

**NEW JERSEY INSTITUTE OF TECHNOLOGY  
FY 2005 BUDGET REQUEST**

**GOALS, OBJECTIVES AND PROGRAM DESCRIPTIONS**

Outlined below are the major university goals for Fiscal Year 2005 and beyond, the objectives associated with these goals and relevant program descriptions.

The goals outlined below reflect the broad statements consistent with the traditional university mission of teaching, research, and service and associated support. More specific objectives are part of the initiatives more fully described in the priority packages.

**Goals: Teaching and Learning**

1. To ensure that the curriculum remains congruent with the realities of a demographically and a technologically dynamic world; to modify curricula, teaching, and learning modalities with a view toward educating for leadership in a global economy.
2. To enhance student awareness of an increasingly complex, diverse and interdependent world.
3. To continue to expand the use of computing hardware, software, and other advanced technologies.
4. To expand links between what students and faculty do on campus and their experiences in industry and other professional settings.
5. To strengthen and enhance student analytical and communications skills.
6. To improve undergraduate and graduate teaching skills.
7. To support programs that foster teaching excellence and the use of effective teaching techniques.
8. To more effectively assess the quality of teaching as part of the promotion and tenure process.
9. To create a learning environment that better serves and supports under-represented student groups such as women and minorities.
10. To continue to conduct outcomes assessment research to develop best practices in teaching and learning.
11. To expand context-based learning and problem-based instructional strategies across the curriculum.
12. To further integrate technology and technology-based resources in teaching and learning activities.
13. To improve retention across all student populations.
14. To review academic programs on a regular basis.
15. To improve the integration of the university's various assessment-related activities.
16. To embrace quality improvement as a major objective in both academic and administrative functions.

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**Goals: Research and Graduate Studies**

1. To continue to expand NJIT's reputation as a nationally recognized research university.
2. To increase annual external research support to \$50 million as a result of growth in the number and size of grants awarded.
3. To improve institutional structure and policy to further encourage research.
4. To provide faculty with increased opportunities to build research programs.
5. To increase the number of industrial and corporate personnel involved with NJIT, in order to develop enhanced opportunities for joint research projects.
6. To establish a flexible teaching load policy, consistent with the goals of a comprehensive technological research university on a basis uniformly understood and appropriately negotiated.
7. To increase the number of faculty who are Fellows in their professional societies and are members of the national academies.
8. To continue to improve the academic quality of the graduate student population.
9. To increase measurable scholarly productivity.
10. To improve the quality of the graduate student population.
11. To continue to implement more rigorous and uniform admissions procedures.
12. To improve the completion rate of graduate students.
13. To enhance and improve Ph.D. programs.
14. To continue developing internal support systems for doctoral students.
15. To increase the number of enrolled Ph.D. students to 350 and the completion rate to a minimum of 60 doctoral degrees conferred in 15 different departments annually by 2005.
16. To continue to improve library services and collections and to increase access to information in order to meet fully the needs of a comprehensive technological research university.

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**Goals: Student Diversity**

1. To increase the number of full-time enrolled women undergraduate students and the number of full-time enrolled minority graduate students.
2. To achieve a female enrollment of at least 25 percent of all full-time undergraduate students by Fall 2008.
3. To continue to maintain high levels of under-represented minority graduate enrollments.
4. To increase the resident student population to improve retention, quality of life, and attractiveness of the campus to more distant populations, and as part of a university's visibility plan.
5. To increase the number of domestic (U.S. national) full-time graduate students.
6. To improve the recruitment and retention of adult learners.

**Goals: Faculty and Staff**

1. To continue to improve the quality of NJIT faculty and staff.
2. To increase the number of women, African-American and Latino faculty.
3. To recruit intensively so that women account for at least 30 percent and under-represented minorities for at least 10 percent of full-time faculty.
4. To maintain NJIT's favorable labor-management relations and atmosphere for negotiations.
5. To foster a welcoming and supportive environment for all new and veteran NJIT employees.
6. To expand the staff and management development/training program.
7. To expand career development ladders for non-faculty employees.
8. To improve employee productivity, efficiency and effectiveness.
9. To improve the university's staff training program.

**Goals: Campus Life**

1. To continue to improve the quality of services provided to students and other constituents.
2. To continue to develop an environment that provides a tangible sense of community for students, faculty, staff and administration.

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3. To maintain the safe environment through excellent security and fire safety systems.
4. To continue to develop services and facilities appropriate to the needs of women on an urban campus.
5. To ensure appropriate levels of student participation in the decision-making process.
6. To improve communications and information dissemination.
7. To increase the amount and proportion of “green space” on campus.

**Goals: Public Service**

1. To serve diverse student populations through the continued development of programs and services for disadvantaged pre-college students, as well as specific populations such as the disabled, the gifted, and practicing professionals.
2. To continue to develop innovative programs for elementary and secondary school students.
3. To continue to develop services for the professional community.
4. To increase the involvement of students, faculty and staff in community service.

**Goals: Economic Development**

1. To serve the economic development needs of the City of Newark, the State, and the nation.
2. To make the best possible use of NJIT's special talents and expertise in service to its external communities.

**Goals: Resource Management and Development**

1. To continue to improve the budgetary process for academic and administrative sectors, ensuring appropriate links between allocation decisions and institutional goals and strategic priorities.
2. To improve formal linkages between all planning activities, resulting documents, and institutional budgets.
3. To continue to develop resources to support ongoing programs and the implementation of plans for NJIT's future.
4. To increase significantly the university's endowment.
5. To increase giving from alumni and other individual donors.

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

**Instruction: Objectives**

1. To offer baccalaureate degree programs in architecture, engineering, engineering technology, computer science, management, statistics and actuarial science, chemistry, applied science, science technology and society, applied physics, applied mathematics, information technology, bioengineering and applied sciences, environmental studies and sustainability, advanced materials, transportation and other disciplines that will enable graduates to qualify for immediate, productive careers and for advanced study in graduate and professional schools.
2. To provide opportunities for graduate students to attain advanced degrees in a number of professional fields.
3. To provide opportunities for continuing education for engineers, scientists, architects, managers, computer specialists, engineering technologists, and others employed in business, industry, and government in New Jersey and throughout the region.
4. To encourage and provide opportunities for the development and maintenance of high professional standards within the academic community.
5. To the extent feasible, where there is a demonstrable need, expand the number of sites in the state where NJIT's programs are offered, to make them available on a statewide basis.
6. To offer college courses to students in high schools through carefully planned television and computer conferencing programs. To expand graduate course offerings at remote sites through distance learning modalities.
7. To expand the use of computers in each of the curricula offered by the university.

**Instruction: Program Descriptions**

1. NJIT currently offers day and evening courses leading to the following degrees:
  - Bachelor of Architecture (B.Arch.)
  - Bachelor of Science in Nursing (B.S.N) joint with The University of Medicine and Dentistry of New Jersey, (Mt. Laurel Campus)
  - Bachelor of Arts (B.A.) in: Applied Mathematics (joint with Rutgers University - Newark Campus); Biology (joint with Rutgers University - Newark Campus); Computer Science (joint with Rutgers University - Newark Campus); History (joint with Rutgers University - Newark Campus); Information Systems (joint with Rutgers University - Newark Campus); Professional

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and Technical Communication; Science/Technology & Society (joint with Rutgers University - Newark Campus)

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

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- Master of Science in Nursing-Nursing Informatics (M.S.N.) joint with The University of Medicine and Dentistry of New Jersey
  - Doctor of Engineering (D.E.) in: Chemical Engineering; Civil Engineering; Electrical Engineering; Mechanical Engineering
  - Doctor of Philosophy (Ph.D.) in: Applied Physics (joint with Rutgers University – Newark Campus); Biology (joint with Rutgers University - Newark Campus); Biomedical Engineering (joint with The University of Medicine and Dentistry of New Jersey) Chemical Engineering; Chemistry; Civil Engineering; Computer and Information Science; Computer Engineering; Computer Science; Electrical Engineering; Environmental Engineering; Environmental Science (joint with Rutgers University - Newark Campus); Industrial Engineering; Information Systems; Materials Science and Engineering; Mathematical Sciences (joint with Rutgers University - Newark Campus); Mechanical Engineering; Transportation; Urban Systems (joint with both The University of Medicine and Dentistry of New Jersey and Rutgers University - Newark Campus)
2. NJIT teaches, advises and mentors doctoral students in one degree program offered by Rutgers University as the degree-granting institution: Ph.D. in Management
  3. NJIT offers cooperative education programs in which work in industry and business is a part of the student's curriculum leading to most of the listed bachelors' and masters' degrees.
  4. Faculty responsibilities, in addition to instruction and academic program development, include advisement of students in undergraduate and graduate programs; supervision of students in laboratories and independent study; research and scholarship; professional activities and public service; service on departmental, college, and university committees concerned with academic governance of the university; and activities related to community service.

**Program Descriptions: Sponsored Research and Other Sponsored Programs**

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

**Objectives: Public Service**

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

**Objectives: Continuing Professional Education**

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To make available on campus and at sites throughout the State, not-for-credit programs for working professionals and non-matriculating students for the primary purpose of maintaining proficiency in employment and professional development. Conferences, courses of varying duration, and seminars are held for these purposes and to satisfy other specific educational objectives of individuals and their corporate and government employers.

**Program Descriptions: Continuing Professional Education**

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

1. Courses are offered to practicing professionals who desire to upgrade their competence in newly emerging areas of concern to government and industry, e.g., web mastering, microelectronics, microcomputers, computer-aided design, manufacturing and robotics.
2. Refresher courses are provided for individuals qualified for admission to the licensing examination for Registered Architect in the State of New Jersey.
3. National conferences are organized on subjects of interest to industry and government.
4. There are two exams, Fundamentals of Engineering and Professional Engineer. Review courses are held during the Fall and Spring semesters to assist individuals in preparing for the Fundamentals of Engineering (FE) examination and the Professional Engineering (PE) examination.
5. Specially tailored "in-house" programs are presented to industry and government organizations.
6. Non-credit and credit-bearing distance-based degrees, certificates and courses and non-credit training courses are developed and delivered to audiences too remote to take advantage of other curriculum offerings.
7. For professionals who have been displaced by layoffs, plant or business closings, or corporate restructuring, the Division of Continuing Professional Education provides skill and competency upgrading so that these individuals can pursue new employment opportunities.
8. The Division works closely with NJIT's various research centers to provide a comprehensive training component, helping the centers achieve their public service objectives.

**Objectives: Community Service and Economic Development**

1. To promote civic responsibility through service for all members of the university community, with a special focus on students.
2. To link students, faculty and staff directly to an array of community service opportunities.

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

**Program Descriptions: Community Service and Economic Development**

1. The Office of Community and Public Service promotes the integration of service learning programs with course work, as well as providing opportunities for paid and volunteer work with public and community-based agencies. The office administers NJIT's Service Corps enabling students to use their skills and knowledge to address serious social and environmental issues facing the city, state and region. The Housing Fellows Program, for example, places students in community based non-profit housing organizations to develop plans, design and initiate affordable housing, and related projects.
2. Economic development includes three major initiatives. The Enterprise Development Center is a technology-based business incubator that assists firms to start-up and grow with the aid of university resources. The Procurement Technical Assistance Center is a federally funded program that helps businesses successfully compete for Department of Defense and other federal contracts. The Office of Intellectual Property provides systematic coordination of efforts to support NJIT faculty, staff and students seeking to commercialize their inventions. NJIT is also involved in a number of other efforts to support and develop the economy of the city, the state and beyond.

**Objectives: Auxiliary Services**

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

**Program Description: Auxiliary Services**

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

**Objectives: Academic Support**

1. To provide print and non-print media materials to the faculty and students for research, reference and supplemental reading to complement and supplement the formal instructional program.
2. To provide instruction to students in the use of library collections to aid them in study and research.
3. To provide bibliographical and other technical assistance to faculty and students to meet their needs in academic program planning and development and in carrying out independent study projects, and other course-related assignments.
4. To provide instruction in the use of and access to modern computer technology.
5. To provide computer and programming capability appropriate to the research and instructional activities of the university.

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**Program Descriptions: Academic Support**

1. The library and staff provide a full range of services to students, faculty and administration, including circulation, catalog maintenance, reference services, technical and bibliographical services, and general assistance in the use of all library collections. Media Services and the Library also provide films, film-strips, video tapes, and other audio-visual materials and equipment to faculty and staff for instructional and other university purposes.
2. The University Information Systems department provides a full range of computing facilities, services, and information systems. An extensive network of mainframes, minicomputers, microcomputers, terminals, and software has been developed and is regularly updated and expanded.

**Objectives: Student Services**

1. To provide students with a quality campus life experience.
2. To provide students with comprehensive academic support services and programs.
3. To provide students with a broad range of education-related services in order to facilitate their social, emotional, and intellectual growth.
4. To provide financial assistance to students on the basis of demonstrated need, and to provide scholarships from university and private sources when there is a combination of need and merit.
5. To provide a complement of support services outlined in the Program Descriptions.

**Program Descriptions: Student Services**

Services provided include admissions processing, academic tutoring and support, residence, dining, athletics (including an extensive program of intercollegiate and intramural sports), counseling services (including testing, course placement, academic and personal counseling), veterans and international student services, student activities, financial aid programs, health services, co-op's, internships, college work study, career planning and placement. Under established policies and procedures, financial aid is provided to students through a program of loans, scholarships, grants and work opportunities. Funds are derived from state appropriations, federal grants, and private sources and institutional budgets.

**Objectives: Institutional Support**

1. To provide management of the university with strong support in planning, program development and evaluation, financial management, and effective resource development, allocation, and utilization.
2. To provide general support services to all instructional, service and administrative units of the university.

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

**Objectives: Physical Plant Operations and Management**

1. To operate the physical plant in a safe and energy-efficient manner.
2. To operate and maintain all physical facilities required for the conduct of the educational and related programs.
3. To provide transportation and other related services required to maintain a secure and efficiently managed physical environment.
4. To preserve and extend the useful life of the physical assets.

**Program Descriptions: Physical Plant Operations and Management**

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