculty | | Taught by Others* | |
| | Number | Percent | Number | Percent | Number | Percent |
| 864 | 583 | 67% | 281 | 33% | | |

Note: Others includes Full-time Administrators and Teaching Assistants

II.E.3. Ratio of full- to part-time faculty

| Table II.E.3: Ratio of Full- to Part-time Faculty, Fall 2010 | | | | | |
|---|-------------------|--|-------------------|--|-------------------|
| <u>Full-time</u> <u>Num</u> | <u>Pct</u> | <u>Part-time</u> <u>Num</u> | <u>Pct</u> | <u>Total</u> <u>Num</u> | <u>Pct</u> |
| 436 | 67.4% | 211 | 32.6% | 647 | 100.0% |

Source: IPEDS Human Resources Survey

II.F. Characteristics of the Trustees or Governors

II.F.1. Race/ Ethnicity and Sex

Board of Trustees by Gender and Ethnicity

| | B | AI/AN | A/PI | H | W | Total |
|--------|---|-------|------|---|---|-------|
| Male | 0 | 0 | 1 | 0 | 7 | 8 |
| Female | 0 | 0 | 0 | 1 | 2 | 3 |
| Total | 0 | 0 | 1 | 1 | 9 | 11 |

B : Black/African American, Non-Hispanic
 AI/AN : American Indian/Alaskan Native
 A/PI : Asian/Pacific Islander
 NRA : Non-Resident Alien
 H : Hispanic
 W : White, Non-Hispanic
 U : Unknown

II.F.2. List of Trustees/ Governors with Titles and Affiliations

- Hon. Christopher J. "Chris" Christie, Ex-Officio, Non-Voting, Governor of the State of New Jersey
- Hon. Corey Booker, Ex-Officio, Non-Voting, Mayor of the City of Newark
- Kathleen Wielkopolski, Chair, Formerly of The Gale Company
- Stephen P. DePalma, PE '72, Vice-Chair, Chairman & CEO, Schoor DePalma Inc.
- Philip K. Beachem, President, New Jersey Alliance for Action
- Dennis M. Bone, President, Verizon New Jersey, Inc.
- Peter A. Cistaro, '68, Vice President - Distribution, Public Service Electric and Gas Company
- Vincent L. DeCaprio, Ph.D. '72, President (Ret.), Vyperis, Inc.
- Elizabeth ("Liz") Garcia, PE '73, Manager, Public Affairs, Infineum USA, L.P.
- Anthony J. Knapp Jr., Proprietor (formerly), Black Horse Restaurant Group
- Mariel O'Brien, Astronomy & Physics Educator, Newark Museum
- Binay Sugla, Ph.D. Chairman & CEO, Mobile Matrix, Inc.

II.F.3. URLs of WebPages with Information on Trustees/ Governors

- <http://www.njit.edu/about/boards/trustees/members.php>

II.G. Profile of the Institution

II.G.1. Degree and Certificate Programs

NJIT offered 134 degree programs (56 bachelors degree programs, 59 masters programs, and 19 doctoral programs) during fiscal year 2010:

Bachelors Degrees (56 programs, CIP Code listed after program name)

| | |
|--|--|
| Applied Mathematics ¹ (B.A.) 270301 | Electrical Engineering Technology (B.S.) 150000 |
| Applied Physics ¹ (B.S.) 400801 | Engineering Science (B.S.) 141301 |
| Architecture (B.Arch.) 040201 | Environmental Engineering (B.S.) 141401 |
| Architecture (B.S.) 040201 | Environmental Sciences ¹ (B.S.) 030104 |
| Biochemistry (B.S.) 260202 | Fine Arts (B.F.A.) 500701 |
| Bioinformatics (B.S.) 261103 | Geoscience Engineering ¹ (B.S.) 143901 |
| Biology ¹ (B.A.) 260101 | History ¹ (B.A.) 540101 |
| Biology ¹ (B.S.) 260101 | Human Computer Interaction ¹ (B.S.) 110401 |
| Biomedical Engineering (B.S.) 140501 | Industrial Design (B.S.) 049999 |
| Business & Information Systems (B.S.) 110401 | Industrial Engineering (B.S.) 143501 |
| Business (B.S.) 520201 | Information Systems (B.S.) 110401 |
| Chemical Engineering (B.S.) 140701 | Information Systems ¹ (B.A.) 110401 |
| Chemistry (B.S.) 400501 | Information Technology (B.S.) 110103 |
| Civil Engineering (B.S.) 140801 | Interior Design (B.A.) 500408 |
| Communication and Media (B.S.) 231101 | International Business (B.S.) 521101 |
| Communication (B.A.) 231101 | Law, Technology and Culture (B.A.) 229999 |
| Computational Sciences (B.S.) 261103 | Management (B.S.) 520201 |
| Computer Engineering (B.S.) 140901 | Manufacturing Engineering (B.S.) 143601 |
| Computer Science (B.S.) 110101 | Mathematical Sciences (B.S.) 270101 |
| Computer Science ¹ (B.A.) 110101 | Mechanical Engineering (B.S.) 141901 |
| Computer Technology (B.S.) 150000 | Mechanical Engineering Technology (B.S.) 150000 |
| Computing and Business (B.S.) 110199 | Medical Informatics Technology (B.S.) 150000 |
| Concrete Industry Management Technology (B.S.) 150000 | Science, Technology & Society (B.S.) 301501 |
| Construction & Construction Engineering Technology (B.S.) 150000 | Science, Technology & Society ¹ (B.A.) 301501 |
| Construction Management Technology (B.S.) 150000 | Surveying Engineering Technology (B.S.) 150000 |
| Digital Design (B.A.) 100304 | Technology Education (B.S.) 150000 |
| Electrical & Computer Engineering Technology (B.S.) 150000 | Telecommunications Management Technology (B.S.) 150000 |
| Electrical Engineering (B.S.) 141001 | Web and Information Systems (B.S.) 110401 |

There is now a Mathematical Sciences B.S. that will replace the Applied Mathematics B.S. and the Statistics and Actuarial Science B.S. No new students will be admitted to either the Applied Mathematics B.S. or the Statistics and Actuarial Science B.S; they will both be phased out as students currently in the programs complete.

There are 4 options within Engineering Science (B.S.):

- Materials Science and Engineering
- Pre-medical
- Pre-dental
- Pre-optometry

There are 9 specializations within Engineering Technology (B.E.T.):

- Computer Technology (not ABET accredited)
- Concrete Industry Management Technology (not ABET accredited)
- Construction Engineering Technology
- Construction Management Technology (not ABET accredited)
- Electrical and Computer Engineering Technology
- Manufacturing Engineering Technology (not ABET accredited)
- Mechanical Engineering Technology
- Surveying Engineering Technology
- Telecommunications Management Technology (not ABET accredited)

There are 4 specializations within Management (B.S.):

- E-Commerce
- Finance
- Marketing
- Management Information Systems

There are 23 undergraduate minors offered (12-18 credits required for a minor):

| | |
|---------------------------|--|
| Applied Mathematics | History |
| Applied Physics | Industrial Engineering |
| Applied Statistics | Information Systems |
| Biology | Leadership and Aerospace Studies (AFROTC only) |
| Chemistry | Legal Studies |
| Communication | Literature |
| Computer Engineering | Management |
| Computer Science | Materials Engineering |
| Drama/Theatre | Philosophy/Applied Ethics |
| Economics | Science, Technology and Society |
| Environmental Engineering | Technology, Gender & Diversity |
| Global Studies | |

Masters Degrees (59 programs, CIP Code listed after program name)

| | |
|--|--|
| Applied Mathematics (M.S.) 270301 | History ¹ (M.A.) 540101 |
| Applied Physics ¹ (M.S.) 400801 | History ¹ (M.A.T.) 540101 |
| Applied Science (M.S.) 409999 | Industrial Engineering (M.S.) 143501 |
| Applied Statistics (M.S.) 270501 | Information Systems (M.S.) 110401 |
| Architecture (M.Arch.) 040201 | Infrastructure Planning (M.I.P.) 040301 |
| Architecture (M.S.) 040201 | Interdisciplinary Studies (M.S.) 309999 |
| Bioelectronics (M.S.) 140501 | International Business (M.S.) 521101 |
| Bioinformatics (M.S.) 261103 | Internet Engineering (M.S.) 110901 |
| Biology ¹ (M.S.) 260101 | IT Administration and Security (M.S.) 110103 |
| Biomedical Engineering (M.S.) 140501 | Management (M.S.) 520201 |
| Biostatistics (M.S.) 261102 | Management of Technology (M.B.A.) 520299 |
| Business and Information Systems (M.S.) 110401 | Manufacturing Systems Engineering (M.S.) 143601 |
| Business Administration (M.B.A) 520299 | Materials Science & Engineering (M.S.) 141801 |
| Chemical Engineering (M.S.) 140701 | Mathematical and Computational Finance (M.S.) 270301 |
| Chemistry (M.S.) 400501 | Mechanical Engineering (M.S.) 141901 |
| Civil Engineering (M.S.) 140801 | Nursing - Nursing Informatics ² (M.S.N.) 511608 |
| Computational Biology ¹ (M.S.) 261103 | Occupational Safety & Health Engineering (M.S.) 142701 |
| Computer Engineering (M.S.) 140901 | Occupational Safety & Industrial Hygiene (M.S.) 150701 |
| Computer Science (M.S.) 110101 | Pharmaceutical Bioprocessing (M.S.) 140301 |
| Computing and Business (M.S.) 110199 | Pharmaceutical Chemistry (M.S.) 512004 |
| Critical Infrastructure Systems (M.S.) 142701 | Pharmaceutical Engineering (M.S.) 140701 |
| Electrical Engineering (M.S.) 141001 | Pharmaceutical Materials Processing (M.S.) 142701 |
| Emergency Management & Business Continuity (M.S.) 110199 | Pharmaceutical Systems Management (M.S.) 142701 |
| Engineering Management (M.S.) 151501 | Power & Energy Systems (M.S.) 141001 |
| Engineering Science (M.S.) 141301 | Professional & Technical Communication (M.S.) 231101 |
| Enterprise Development (M.S.) 529999 | Public Health ³ (M.P.H.) 512201 |
| Environmental Engineering (M.S.) 141401 | Software Engineering (M.S.) 140903 |
| Environmental Policy Studies (M.S.) 440501 | Telecommunications (M.S.) 141001 |
| Environmental Science ¹ (M.S.) 030104 | Transportation (M.S.) 140804 |
| Healthcare Systems Management (M.S.) 510702 | |

There are 4 options within Management (M.S.):

- Management Information Systems
- E-Commerce
- Organization Management
- Management of Technology (pending approval)

There are 6 areas of concentration within the M.B.A.:

- Management Information Systems
- Operations Management
- E- Commerce
- Marketing
- Finance

Doctoral Degrees (19 programs, CIP Code listed after program name)

| |
|--|
| Applied Physics ¹ (Ph.D.) 400899 |
| Biology ¹ (Ph.D.) 260101 |
| Biomedical Engineering ² (Ph.D.) 140501 |
| Chemical Engineering (Ph.D.) 140701 |
| Chemistry (Ph.D.) 400501 |
| Civil Engineering (Ph.D.) 140801 |
| Computer & Information Science (Ph.D.) 110101 |
| Computer Engineering (Ph.D.) 140901 |
| Computer Science (Ph.D.) 110701 |
| Electrical Engineering (Ph.D.) 141001 |
| Environmental Engineering (Ph.D.) 141401 |
| Environmental Science ¹ (Ph.D.) 030104 |
| Industrial Engineering (Ph.D.) 143501 |
| Information Systems (Ph.D.) 110401 |
| Materials Science & Engineering (Ph.D.) 141801 |
| Mathematical Sciences ¹ (Ph.D.) 270101 |
| Mechanical Engineering (Ph.D.) 141901 |
| Transportation (Ph.D.) 140804 |
| Urban Systems ³ (Ph.D.) 459999 |

NJIT teaches, advises, and mentors doctoral students in one degree program where Rutgers University is the degree-granting institution:

- Management (*Ph.D.*) 520201

NOTES:

1. Joint degree program with Rutgers - The State University of New Jersey, Newark Campus
2. Joint degree program with The University of Medicine and Dentistry of New Jersey.
3. Joint degree program with both The University of Medicine and Dentistry of New Jersey and Rutgers - The State University of New Jersey, Newark Campus.

Graduate Certificates (17 programs, CIP Code listed after program name)

| |
|--|
| Architectural Studies (Post-Bacc.) 040201 |
| Applied Mathematics (Mast. Cert.) 270301 |
| Architecture (Mast. Cert.) 040201 |
| Business Administration (Mast. Cert.) 520201 |
| Chemical Engineering (Mast. Cert.) 140701 |
| Chemistry (Mast. Cert.) 400501 |
| Civil Engineering (Mast. Cert.) 140801 |
| Computer & Information Sciences (Mast. Cert.) 110101 |
| Computer Engineering (Mast. Cert.) 140901 |
| Electrical/Electronics & Communications Engineering (Mast. Cert.) 141001 |
| English/Technical & Business Writing (Mast. Cert.) 231303 |
| Industrial Engineering (Mast. Cert.) 143501 |
| Information Sciences & Systems (Mast. Cert.) 110401 |
| Mechanical Engineering (Mast. Cert.) 141901 |
| Miscellaneous Biological Specialties (Mast. Cert.) 269999 |
| Pharmaceutical Technology/Management (Mast. Cert.) 149999 |
| Public Policy Studies (Mast. Cert.) 440501 |

NJIT's accelerated programs

NJIT offers or participates in 9 accelerated programs:

- B.S./M.S.
- B.Arch./M.S.
- B.S./D.M.D. with the University of Medicine and Dentistry of New Jersey
- B.S./M.D. with the University of Medicine and Dentistry of New Jersey
- B.S./M.D. with St. George's University School of Medicine
- B.S./O.D. with the State University of New York-New York School of Optometry
- B.S./D.D.S. with the New York University-College of Dentistry
- B.S./J.D. with Rutgers School of Law-Newark
- B.S./J.D. with Seton Hall University School of Law-Newark

NJIT's 2+2 and 3+2 programs

NJIT offers 2+2 programs through a joint admissions agreement with 10 county colleges:

- Bergen Community College
- Brookdale Community College
- Burlington County College
- Essex County College
- Hudson County Community College
- Mercer County College
- Middlesex County College
- Ocean County College
- Raritan Valley Community College
- Union County College

NJIT offers 3+2 programs through a joint admissions agreement with 3 colleges:

- Seton Hall University
- Stockton State College
- William Paterson University

NJIT's articulation arrangements

NJIT currently has articulation arrangements with the following 19 institutions:

- Bergen Community College
- Brookdale Community College
- Burlington County College
- Camden County College
- County College of Morris
- Cumberland County College
- Essex County College
- Hudson County Community College
- Mercer County College
- Middlesex County College
- Morris County College
- Ocean County College
- Paul Smith's College
- Passaic County Community College
- Raritan Valley County College
- Union County College
- Seton Hall University
- Stockton State College
- William Peterson University

NJIT currently offers an accelerated B.S. in Information Technology at Camden County College and partners with Camden County College to offer courses leading to masters degrees in Engineering Management, Computer Science, and Information Systems

II.G.2. Other

II.G.2.a. Continuing and Professional Education Activities at NJIT

Continuing Professional Education (CPE) at NJIT has long been recognized as a leader in industry training and workforce development, as exemplified by the diverse group of companies that rely on NJIT's expertise and understanding of corporate challenges. NJIT academic catalogues dating back to 1950 indicate the existence and importance of this function. Indeed the archives of NJIT's history, which began in 1881 when the university was first established as the Newark Technical School, contain documents ascertaining that this university was "founded to meet certain technical education requirements of individuals employed in local industry." Data maintained just since 1990 NJIT reveal that CPE has provided on-site and online corporate training and education programs to more than 72,000 employees at 600 New Jersey companies. Some of the companies that benefited from this training include Verizon Wireless, Dow Jones, Burlington Coat Factory, Boston Scientific, Franklin Credit, Fletcher Creamer and CIBA. Other training partnerships were established or maintained with organizations such as NJ Transit, NJ Youth Corps, NJ Office of Homeland Security and Preparedness, US Postal Service and the Port Authority of New York and New Jersey. NJIT always partners with companies to accomplish their business objectives, both short term and long term by providing the training their employees need to achieve results.

NJIT is an original partner in North Jersey's \$5.1 million US Department of Labor's Workforce Innovation for Regional Economic Development (WIRED) program and is assisting this program in obtaining an estimated \$18 million in leveraged funding which will be used to strengthen the workforce of small and large companies in three high growth sectors of New Jersey's economy.

Another example of NJIT's commitment to education and training in partnership with industry need is NJIT's participation in the Innovation Partnership Institutes program, a joint effort of the Commission on Higher Education, the Department of Education, and the Department of Labor and Workforce Development focused on specific NJ business sectors. NJIT both led and participated on teams dedicated to the individual sectors of Financial Services, Advanced Manufacturing, Biotechnology, and Transportation, Logistics and Distribution. The Innovation Partnership Institutes are collaborations among businesses in these key sectors and New Jersey's colleges, universities and public high schools, to develop cutting edge curricula that meet the evolving training needs of businesses. Curricula is developed with input from industry and posted online to best disseminate to high schools and two-year as well as four-year educational institutions.

NJIT's Division of Continuing Professional Education (CPE) is a coordinated unit focusing on the development, management, and execution of five major educational programs that fall into two major categories:

Academic Credit Learning (Degree and Certificate Programs)

- NJIT eLearning Program
- Graduate Certificate Program
- Extension Programs

Non-Credit Learning (Training and Certificate Programs)

- Corporate Training
- Professional Development and License Reviews

II.G.2.b. NJIT eLearning Program

NJIT offers seven complete undergraduate and graduate degree programs, seven graduate certificates completely online, eight graduate certificate partially via eLearning, and more than 218 individual eLearning college courses in an academic year. eLearning courses are available three times per year in the standard NJIT Fall and Spring semesters and in a ten-week Summer Session. NJIT eLearning courses consist of both an electronic lecture component conducted by an NJIT faculty member and an electronic discussion through which students conduct dialogue with their instructor and other classmates at any time of the day or night. Courses utilize computer conferencing platforms (e.g. WebCT, WebBoard), and multimedia methodologies delivered via CD-ROMS, streaming audio/video, and/or videotapes. Over the past five years, the number of eLearners and eLearning course enrollments have grown as much as 21% averaging 16% a year growth. During the 2008-2009 academic year, there were about 4,800 eLearning students who totaled an eLearning enrollment of more than 6,000 in over 190 eLearning academic credit courses during Fall and Spring semesters and Summer sessions. NJIT's has an inventory of over 200 courses produced in-house within 27 academic disciplines:

- Accounting
- Chemistry
- Chemical Engineering
- Computer Science
- Economics
- Electrical and Computing Engineering
- Electrical Engineering
- Engineering Management
- English
- Environmental Engineering
- Finance

- Human Resource Management
- Humanities and Social Sciences
- Industrial Engineering
- Industrial Management
- Information Systems
- Information Technology
- Literature
- Mathematics
- Management
- Management Information Systems
- Manufacturing Engineering
- Marketing
- Physics
- Professional and Technology Communication
- Science Technology & Society
- Social Science

Over 100 NJIT faculties have originated courseware for NJIT's eLearning Program.

Seven undergraduate and graduate degree programs are available through eLearning as well as, seven graduate certificates completely online and eight graduate certificates offered partially via eLearning:

Undergraduate Degrees via eLearning in whole or in part

- | | |
|---------------------------------|-------------|
| • Computer Science (B.S.) | 134 credits |
| • Information Systems (B.A.) | 129 credits |
| • Information Systems (B.S.) | 130 credits |
| • Information Technology (B.S.) | 127 credits |

Graduate Degrees via eLearning

- | | |
|---|------------|
| • Engineering Management (M.S.) | 30 credits |
| • Information Systems (M.S.) | 36 credits |
| • Professional & Technical Communication (M.S.) | 30 credits |

Graduate Certificates in whole or part via eLearning (each 12 credits)

- Bioinformatics
- Business Management Fundamentals
- Construction Management
- Health Communications
- Information Assurance
- Information Systems Auditing
- Information Systems Design
- Information Systems Implementation
- Internet Applications Development
- Management Essentials

- Management of Technology
- Operations Productivity
- Pharmaceutical Management
- Pharmaceutical Technology
- Practice of Technical Communications
- Project Management
- Sustainable Architecture
- Telecommunications Networking
- Virtual Tools for Professional Communities

In the last five years, the number of NJIT learners and eLearning course enrollments in academic programs has increased an average of 16% each year and over the last ten years has grown nearly 2600%.

II.G.2.c. Graduate Certificate Program

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

Key features of the Graduate Certificate Program include the following: 12-credit Graduate Certificates are milestones in their own right or springboards to MS degrees at NJIT or elsewhere. Graduate Certificates are offered in fields of study designated by outside authorities as likely to offer the highest growth opportunities for employment. Program duration is one calendar year.

Study is possible through distance learning, which provides greater flexibility for the busy professional to study anytime, anywhere. Entry is open to applicants with a BA/BS degree with a satisfactory grade point average.

The following is the list of the 26 current Graduate Certificates offered during Academic Year 09-10:

- Applied Statistical Methods
- Biostatistics Essentials
- Business and Information Systems Implementation
- Business and Computing
- Construction Management
- Data Mining
- Emergency Management and Information Assurance
- Emergency Management Design Essentials

- Engineering Soft Skills
- Environmental Sustainability
- Finance for Managers
- Firmware Engineering
- Information Management for Managers
- International Commerce
- IT Administration
- Management Essentials
- Management of Technology
- Network Security and Information Assurance
- Pharmaceutical Management
- Pharmaceutical Technology
- Physiology and HCI
- Power Systems Engineering
- Project Management
- Sustainable Architecture
- Technical Communications
- Web Systems Development

II.G.2.d. Extension Programs

NJIT's Division of Continuing Professional Education provides access to their courses and programs to part-time, evening students who prefer to attend classes at locations throughout the state. The extension program began in 1974 when courses in Computer and Information Science were offered at Drew University.

During AY09-10, NJIT will offer courses at 6 extension sites throughout New Jersey including:

Public Extension Sites:

Communiversity at Brookdale Community College- Lincroft

Courses Leading to Degree(s) in:

- B.S. in Information Systems,
- B.S. in Computer Science,
- B.S. in Information Technology

Department of Environmental Protection - Mercer

Courses Leading to Degree(s) in:

- M.S. in Environmental Science and Environmental Policy Studies

Department of Transportation - Mercer

Courses Leading to Degree(s) in:

- M.S. In Transportation

- Gloucester County College, Sewell, NJ
Courses Leading to Degree(s) in:
- BSET

- New Jersey City University, Jersey City, NJ
Courses Leading to Degree(s) in:
- M.S. Computer Science,
 - M.S. Information Systems

- Certificate Programs:
- Data Mining,
 - Information Systems Implementation

- Weekend University - Newark, NJ with online components
Courses Leading to Degree(s) in:
- B.S. in Information Technology,
 - B.S. in Information Systems,
 - M.S. Engineering Management,
 - M.S. Information Systems

- Certificate Programs:
- Project Management,
 - Information Systems Implementation

II.G.2.e. Private Extension Sites

- Schering Pharmaceutical
- Wyeth Pharmaceuticals - Pearl River, NY (Open to employees only)
Certificate Programs: Pharmaceutical Manufacturing

II.G.2.f. Customized Corporate Training

For fifty years, NJIT has been designing and conducting customized non-credit courses that meet technology-based organizations' needs for high-quality, lifelong workforce education. Representing the arm of NJIT that brings the university's areas of academic specialization into the workplace, this unit has developed particularly close relations with the NJ Department of Labor (DOL). The DOL's Office of Customized Training implements aspects of the NJ Workforce Development Partnership Program through which eligible New Jersey companies can receive state subsidization for sixty percent of the cost of initiating on-site training programs. Qualified educational providers (such as NJIT's Customized Corporate Training Program) oversee these programs. In FY 08-09 NJIT's Customized Corporate Training program executed training contracts with over 50 companies and trained over 2,000 employees.

II.G.2.g. Professional Development and License Review

The Professional Development and License Review Program offers non-credit short courses, certificates, and license reviews. In AY 08-09 over 145 non-credit courses were offered.

In Academic Year 08-09 many new courses were added to the program, bringing the total number of courses offered to over 60 courses. Among the new offerings, a Certification in Open Source Unix was initiated. At this time, NJIT is the only University nationwide that offers this program and is endorsed to offer a professional development certificate in Open Source Operating Systems

Also added was an expansive Architecture Program for Review and Professional Development. NJIT is the only facility in New Jersey to offer this array of courses and NJIT is an approved provider in the American Institute of Architects' Continuing Education System.

The non-credit Professional Development program escalated in course demand and variety. Additional courses were added to the program and include:

Architecture

- Architecture Review Courses
- Design of Steel and Wood Structures
- Marketing/Communications for Design Firms

Cable Telecommunications Industry

- Introduction to the Cable Telecommunications Industry
- Cable Telecommunications Installation
- Digital and High Speed Data
- Customer Service
- Broadband Telephony

Cisco Networking Academy

- Preparing for the CISSP Credential

Computing and Technology

- A+ Certification
- .Net Comprehensive
- C Sharp Basics and Advanced C# programming
- Fireworks MX
- Windows Application Programming using Visual C#
- Web Application Development using Visual C#
- XML Comprehensive
- Voice XML
- Introduction to EDI – Electronic Data Interchange

- Advanced EDI Concepts

Open Source UNIX Operating Systems – NJIT is the only University nationwide that offers and is endorsed to offer a professional development certificate in Open Source Operating Systems

- Introduction to UNIX Free BSD
- UNIX Administration I
- UNIX BSD Administrator II

Oracle Database Technology

Safety and Environment

- Hazwoper Refresher
- Supervisor Training
- OSHA Hazwoper Training
- Certified Hazardous Materials Manager (CHMM)
- NJ's Underground Storage Tanks Regulations

Web Master

- Web Manager
- Web Developer
- Web Author
- Dreamweaver
- Flash
- Fireworks MX
- Programming for the Web
- Visual Basic Programming
- Multimedia:SMIL

II.G.2.h. Pre-College Programs

The Center for Pre-College Programs at NJIT is a comprehensive academic service department that provides technical assistance to schools and districts in New Jersey helping them expand and develop innovative educational programs and help for K-12 teachers as they create connections between the science and mathematics used in engineering applications in the workplace, careers in the STEM (science, technology, engineering, and mathematics) disciplines, and the standards-based curricula that teachers must adhere to in the classroom. Serving a widening geographical audience of over 4,000 students, teachers, parents and educational professionals from kindergarten through twelfth grade, The Center has established many partnerships and collaborations with schools and districts across New Jersey. Among the recent activities of the Center related to career awareness and workforce development:

- A three-year effort funded by the New Jersey Commission on Higher Education helped established the Pre-Engineering and Outreach Program (PrE-IOP) to inform students, teachers, parents, and school counselors about careers in engineering, and to provide training programs for

hundreds of secondary school teachers with pre-engineering curricula that not only better prepared students to study engineering but helped increase their attitudes towards engineering. The curricula, aligned with State Content Standards, focused on pre-engineering skills and included instructional strategies that emphasized connections between science, mathematics and real-world engineering.

- A 3-year grant from the National Science Foundation (NSF), entitled Medibotics (Merging of Medicine, IT, and robotics) that introduce teachers and students to bio-medical applications of robotics using LEGO Mindstorms Robotics kits for Schools and NXT Software. The Medibotics pre-engineering curricula incorporates grade-appropriate prototypes of robotic surgeries into middle and high school pre-engineering curriculum providing students with hands-on experiences that simulate real-world problems to encourage their interest in engineering and information technology and provide information on careers in these fields.
- For the past three-years, CPCP, in collaboration with the Engineering Research Center at NJIT, has hosted a Research Experiences for Teachers (RET) program, in which high school science teachers are part of research groups in the pharmaceutical engineering research labs of NJIT, as they participate in research and gain knowledge about the pharmaceutical industry. CPCP faculty and staff guide the teachers in the development of instructional modules, related to their research experience, and which they can use in their classrooms.
- The Center has collaborated with colleagues in Industrial and Mechanical Engineering, with funding from the State to develop instructional materials in manufacturing engineering for high school teachers and their students.
- The Center recently developed a career skills database as part of the Northern NJ WIRED program. The STEM Resource Database is designed to inventory and connect skill development programs on a national, state, and local level, with an emphasis on northern New Jersey. The purpose of the STEM Resource Database is to raise awareness of the career possibilities and job opportunities in the fields of transportation, logistics, and delivery; health care and life sciences; and entertainment, arts, and retail.

Methodologies and instruments for measuring Attitudes toward Engineering, and Knowledge of Engineering, as well as instruments for measuring teacher change have been developed or adapted during the operation of these programs. These instruments are still in use and adapted as necessary for other programs. Also, these instruments are also being used in other universities across the country and have been cited in the professional literature. These instruments and methodologies have been utilized to document the successes of all our programs.

II.H. Major Research and Public Service Activities

R&D EXPENDITURES : Fiscal Year 2009

Institution: New Jersey Institute of Technology

| | Amount (Dollars in thousands) |
|--|-------------------------------|
| Federally Financed Academic R&D Expenditures | 50,051 |
| Institutionally Financed Academic R&D Expenditures | 31,417 |
| State, Industry & Other Financed R&D Expenditures | 10,850 |
| Total Academic R&D Expenditures | 92,318 |

Note: Draft Audit results to be reported to the National Science Foundation (NSF) on Form #411 (Survey of Research and Development Expenditures at Colleges and Universities).

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

While *research* activity may be viewed as end unto itself, it is also a powerful enabler for 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 legislation. With strong roots in the application of scientific discovery to practical purpose that comes from a 126 year-long heritage in engineering, the university recognizes the importance of contributing to the 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 start-ups in our own Enterprise Development Center, the state’s oldest and largest technology business incubator, to global OEMs.

NJIT research is “at the edge of knowledge”. By that we mean our researchers are at the forefront of their professions and proactively working to connect scientific discovery to practical application. Some examples follow that are organized around thematic areas of particular significance to new Jersey – healthcare and the life sciences, alternative energy and sustainable systems homeland security, and information and communication technology.

II.H.1. Life & Healthcare Science and Engineering

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, math, 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.

A critical element of healthcare improvement pertains to the reduction of cost for bringing new pharmaceuticals to market. Nano-particulate technology offers many benefits for increased potency and targeted drug delivery. The NSF-supported Engineering Research Center in Structured Organic Composites will establish cutting-edge research, technology transfer, and educational/outreach to transform products and processes used for pharmaceutical, nutraceutical, and agrochemical delivery applications. The Center is a partnership between Rutgers University, NJIT, Purdue and the University of Puerto Rico, Mayaguez. Improved technology will result in reduced cost and more consistent and reliable manufacture of biocompatible products as well as science-based, faster development of new products, and a more competitive US industry. Impact will be maximized by focusing on six technology test beds (integrated manufacturing platforms) that focus on multiple methodologies for synthesis of functionalized materials and finished products.

Treena Livingston Arizneh, associate professor and interim chair of biomedical engineering, winner of an NSF Presidential Early Career Award for Scientists and Engineers (PECASE) award, the highest national honor for young scientists and engineers, for her research with adult stem cells received a \$700,000 grant from the New Jersey Commission on Spinal Cord Research, a state agency that funds spinal cord research. She will use the grant to build a laboratory to test if stem cells taken from adult bone marrow can be made to turn into neurons. If her research shows that the cells can turn into neurons -- the nerve cells in the body that control brain and spinal cord function -- patients with spinal cord injuries could be healed with injections of stem cells. Arizneh's second \$300,000 grant, from the New Jersey Commission on Science and Technology, will allow her to apply her stem cell techniques to help patients who have cartilage damage. She and Jaffe will spur cartilage regeneration by combing stem cells with bio-degradable scaffolds that mimic fibers found in human cartilage tissue. They will test different scaffolds and determine which biomaterial is the best catalyst for stem cell differentiation. Again, their hope is that stem cells can soon be used to treat patients with damaged cartilage.

NJIT researchers Iqbal Zafar, PhD, research professor and Somenath Mitra, PhD, acting chair and professor, department of chemistry and environmental sciences have developed the concept for a biologically powered fuel cell that would utilize sugars in the blood stream as a renewable energy source for implanted medical devices. The approach integrates micro- and nano-fluidic platforms, electrodes and membrane/electrolyte separator into a biologically compatible, encapsulated biomedical device. It utilizes aligned single wall carbon nanotubes with high ballistic electrical conductivity, and rapid, green microwave-assisted enzyme

covalent functionalization of nanotube tips or sidewalls to provide for stable long term performance.

Tara Alvarez, associate professor of biomedical engineering, received a prestigious Faculty Early Career Development Award from the NSF to support her work in neural engineering and vision research and to enhance the Vision and Neural Engineering Laboratory. The grants support the early career development of teacher-scholars who integrate research and education. Her research focuses on how the brain learns when visually locating objects in three dimensional space to gain a better understanding of basic motor control and motor learning. She also plans to offer courses for undergraduates and to develop educational programs for pre-college girls to attract them to the field of neural engineering.

Michael Jaffe, research professor of biomedical engineering and chemistry directs collagen research at the Medical Device Concept Laboratory (MDCL). MDCL projects focus on reconstituted collagen fiber formation, collagen characterization - both as a "material" and as tissue engineering substrate, collagen mechanical properties and transport of small molecules through skin. One project of special interest is a collaboration among Treena Arinzeh and Sam Hessami (OB/GYN) and Fred Silver (pathology) of UMDNJ, aimed at understanding the collagenous failure that leads to uterine prolapse, a major problem in women's health.

Biomedical engineers at NJIT will use new technology to help children with cerebral palsy improve their movements, reduce stiffness in their joints and live fuller and more independent lives. Small robots mounted on wheelchairs, interactive video games and a robotic arm that can be programmed to guide and aid human motion – these are just a few of the technologies the engineers will use to help these children improve their muscular control and movements. The program led by BME associate professor Richard Foulds is part of a the newly formed Rehabilitation Engineering Research Center (RERC) at NJIT, funded by a \$4.75 million grant from the National Institute on Disability and Rehabilitation Research, in Washington, D.C. The institute supports research for the rehabilitation of people with disabilities. The grant, awarded on Nov. 1, 2005, will run for five years.

New Jersey Institute of Technology (NJIT) computer scientist Yehoshua Perl, PhD, creates elegant logical structures to track down errant or misplaced medical terms. The errors creep into documents and databases developed by corporations, government agencies, hospitals and academic institutions that design, maintain and use terminologies throughout a variety of systems. Perl's research is funded by a three-year \$1.43-million grant from the National Library of Medicine (NLM), a branch of the National Institutes of Health.

Interactions among neuropeptides and microglial cells in the brain are the research focus of G. Miller Jonakait, dean of the College of Science and Liberal Arts and professor of biological sciences. With grant support from the National Science Foundation, she is looking at how neurons and glia interact both in the normal brain and in the damaged or diseased brain. Several specific neuropeptides seem to play a role in regulating microglial responsiveness, particularly in dampening the inflammatory response. Dr. Jonakait is exploring this neuronal/glia cross-talk hoping to understand the ways in which neurons affect glia and glia affect neurons.

II.H.2. Sustainable Systems

New Jersey is prototypical of many areas where the co-location of dense population centers and industrial systems needs 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 the 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 at least some scientific merit makes it clear that disruptive technology is required. Alternative energy research is actively underway at NJIT. Were these not enough, creating a safe and secure environment for our citizens in the face of international terrorism creates new challenges to develop and depoy sustainable models for homeland security. Some examples of NJIT research at the edge of sustainable systems technology follow.

Conventional solar cells are made of silicon. But the material that is deposited on the silicon chips cannot be coated. Professor Som Mitra, acting chair of the department of chemistry and environmental science, however, is experimenting with polymers that when dissolved in a solvent become like a paint, and thus can be used as a coating. Developing organic solar cells from polymers is a cheap and potentially simple alternative energy. Solar cells can be inexpensively printed or simply painted on exterior building walls or roofs of houses and buildings. The solar cell uses a carbon nanotube complex, which is just a molecular configuration of carbon in a cylindrical shape and tiny carbon buckyballs (a circular-shaped carbon structure) to form snake-like structures. Buckyballs trap electrons, although they can't make electrons flow. But when you add sunlight to excite the polymers, the buckyballs will grab the electrons. Nanotubes, behaving like copper wires, will then make the electrons or current flow.

Chemical engineer Kamalesh Sirkar, PhD, a distinguished professor and an expert in membrane separation technology, is leading a team of researchers to develop a breakthrough method to desalinate water. Sirkar holds more than 20 patents in the field of membrane separation. Using his technology, engineers will be able to recover water from brines with the highest salt concentrations. The process will work especially well with brines holding salt concentrations above 5.5 percent. Currently, 5.5 percent is the highest percentage of salt in brine that can be treated using reverse osmosis. The Bureau of Reclamation in the Department of Interior is funding the project.

Michael Jaffe, research professor of biomedical engineering and director of the Medical Device Concept Laboratory has teamed with the Iowa Corn Promotion Board to identify polymer opportunities based on monomers derived from corn. The study will look at the potential of corn derivatives as readily available and inexpensive sources of new polymeric materials. Materials to be investigated range from new, bio-erodible polymers for medical applications to improved, bio-compatible coatings and plastics.

A better understanding of the solar flares that can interfere with wireless communication and damage satellites in Earth's orbit is the focus of research by the Center for Solar-Terrestrial Research. Professor Phil Goode directs the Big Bear Solar Observatory on a mountaintop in California. In the fall of 2008 he completed a multi-year, multi-million dollar, federally financed construction project that resulted in the world's largest ground-based optical solar telescope. CSTR research will lead to new understandings of the sun's complex behavior and its effect on our own environment. Dale Gary, professor of physics and specialist in radio solar physics, is leading a design study for the Frequency Agile Solar Radiotelescope (FASR). The project, supported by the National Science Foundation, will construct a new radio telescope capable of making high-resolution images of the solar corona. The telescope, which will consist of 100 receiving dishes, will allow scientists to study the birth of coronal mass ejections, violent phenomena associated with the Sun's magnetic fields that can cause sudden, intense fluctuations in the solar wind and serious consequences on Earth. The high-energy particles that characterize these ejections have the potential to destroy satellites. The satellites in turn may impact television viewing, pagers, cellular phones and other wireless devices. With the ability to observe these phenomena, especially those on the near face of the sun that most affect Earth, researchers will be able to provide better information on the space environment to airlines, power companies and satellite operators. Eventually, solar researchers may be able to predict the severity of such incidents and when they will occur.

The New Jersey Applied Water Research Center, directed by Taha Marhaba, associate professor of environmental engineering, has been established by NJIT in partnership with the American Water Works Association to unite industry, government and academia in a common effort to research and improve the state's drinking water. Researchers from NJIT and the Water Works Association, a non-profit group dedicated to providing the state with safe drinking water, expect to have a significant impact on the state's water infrastructure. The center's emphasis on applied research specific to New Jersey will fill in the gaps that national research programs have not addressed. Researchers will also work to assure that the region's water supply is safe from bio-terrorist attacks, developing monitoring systems to identify biological agents deposited in the water infrastructure.

NJIT has been designated as the Liberty Corridor Planning Institute. In this capacity, NJIT researchers are engaged in creating the framework under which over \$100M in federal funds will be invested to improve New Jersey's transportation infrastructure to support the ten-fold growth in containerized shipping that is projected as part of the Port Newark expansion. The objective is to facilitate the movement of import and export goods within the already congested Port district to facilitate job growth and economic development in the associated trades.

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 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 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 Codey, a similar model system has been installed at the Beatrice Gilmore School in West Paterson. NJIT has funding from the N.J. Department of Law and Public Safety to protect schools and shopping malls.

In one of the most promising homeland security initiatives, university researchers continue to develop applications that utilize terahertz (THz) electromagnetic radiation to detect and identify explosives and biological agents. A team of researchers led by John Federici, professor of physics, received a patent for a terahertz imaging system that could be used in airports to detect potentially harmful materials even if they are concealed in clothing, sealed packages, or suitcases. The team also has funding from the Army Research Office, and their industrial collaborator, Picometrix, Inc., of Ann Arbor, Mich., a manufacturer of high-speed optical receivers and ultrafast instrumentation, has a Phase II Small Business Innovative Research (SBIR) grant to develop the system. Above, Federici displays one of the homodyne modules developed by Picometrix that will collect data for the system. Other projects related to homeland security include: • With NSF funding, Haim Grebel, professor of electrical and computer engineering, is developing new concepts for producing infrared filters based on integrated circuit microstructure technology. His group plans to develop and test filters for all types of spectral sensors applied to a broad range of monitoring and detection systems from the visible to the THz region.

A new technology that can verify a person's identity using facial images is the goal of research by Chengjun Liu, assistant professor of computer science. He has developed a face recognition system that improves on previous technology by taking into account such factors as lighting and facial expressions. The system has tested 100 percent effective in matching videotaped images to those stored in government databases by comparing 62 features or facial landmarks. Such a technology can be used as a security system with facial identification replacing a physical key or a password. An effective face recognition system could also assist law enforcement officials in locating fugitives by means of video cameras strategically placed in public places such as airports. Liu recently received funding from the Department of Defense to support his research as part of the government's effort for combating terrorism using face recognition technologies.

A biometric identification system based on Dynamic Grip Recognition developed in NJIT's personalized weapons project could also be effective in preventing skyjackers from taking control of aircraft. The research team is developing a prototype "smart gun" using silicon-based piezo-electric pressure sensors embedded in the gun grip. The system can identify the user based on the unique "signature" of the individual hand during the first instant of trigger pull. On-board decision electronics and micro-mechanical systems-based actuators then react to either enable or block the firing mechanism. Biometrics expert, Michael Recce, professor of information systems, has also applied for a patent to adapt his hand grip technology for use by airplane pilots. Since operation of modern aircraft frequently shifts

between the pilot and ground controllers, Recce reasoned that the installation of his grip sensors in the cockpit controls could be achieved with relative ease because only the authenticated grips of the pilot or copilot could be programmed to operate the plane. When the pilot releases his or her grip, control of the plane would revert to the ground. The concept of dynamic biometrics is also being extended to other devices such as keypad entry systems where the rhythmic pattern of data entry reveals an underlying structure that is unique to the individual, reproducible and detectable.

M. Ala Saadeghvaziri, professor of civil and environmental engineering, has received start-up funding from the Multidisciplinary Center for Earthquake and Engineering Research at the University of Buffalo to develop proof of concept for an innovative water-based protective technology that could be used to mitigate the effects of explosions or earthquakes on public buildings such as schools and hospitals.

David Mendonca, assistant professor of information systems, is investigating how training in improvisation can help improve the tactical response to large-scale emergencies like the 2001 World Trade Center attack. With a prestigious NSF Faculty Early Career Development award, he hopes to develop software that can help emergency response personnel to make the right decisions under pressure.

The work of Associate Professor Eliza Michalopoulou in ocean acoustics has a compelling and timely bottom line — national defense. With expertise in both mathematical analysis and signal processing, she studies how sounds move in the ocean and how they are affected by factors like temperature, ocean depth, seafloor composition and currents. The main goal is to help the U.S. Navy, which supports her research through the Office of Naval Research, to identify better techniques for detecting underwater vehicles, particularly along the nation's seacoasts. The end products of her work are algorithms that can be used in developing next-generation security systems.

Dr. Michael Chumer of the Information Systems department is working on a variety of advanced software architectures to support emergency response and homeland security applications. By developing interoperability standards these architectures facilitate rapid integration of high performance software applications into a virtual command and control support system. With direct support from the US Army, some of these concepts are being demonstrated in conjunction with combat unmanned systems management. The concepts are being field tested in a Business Emergency Operation Center operating at Picatinny Army base. In a partnership with ARDEC and the New Jersey Business Force, the team is developing and implementing private sector integration with the public sector emergency management function. Software and communications interoperability standards are emerging that will facilitate a more resilient response and recovery should New Jersey face any mass casualty event.

II.H.3. Digital “Everyware”

The mass-impact of computing technology and the ultimate delivery on the promise of digital convergence will only come when information is available anywhere, anytime and for

anyone (or anything!). The development of ubiquitous broadband connectivity will in turn drive transformational products based on distributed intelligence and novel human interface concepts. Some examples of NJIT research at the edge of information and communications technology follow.

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 Quentin Jones, associate professor of information systems and Christian Borcea from computer science, 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 will develop 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 will create privacy-sensitive applications that make use of contextual factors — the properties of people and places and the relationships between them — that are unique to people to people to places, or P3 systems such as SmartCampus. 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.

Breakthrough discoveries by research professor Reggie Farrow may make the dream of ubiquitous computing a near-hand reality. He has devised a technique for creating nano-transistors by building functionalized carbon nanotubes one element at a time. Using electrophoresis, his research has been able to create nano-devices in the though holes of conventional micro circuitry. This means that the tremendous size reduction and performance gains of nanotechnology can be immediately take advantage of the technology base for conventional micro-fabrication to produce fully functional devices without waiting for advances in nano-wiring or other ancillary process steps. The work has received over \$1M in external support, principally from US DOD's DARPA.

NJIT is advancing wireless technology on many fronts as well as bringing related social issues into sharper focus. Wireless innovations have flowed from NJIT's Center for Wireless Communications and Signal Processing Research (CWCSRP), affiliated with the Electrical and Computer Engineering Department, for more than twenty-five years. The center's founder, Yeheskel Bar-Ness, continues to direct the group's initiatives. Bar-Ness, distinguished professor and Foundation Chair, exemplifies the creative thinking that has generated dozens of patentable improvements in wireless. Bar-Ness' name is on many of the patent applications filed over the years, and his pioneering research led to being honored as a New Jersey Inventor of the Year in 2006 and receiving a 2008 Edison Patent Award from the Research and Development Council of New Jersey.

Alex Haimovich, professor of electrical engineering, is developing a new type of network using multiple antennas that could accommodate both a high-speed information link and a sensor network for security or medical monitoring within the same frequency space. With NSF funding, his research team is seeking to develop solutions that can support a wide variety of applications simultaneously within a home or business. The team's goal is a new type of network characterized by multiple antennas and multiple appliances (MAMA).

Roberto Rojas-Cessa, assistant professor of electrical and computer engineering, is leading a team of researchers who are developing a new service model concept, called service vector, as a solution for providing quality of service support for a large variety of traffic classes — Internet, video, audio, business and data services — that challenge the next-generation information networks. The study has NSF funding.

Data watermarking, intrusion alarm systems and distortionless data hiding are some of the techniques under study at the Center for Wireless Networking and Internet Security. A partnership between NJIT's Department of Electrical and Computer Engineering and Princeton University, the center was supported by a \$2.6 million R&D Excellence Grant from New Jersey Commission on Science and Technology. Professor Yun Shi of the department of electrical and computer engineering has been awarded a number of patents based on his work in steganography and data watermarking, and these are now being commercialized.

Functional nanostructures for novel electron devices are the focus of the Integrated Nanostructures Laboratory, headed by Leonid Tsybeskov, associate professor of electrical and computer engineering. In one project supported by the National Science Foundation, the team is investigating links between structural and optical properties in three-dimensional nanostructures made of silicon and germanium, the most common materials for semiconductors. Visible photo luminescence from Si nanocrystals and different forms of organization in Ge nanocrystals grown on a Si substrate are recent discoveries, and Dr. Tsybeskov is exploring the feasibility of novel devices that make use of efficient light emission in these nanostructures. Hewlett-Packard and IBM are partners on the project.

II.H.4. Research Centers and Specialized Labs

NJIT's research program focuses on applied research in the most promising of emerging technologies, with emphasis on technology transfer and commercialization. Research at NJIT is organized around multi-disciplinary centers of excellence that encourage partnerships among various disciplines, as well as with other educational institutions, private enterprise and government agencies.

APPLIED LIFE SCIENCES

- Newark Institute for Regenerative Healthcare develops process technology to bring stem cell – based therapies to practical, reproducible, commercial scale.
- Biomedical Engineering: Stem cell applications in tissue regeneration, vision and neural engineering, bioMEMS, motion analysis and rehabilitation engineering, biomaterials and biopolymers.
- Center for Applied Genomics: Development and application of DNA microarray technology.
- The Medical Device Concept Laboratory : Synthetic materials in biomedicine.

- Membrane and Separation Technologies: Micro- and nanoporous filters for medicine and pharmaceutical manufacture.
- The Vision and Neural Engineering Lab: Oculomotor dynamics, vergence eye movements.

ARCHITECTURE AND BUILDING SCIENCES

- Center for Architecture and Building Science Research: Educational facilities, health care and aging environments, developmental disabilities planning, historic preservation, housing and community development.
- Concrete Testing Laboratory: Reinforced and high-strength concretes.

COMPUTING, MATHEMATICS AND TELECOMMUNICATIONS

- Center for Applied Mathematics and Statistics: Mathematical biology, fluid dynamics, wave propagation.
- Center for Wireless Communications and Signal Processing Research: Multi-carrier systems, Turbo Coding techniques, ultra-wideband communications, MIMO systems.
- Cryptography & Telecommunication Laboratory: Cryptography, computer security and telecommunications networks.
- electronic Arts Habitat (eArtH): Multimedia, social computing, human-computer interaction.
- New Jersey Center for Wireless Networking and Internet Security: Intrusion detection, watermarking, mobile networks.

ENVIRONMENTAL SCIENCE AND ENGINEERING

- York Center for Environmental Engineering and Science: Hazardous substance management, pollution remediation and prevention, sustainable manufacturing.
- Geoenvironmental Engineering Laboratory: Solid waste management and disposal, environmental systems, waste water treatment, site remediation.
- Laboratory for Process and Field Analytical Chemistry: On-line process analysis, environmental monitoring, portable instruments for on-site environmental measurement.

MATERIALS SCIENCE AND MANUFACTURING

- Bearings and Bearing Lubrications Laboratory: Hydrodynamic, hydrostatic, rolling element bearings and novel designs of unique bearings.
- Computational Fluid Dynamics: Particulate flows, mixing enhancement, suppression/enhancement of turbulence, drag minimization, thermal management.

- Electro-hydrodynamics Laboratory: Sensors and separation devices for a wide variety of systems for environment monitoring, health care, and medical diagnostics
- Electronic Imaging Center: Infrared filters, sensors and detectors utilizing terahertz radiation, carbon nanotubes.
- W.M. Keck Laboratory: Manipulation of liquid flows and the small particles/microorganisms they transport in biological and biomedical technologies.
- Materials Characterization Laboratory: Elemental, organic and structural analysis
- Metal Combustion Laboratory: Propellants, explosives, pyrotechnics, and incendiaries.
- Microelectronics Fabrication Center: Application-specific integrated circuits, optical switches, pressure sensors, and MEMS for biomedical, biometrics, and microfluidics application.
- New Jersey Center for Engineered Particulates: Tailored particle coatings for pharmaceuticals, food, cosmetics, ceramics, defense, electronics and specialty chemicals.
- New Jersey Center for Microflow Control: Fluidic devices, with a focus on miniaturized flows, and miniaturized sensors and actuators.
- Polymer Processing Institute: Modification of polymers processing into special property products for the medical, health care, automotive, electronics, construction, and packaging industries
- Waterjet Technology Lab: Waterjet machining and cleaning applications.

SOLAR PHYSICS

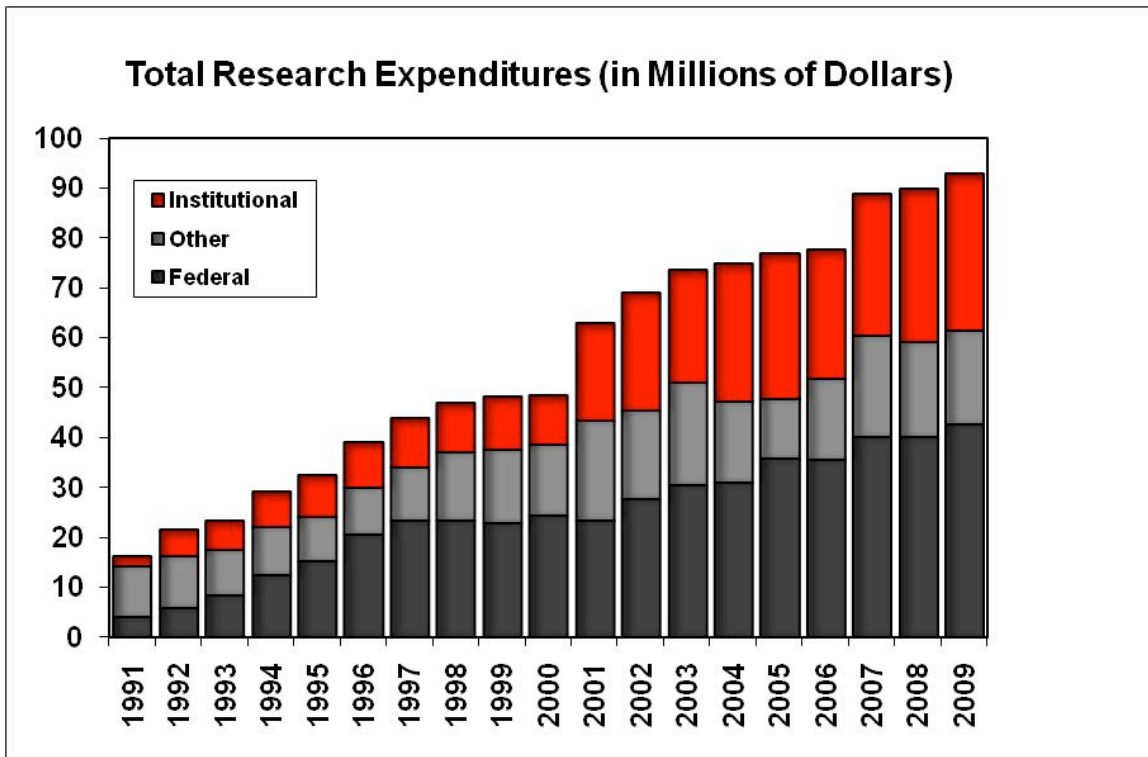
- Center for Solar-Terrestrial Research: Solar optical astronomy, solar radiophysics, terrestrial science.
- Big Bear Solar Observatory: Solar observation, helioseismology.
- Owens Valley Solar Array: Transient energetic phenomena, coronal magnetic fields.
- The Frequency-Agile Solar Radiotelescope (FASR) Project: Nature and evolution of coronal magnetic fields, physics of solar flares, drivers of space weather, the quiet Sun.
- Global High-Resolution H-Alpha Network: Round-the-clock solar observation.
- Space Weather Project: Monitoring and forecasting solar activity that may affect Earth's climate and technologies.

TRANSPORTATION

- Liberty Corridor Planning Institute: Port Newark, Elizabeth, Bayonne redevelopment; Freight transportation, brownfields and passenger transportation
- North Jersey Transportation Planning Authority: Maintaining and improving transportation systems.
- Transportation, Economic and Land Use System (TELUS): Computerized transportation planning and programming.

II.H.5. NJIT Research Expenditures

NJIT research expenditures since 1991 have grown six-fold and Federally funded research expenditures have grown even more dramatically – more than tenfold in eighteen years.



II.H.6. Incubator Expansion

The opening of a third Enterprise Development Center (EDC III) in 2002 makes NJIT's small business incubation program one of the largest in the nation. With 80,000 square feet in five stories, EDC III doubles the previous incubation space. Three floors in the new structure are earmarked for technology start-up businesses, while the remaining two floors will provide "graduation" space for companies that have outgrown an incubation program.

EDC, founded in 1988 by NJIT, with assistance along the way from Prudential, the New Jersey Commission on Science and Technology, the New Jersey Economic Development Authority, and the U.S. Economic Development Administration, is the oldest and largest incubator facility in New Jersey, which is currently serving more than 80 client businesses. EDC provides a broad base of support and acts as a "proving ground" for new and developing high-tech products. Many client companies are developing commercial enterprises that reflect the university's major thrusts in information technology, health sciences, environmental science and engineering, and materials science and engineering. The university provides the latest technical information, including access to the university's specialized equipment, faculty experts and students. The success rate for EDC businesses is higher than 85 percent; more than 50 businesses have graduated from the incubator facility.

Based on its experience in high-tech business incubation, NJIT has placed a focus on increasing the depth and breadth of services that these incubators can offer to resident firms. In particular, the objective should be to promote business acceleration – growing companies more rapidly from business concept to fledgling business. On the technological front, underwriting the expense of access to university based personnel and equipment assets and facilitating the ability to compete for federal and foundation grant funding will more rapidly move companies to critical “proof of concept” and reduce the inherent risk to investors. In addition, adding new professional services like shared support for marketing, information technology infrastructure, management team building and other critical growth items will increase the flow of successful businesses from existing incubators. NJIT has won several grants from the NJCS&T and has application spending with the National Science Foundation to further enhance its concepts for new business acceleration – and these are viewed as critical competitive advantages for the NJ-EDA led Innovation Zone program in Newark.

II.H.7. Helping Businesses Get Lean

More than 100 New Jersey manufacturing firms benefited this year from the technical assistance programs of the Center for Manufacturing Systems (CMS). The center, directed by Wayne Chaneski, offers services that range from identifying short-term productivity improvement opportunities to long-term engagements geared toward streamlining entire operations. CMS also assisted companies with product design and prototyping, process development, plant layout, machining of complex parts, and training in modern manufacturing concepts.

Training in lean manufacturing is one of the center's most popular services. Lean techniques - - inventory reduction, reduced lead time, continuous flow, increased flexibility -- are critical to the small and mid-sized manufacturing businesses that are the center's clients. One project for Purepac Pharmaceutical, an Elizabeth-based manufacturer of generic drugs, focused on reducing setup time -- the time a machine is out of service for changeover between the end of one run and the beginning of another. The CMS team videotaped an actual machine setup, then helped employees to review the process and identify solutions to problems. One department also got 5S training (Sort, Set-in-Order, Shine, Standardize, and Sustain) for improving efficiency by reorganizing workspace.

II.H.8. New Jersey Immunization Information System and the New Jersey Local Information Network & Communications System

NJIT has put into production for statewide use the New Jersey Immunization Information System (NJIIS) and the New Jersey Local Information Network and Communications System (NJLINCS) for the New Jersey Department of Health and Senior Services (NJDHSS).

NJIIS is an on-line immunization registry capable of enrolling all New Jersey children at birth and recording and evaluating their immunization histories for completeness under the Center for Disease Control and Prevention's current guidelines. Over 150,000 children are currently in the registry and more than 150 health departments, clinics and private physician's offices are currently participating via dial in modems or the Internet. NJIT installs client software at user sites, operates the servers and provides administrative and technical support for the NJIIS.

NJLINCS is an Internet based communications system that will link all local health departments with the NJDHSS in Trenton. NJLINCS provides rapid, two-way communication between state health officials and local health officers for dissemination and collection of health related information and data. NJIT operates the servers and provides administrative and technical support for the NJLINCS.

II.H.9. Assistance to Business

NJIT offers direct assistance to business through several services to small- and medium-sized businesses to encourage their growth and success. These services are delivered primarily through NJIT's six-business assistance centers:

- Technology Extension Program in Manufacturing Engineering (a component of the New Jersey Manufacturing Extension Partnership – NJMEP): a statewide manufacturing extension program to help small- and medium-sized manufacturing businesses to modernize and become more competitive
- Center for Information Age Technology (CIAT): integrates computer technology into the operations of New Jersey business, government, non-profit and educational organizations

- Center for Manufacturing Systems: assists manufacturers with prototype product development, process improvement and modernization with high speed machining center, advanced CAD/CAM and rapid prototyping facilities.
- Defense Procurement Technical Assistance Center: helps New Jersey small businesses obtain defense and other federal contracts
- Enterprise Development Center: small business incubators that help new and developing enterprises survive the typically difficult start-up stages;
- New Jersey Technical Assistance Program (NJTAP): helps New Jersey small- and medium-sized businesses comply with state and federal pollution prevention regulations;
- Micro-fabrication Center: serves to assist businesses with design and fabrication services related to silicon processing technologies in the university's clean room for MEMS and CMOS processing;
- Polymer Processing Institute: provides assistance to small businesses in processing of polymers and plastics.

NJIT also provides assistance to business through workforce development activities, research activities, economic development activities, and public service activities.

II.H.10. Sports/Sport Events

The 2008-09 year saw the Athletic Department clear the last major check by the NCAA in our bid to reclassify our Athletic Program to the NCAA Division I level. In February, we received notice from the national office, that we successfully completed the self study certification process, and received full certification.

In 2009-10 we also continue to increase our national visibility. Our men's basketball team played in their first ever nationally televised game, on the Big Ten Network vs. Penn State, and the first regionally televised game on Comcast vs Monmouth. Stories of our teams were discussed nationally on ESPN and the Today Show, and locally on many radio and TV stations, plus written articles in the Star Ledger, Wall Street Journal, and New York Times. We continue to play a national schedule with our teams facing teams in California, Hawaii, Utah, Texas, Florida, and many other states.

Athletic Highlights include our tennis teams better than .500 records, our women volleyball team's 19 victories, fencing sending two people to the NCAA regionals, and one of our cross country runners winning the university division race at the ECAC Championships.

The university upgraded the athletic training and weight room facilities, also renovations began on new locker-room facilities for the men's and women's basketball teams, in addition to a new locker room area for women's track, swimming, and tennis. The men's and women's basketball teams played some games at the new Prudential Center in Downtown Newark., and baseball continues to play their home schedule at Bears & Eagles Riverfront Stadium.

NJIT joined six other independent Division I schools and formed the all sports Great West Conference. Other conference members include: Chicago State, Houston Baptist University, University of North Dakota, University of South Dakota, University of Texas at Pan American, and Utah Valley University

In 2008-09 there were 214 student-athletes. The profile includes 140 males and 74 females. Full and partial athletic scholarships were given to 131 student-athletes whose sum totaled just over \$2.2 million. During 2008-09 academic year, 119 scholar-athletes (55%) who participated in varsity sports and earned a GPA of at least 3.0 during the fall 2008. In addition 49 (23%) student athletes are members of the Albert Dorman Honors College. In 2008-09, the university will once again sponsor 19 intercollegiate varsity sports: baseball, M/W basketball, M/W cross country, M/W fencing, M/W soccer, M/W swimming, M/W tennis, M/W indoor and outdoor track, and M/W volleyball.

II.I. Major Capital Projects Underway in Fiscal Year 2011

The NJIT campus consists of 2.9 million gross square feet of built environment on a 48 acre campus. With the recently completed construction and major rehabilitation, the average age of campus facilities is about 22 years. This is in spite of the original building dates of the 1964-1967 expansion campus, Eberhardt Hall built in 1897, Colton Hall in 1911 and Campbell Hall in 1930.

In concert with the development of University Heights Science Park, NJIT was able to consolidate a whole block just west of the major portion of the campus, but contiguous to the land acquired for its Enterprise Development Center II, in a “land swap” with the NJ Economic Development Agency of several disparate parcels that NJIT had acquired over time with land the EDA was acquiring on behalf of Science Park. The third building in Science Park Newark, a 170,000 square foot laboratory building and an addition have been completed.

NJIT completed EDCIII, an 80,000 gross square for incubating businesses as well as next stage companies which have graduated from the incubator spaces.

NJIT, with active participation of area stakeholders, has recently embarked on a major project to lead a redevelopment effort in a portion of the historic James Street section of Newark adjacent to campus. This project will involve repurposing some facilities from NJIT, Saint Michael's Hospital, the relocation of Greek housing to campus land along Warren Street, and the systematic creation of a model residential and small business zone within walking distance of Newark's central business district. NJIT has been selected and the work plan was submitted to the city for the selection of a planner / developer of this project. The Newark City Council recently adopted a redevelopment plan for the Broad Street Station Area which includes the NJIT gateway plan. The Council also confirmed NJIT as the redeveloper for the Gateway Project. The City Council approved the Redevelopment Agreement naming NJIT as the sole developer for the land within the footprint of the Gate Way Area. With respect to the Greek Village portion of the project, responses from potential developers are now being reviewed. It is expected that the developer will be under contract shortly. With respect to the multi-functional building, progress is being made on assembling the land.

II.J.1. Planning, the NEXT STEP

In 2005 the previous building phase was completed and NJIT has embarked on a comprehensive facilities planning project to identify facilities needs for the next five to ten years. This effort will take a comprehensive look at the curriculum and instructional needs for a growing campus in addition to the student service infrastructure that growing campus will require. The Facilities Master Plan was completed and is available on the university's web site.

The Plan provides plans for the orderly growth to accommodate up to 12,000 students. The Plan and an Executive Summary have been placed on the Web.

With all the expansion and new facilities, can there be further needs? In a growing technological university the answer is a firm yes. As NJIT continues to place greater emphasis on the use of technology in the life sciences, new spaces will be needed. Further, as new research oriented faculty join NJIT, more laboratory space will be necessary. The overall enrollment is projected to have modest growth in the next 5 to 10 years. The new Master Plan addresses these issues in more detail. NJIT has utilized almost all of the available land as building sites. Further, the Facilities Master Plan does not expand the general campus footprint beyond the four blocks that currently surround the campus.

To meet the challenge of limited building sites, NJIT will continue to pursue multiple paths. Limitations on funding and available land make it imperative that alternative solutions be found. As a critical element of its planning process, NJIT has developed and strengthened strategic alliances with its university neighbors. The Council for Higher Education in Newark (CHEN) consists, in addition to NJIT, of the Newark campus of Rutgers University, the University of Medicine and Dentistry of New Jersey and Essex County College. This consortium has developed both joint academic and administrative programs. For example, a researcher in the College of Computing Sciences may test computer models on learning curves in laboratory animals by using the animal facilities just across the street. There are several federated departments at NJIT and Rutgers University, which permit NJIT to have a faculty of critical mass without the full facilities burden.

The Master Plan also calls for “re-using” land by replacing low density structures with larger/taller structures. This would continue the program started with the expansion of the Campus Center.

In addition, NJIT and the Newark Public Schools have executed a purchase agreement for NJIT to acquire the adjacent public Central High School which will not be needed by the School system. The sale has been completed and NJIT took title in June 2010.

While it is in need of substantial rehabilitation, the lower floors could provide future classroom space, relieve a growing demand on physical education facilities as well as space for our math, science teacher education efforts.

Central High School, now referred to as the Central King Building has approximately 236,000 square feet of space. While it is in need of substantial rehabilitation, the lower floors could provide future classroom space; relieve a growing demand on physical education facilities as well as space for our math, science teacher education efforts.

At this time, Phase I renovations are underway. A portion of the first floor (approximately 8,000 square feet) and the second floor (approximately 30,000 square feet) are being rehabilitated and will provide additional classrooms for 550 students.

Another major focus is to secure the building envelope and bring the building up to code by installing sprinkler systems in all occupied areas and fire alarm systems throughout. Finally

technological enhancements such as smart classrooms and network access will transform the space into that which is more suitable for higher education.

Future phases include upgrading the gym and the pool both for recreational purposes and for athletic team practice; a 930 seat auditorium will also be renovated which will be used for lectures, performances and lecture series presentations. Additional classrooms will be renovated to lighten scheduling pressures on other facilities as enrollment increases.

II.J.2. Deferred Maintenance

Another critical element of the facilities plan addresses the outstanding major items of deferred maintenance. To this end, a significant allocation of resources has been made. It should be noted that NJIT has, on an annual basis, continually made progress on this important issue. Even in these difficult economic times, funds have been allocated to major system, e.g., HVAC upgrades as well as refurbishing well used areas.

II.J.3. Sustainability

NJIT sustainability efforts include environmental pollution control, recycling, water conservation, energy efficient equipment installation ,demand limiting strategies roof top vegetation systems, a solar voltaic grid for production of 50 megawatt hours of electricity per year, solar heating for domestic hot water needs, use of synthetic turf, compressed summer schedule, building shading and occupancy sensors. NJIT is among the leaders in producing the fewest tons of emissions per square foot of campus area in New Jersey.

With financial support from the American Recovery and Reinvestment Act, \$1.7 million was provided for Oak Hall through a NJ Board of Public Utilities Grant for innovations in engineering efficiencies and renewable energy. This nearly complete retrofit of Oak Hall includes use of roof mounted photovoltaic cells to generate power; demand-based controls for heating ventilation and air conditioning; new energy efficient and environmentally safe equipment; high efficiency boilers; energy conserving variable speed drives; solar water heating to displace gas as the primary source of heating water; regenerative elevator technology, and high efficiency lighting in residence and common areas utilizing the most advanced fluorescent technology.

II.J.4. Financing

The financing for the recent projects came from several sources. Several of the projects have multiple sources of funding reflective of certain restrictions on funds. For example, the US Economic Development funds could only be used for Enterprise Development III. While the overall debt of the university has risen owing to this construction, the annual debt service is covered from operating revenues, including student fees, residence hall rentals and tenant income from EDCIII. The university issued general obligation bonds through the NJ Educational Facilities Authority. At the time of issuance, Moody's Investors Service and Standard and Poor's Ratings Group have assigned bond ratings of "Aaa" and "AAA," respectively to our insured issues. Moody's Investors Service and Standard and Poor's

Ratings Group have recently reaffirmed the university's ratings of "A1" and "A+," respectively.

III. Other Institutional Information

III.A. Number of Collaborative Academic Programs

Collaborative Academic Programs

Joint Programs

- Rutgers - The State University, Newark Campus
- University of Medicine and Dentistry of New Jersey (UMDNJ)

Joint programs with Rutgers - The State University, Newark Campus include:

- Applied Mathematics (B.A.) 270301
- Applied Physics (B.S.) 400899
- Biology (B.A.) 260101
- Biology (B.S.) 260101
- Computer Science (B.A.) 110101
- Environmental Science (B.S.) 030102
- Geoscience Engineering (B.S.) 141601
- History (B.A.) 450801
- Human Computer Interaction (B.S.)
- Information Systems (B.A.) 110401
- Industrial Engineering (B.S.) 143501
- Applied Physics (M.S.) 400899
- Biology (M.S.) 260101
- Computational Biology (M.S.)
- Environmental Science (M.S.) 030102
- History (M.A.T.) 131328
- History (M.A.) 450801
- Public Health (M.P.H.) 512201
- Applied Physics (Ph.D.) 400899
- Biology (Ph.D.) 260101
- Environmental Science (Ph.D.) 030102
- Mathematical Sciences (Ph.D.) 270101
- Public Health (M.P.H.)
- Urban Systems (Ph.D.)

Joint programs with the University of Medicine and Dentistry of New Jersey include:

- Nursing (M.S.N., Nursing Informatics Track only)
- Public Health (M.P.H.) 512201

- Biomedical Engineering (Ph.D.) 104501
- Urban Systems (Ph.D.) 459999

Joint Research Programs – Centered at NJIT

- Center for Solar Research (NJIT, Cal. Tech.)
- Hazardous Substance Management Research Center (NJIT, UMDNJ, Rutgers, Princeton, Stevens)
- Microelectronics Research Center (NJIT, Rutgers, Columbia)
- Multi-Lifecycle Engineering Research Center (NJIT, Rutgers, Princeton, Stevens)
- National Center for Transportation and Industrial Productivity (NJIT, Rutgers)
- New Jersey Program for Engineered Particulates (NJIT, Princeton, Rutgers)
- New Jersey Center for Micro-Flow Control (NJIT, Princeton)
- New Jersey Center for Multimedia Research (NJIT, Princeton)
- New Jersey Center for Transportation Information and Decision Engineering (NJIT, Princeton)
- New Jersey Center for Internet Security (NJIT, Princeton, Stevens)
- New Jersey Center for Wireless Telecommunications (NJIT, Rutgers, Princeton, Stevens)
- New Jersey MEMS Initiative: From Concept to Commercialization (NJIT, Rutgers, Columbia)
- Northeast Hazardous Substance Research Center (NJIT, UMDNJ, Rutgers, Princeton, Stevens, Tufts, MIT)
- Polymer Engineering Center (NJIT, Stevens)

Research Partnerships Centered at Other Institutions

- Center for Airborne Organics (MIT, NJIT, Cal. Tech.)
- Center for Applied Genomics (NJIT, UMDNJ)
- Center for Embedded System-On-a-Chip Design (Princeton, Rutgers, NJIT)
- Center for Ultra-fast Laser Applications (Princeton, Rutgers, NJIT, UMDNJ)
- New Jersey Center for Biomaterials and Medical Devices (Rutgers, UMDNJ, Princeton, NJIT)
- Collaborative Telemedicine Environments (Rutgers, NJIT, UMDNJ)
- New Jersey Center for Optoelectronics (Princeton, NJIT)
- New Jersey Center for Pervasive Computing (Princeton, NJIT, Rutgers)
- Particle Processing Research Center (Rutgers, NJIT)
- Phytoremediation of Dredge Spoils Using Living Plants/Associated Microorganisms (Rutgers, NJIT)
- Software Engineering for Distributed Computing and Networking (Stevens, Rutgers, NJIT)

NJIT's articulation arrangements

NJIT currently has articulation arrangements with the following 18 institutions:

- Bergen Community College
- Brookdale Community College
- Burlington County College
- Camden County College
- County College of Morris
- Cumberland County College
- Essex County College
- Hudson County Community College
- Mercer County College
- Middlesex County College
- Ocean County College
- Passaic County Community College
- Raritan Valley County College
- Union County College
- Lincoln University of Pennsylvania
- Seton Hall University
- Stockton State College
- William Peterson University

III.B. Number of Collaborative Student Service and Administrative Programs

Collaborative Student Service and Administrative Programs

- South Jersey Economic Development Network (NJIT, Burlington, Cumberland, Georgian Court, Ocean, Salem, UMDNJ)
- Council for Higher Education in Newark (NJIT, Rutgers-Newark, Essex, UMDNJ)
- University Heights Science Park (NJIT, Rutgers-Newark, UMDNJ)
- Cross registration of courses (NJIT, Rutgers-Newark, Essex, UMDNJ)
- Joint student cultural events (NJIT, Rutgers-Newark)
- Joint shuttle bus service (NJIT, Rutgers-Newark)
- Joint library privileges and interlibrary loan arrangements (NJIT, Rutgers-Newark)
- Coordination of security and public safety programs (NJIT, Rutgers-Newark)
- Federated Department of History (NJIT, Rutgers-Newark)
- Federated Department of Physics (NJIT, Rutgers-Newark)
- Southern CIM Consortium (NJIT, Camden + 5 additional county colleges)
- Northern/Central Advanced Technology Consortium
- Joint admissions programs (NJIT, Bergen, Burlington, Essex, Hudson, Mercer, Middlesex, Ocean, Union) Cooperative agreement on B.S. in Engineering Science/M.D. or D.M.D. sequence (NJIT, UMDNJ)
- Articulation agreements (NJIT, 18 county colleges)
- Sharing of facilities: extension sites (NJIT, Bergen, Drew, Mercer, Paterson, Ramapo, Raritan)
- Energy Conservation Committee (NJIT, Rutgers-Newark)
- Joint street cleaning program (NJIT, Rutgers-Newark)
- Consortium for Pre-College Education in Newark (NJIT, Rutgers-Newark, UMDNJ)
- Communiversity
- New Jersey Higher Education Network

III.C. The Process for Assessing Outcomes for Graduates

NJIT assesses outcomes for graduates through a program that includes multiple measures and surveys. Most programs of the college include exit examinations and projects completed in capstone courses. In addition, all graduates have the opportunity to participate in the survey program conducted by the Office of Institutional Research and Planning. In order to help in assessing outcomes for graduates, the program surveys graduating students, alumni, and employers of NJIT graduates. General results from the surveys include the Graduating Student Survey, and Alumni Survey.

III.C.1. Graduating Student Survey

The Graduating Student survey was redesigned in Fall 2007 to improve its assessment effectiveness in its delivery via the web. The survey instrument consists of 36 questions relating to achievement of goals, self-assessment of acquired skills and knowledge, and items evaluating academic programs and student services. Graduates were also asked to describe current employment and educational plans

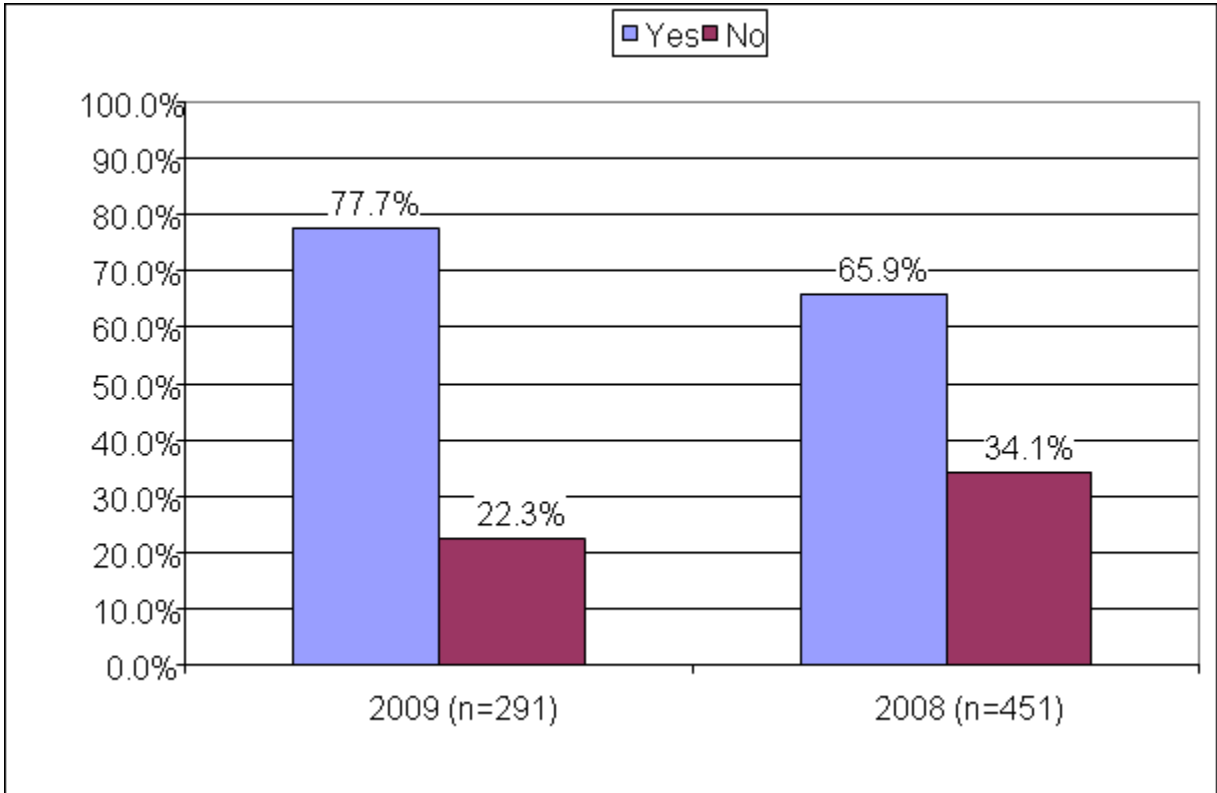
For Spring 2009, both graduating undergraduate and graduate students rated NJIT highly on a five point scale (5=high, 1=low). The current difficult economic climate has had an effect on our graduates. Compared to last year, the mean for the educational goal, improved ability to make more money declined for graduating undergraduate students (3.73 to 3.48) and graduate students (3.52 to 3.24). There was also a decline in the ratings of preparation to enter job market and helpfulness of financial aid services especially for graduating graduate students.

The National Association of College and Employers reported that 19.7 percent of college seniors who were seeking a job got one. Previously, 26 percent of those graduating in 2008 who had applied for a job had one in hand by the time of graduation (see <http://www.nacweb.org/press/display.asp?year=&prid=301>). The NJIT under-graduate full-time employment rate is substantially better than the national average.

Our graduating undergraduate full-time employment rate is about 36 percent or about 16 percent higher than the national average (19.7 percent). It is interesting to note that the overall average starting salary for undergraduates is about 2.5 percent higher than last year.

More undergraduates are planning to go to graduate school. About 78 percent of the undergraduate graduates plan on attending graduate school. This is a 12 percent increase from last year. While the rate of attending graduate school immediately within the year is the same as the previous year, 58 percent will be full-time students which is an increase of 19 percent. See table on next page.

Graduating Undergraduate Students Spring 2009 Survey
 Q30. Are you planning to attend graduate school?



Forty-two percent of graduating undergraduate students plan on attending a graduate program in engineering. As compared to last year, more of them intend to enroll in computer/information technology programs, engineering and liberal arts.

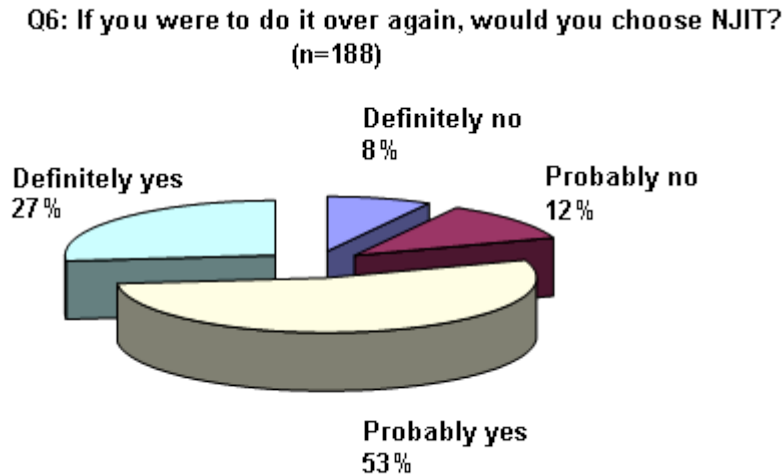
Compared to our undergraduate employment rate, graduating graduate students have fared better in the competition for jobs. Forty percent reported full-time employment which is only a 5 percent decrease from last year. Ninety-four percent has a job related to their field. Compared to last year, the overall average starting salary for graduating graduate students fell from \$63,350 to \$57,979. Fifty percent of the graduating graduate students found new employment.

III.C.2. Alumni Survey

In Spring of 2008, after an environmental scan of our peers, the Alumni survey was revised with input from Advancement and Career Development services. The instrument consisted of 26 items that asked alumni to rate their overall experience, assess their skill development, academic program and alumni services. Alumni were also asked if they had undertaken further formal education and their employment status. An email invitation and subsequent email reminders were sent to all alumni who graduated in the last three years. Many of the respondents reported that classes, professors and classmates were the most meaningful part

of their university experience. If they had to choose a college again, 80 percent of the respondents would choose NJIT, this is identical to the Fall 2005 Alumni survey response.

Alumni Survey Spring 2008



General professionalism of the program, faculty relationship with the students, relevance of the program in major to job performance and intellectual atmosphere were rated good/excellent by approximately 60 percent or more of the respondents. More than 65 percent rated their skills (i.e., problem solving, computer skills, science, program specific skills and mathematics) as good/excellent. Nearly 80% percent are satisfied with their NJIT experience. Fifty-eight percent reported that NJIT prepared them well for their career/profession.

Within three years of graduation, 85 percent of NJIT graduated were employed full-time, and 82 percent have job related to their major. Since graduating, 30 percent have undertaken further formal education. More than 50 percent sought a Master's degree and 24 percent pursued a doctorate or other professional degree. Seventy-one percent plan on seeking further formal education in the future.

III.C.3. Tracking by Office of Career Development, Faculty & Others

In addition to the survey program, numerous other mechanisms are in place that help to provide NJIT with feedback and information about graduates. The Office of Career Development conducts a survey of graduates at the time of graduation, and this survey occurs approximately 1 month after the graduating student survey. At the time of graduation, the number of students reporting that they are employed increased several percentage points across all levels. Many alumni of NJIT continue to participate in the life of the NJIT community through membership in the alumni association, advisory boards established for academic programs, and through other events. Such participation generally includes the opportunity to advise NJIT on the graduate's experiences, achievements, and recommendations regarding programs.

III.D. Degrees**III.D.1. Bachelor's Degrees Awarded in Fiscal Year 2010**

| CIP Code | Institutional Program Title | Total |
|-----------------|--|--------------|
| 400899 | Applied Physics | 7 |
| 040201 | Architecture | 88 |
| 260101 | Biology | 38 |
| 140501 | Biomedical Engineering | 36 |
| 150000 | Certificate in Electrical Technology | 2 |
| 140701 | Chemical Engineering | 39 |
| 400501 | Chemistry | 5 |
| 140801 | Civil Engineering | 67 |
| 261103 | Computational Biology | 2 |
| 140901 | Computer Engineering | 27 |
| 110101 | Computer Science | 50 |
| 150000 | Computer Technology | 7 |
| 150000 | Concrete Industry Management Technology | 1 |
| 150000 | Construction & Construction Engineering Technology | 28 |
| 150000 | Construction Management Technology | 11 |
| 141001 | Electrical Engineering | 39 |
| 150000 | Electrical Engineering Technology | 38 |
| 141301 | Engineering Science | 10 |
| 141401 | Environmental Engineering | 2 |
| 030104 | Environmental Science | 4 |
| 540101 | History | 7 |
| 040201 | Industrial Design | 4 |
| 143501 | Industrial Engineering | 17 |
| 110401 | Information Systems | 21 |
| 110103 | Information Technology | 72 |
| 521101 | International Business | 1 |
| 520201 | Management | 91 |
| 150000 | Manufacturing Engineering Technology | 1 |
| 270101 | Mathematical Sciences | 22 |
| 141901 | Mechanical Engineering | 111 |
| 150000 | Mechanical Engineering Technology | 36 |
| 231101 | Professional & Technical Communication | 6 |
| 301501 | Science Technology and Society | 3 |
| 150000 | Surveying Engineering Technology | 12 |
| 150000 | Telecommunications Management Technology | 2 |
| | Total | 907 |

III.D.2. Master's Degrees Awarded in Fiscal Year 2010

| CIP Code | Institutional Program Title | Total |
|-----------------|---|--------------|
| 270301 | Applied Mathematics | 4 |
| 270501 | Applied Statistics | 15 |
| 040201 | Architecture | 21 |
| 260101 | Biology | 2 |
| 140501 | Biomedical Engineering | 70 |
| 140701 | Chemical Engineering | 23 |
| 400501 | Chemistry | 8 |
| 140801 | Civil Engineering | 39 |
| 261103 | Computational Biology | 23 |
| 140901 | Computer Engineering | 16 |
| 110101 | Computer Science | 140 |
| 141001 | Electrical Engineering | 97 |
| 110199 | Emergency Management & Business Continuity | 15 |
| 151501 | Engineering Management | 109 |
| 141301 | Engineering Science | 1 |
| 529999 | Enterprise Development | 2 |
| 141401 | Environmental Engineering | 11 |
| 440501 | Environmental Policy Studies | 6 |
| 030104 | Environmental Science | 13 |
| 510702 | Healthcare Systems Management | 5 |
| 143501 | Industrial Engineering | 25 |
| 110401 | Information Systems | 94 |
| 040301 | Infrastructure Planning | 9 |
| 521101 | International Business | 3 |
| 110901 | Internet Engineering | 4 |
| 520201 | Management | 21 |
| 520299 | Management of Technology | 79 |
| 143601 | Manufacturing Engineering/Manufacturing Systems Engineering | 2 |
| 141801 | Materials Science and Engineering | 3 |
| 141901 | Mechanical Engineering | 27 |
| 150701 | Occupational Safety & Industrial Hygiene | 1 |
| 149999 | Pharmaceutical Engineering | 35 |
| 142701 | Pharmaceutical Systems Management | 6 |
| 231101 | Professional & Technical Communication | 8 |
| 141001 | Telecommunications | 16 |
| 140804 | Transportation Engineering | 6 |
| | Total | 959 |

III.D.3. Doctoral Degrees Awarded in Fiscal Year 2010

| CIP Code | Institutional Program Title | Total |
|-----------------|------------------------------------|--------------|
| 400899 | Applied Physics | 4 |
| 260101 | Biology | 2 |
| 140501 | Biomedical Engineering | 1 |
| 140701 | Chemical Engineering | 4 |
| 400501 | Chemistry | 1 |
| 140801 | Civil Engineering | 4 |
| 140901 | Computer Engineering | 2 |
| 110101 | Computer Science | 4 |
| 141001 | Electrical Engineering | 11 |
| 030104 | Environmental Science | 1 |
| 143501 | Industrial Engineering | 3 |
| 110401 | Information Systems | 8 |
| 520201 | Management | 1 |
| 141801 | Materials Science and Engineering | 4 |
| 270101 | Mathematical Sciences | 5 |
| 141901 | Mechanical Engineering | 5 |
| 140804 | Transportation Engineering | 1 |
| 459999 | Urban Systems | 6 |
| | Total | 67 |