Transportation is about people and their access to work, school, loved ones and nature’s rich bounty. It aims to improve mobility, enhance the human and natural environment, spur the economy and ensure national security. America’s transportation network is the circulatory system of our economy. A strong and efficient transportation system provides businesses with access to materials and markets, and people with access to goods, services, recreation and other people.

Propelled by amazing new technologies, transportation is being transformed in revolutionary ways and at breathtaking speed at the outset of the new century and the new millenium. Great, long historic sweeps of transportation development in the United States have telescoped to months. This rapid change was unforeseen before the Internet was linked with the calculating power of the computer. The technology marriage has accelerated the rate of change in transportation more than anyone dreamed even five years ago. Transportation has become international in reach, intermodal in form, intelligent in character and inclusive in service.*

The New Jersey Institute of Technology (NJIT) recognized the growing importance of information technology in education and research more than two decades ago. Today, the university is recognized as a national leader in information technology and its applications. Its approach crosses disciplines and encourages a team approach to learning and the entrepreneurial enterprise. In 2000, for the 3rd year in a row, NJIT was designated America’s most wired public university by Yahoo! Internet Life. "Most wired" is an attitude at NJIT that predates any ranking surveys and one that is critical to its mission as a public research university.

Through the Interdisciplinary Program in Transportation, NJIT offers graduate programs leading to M.S. and Ph.D. degrees in Transportation. Graduates of these programs are highly trained professionals in the areas of planning, design and management of transportation systems, and are capable of meeting the personnel and research needs of transportation agencies in private and public sectors of our economy.

The program meets the needs of students with engineering and science backgrounds who choose to study the planning, design and operation of highway and public transit systems. Students who are interested primarily in the movement of freight can pursue an M.S. in Logistics Engineering.

In addition to designated transportation faculty, some 20 additional faculty with diverse backgrounds and academic appointments from various departments and schools throughout the university are involved in educational and research activities. These departments include civil and environmental engineering, computer and information science, electrical and computer engineering, industrial and manufacturing engineering, management, and mathematical sciences.

A number of research fellowships are available to qualified applicants who intend to complete their requirements on a full-time basis.

**GRADUATE STUDIES IN TRANSPORTATION**

Students majoring in transportation can receive a Master of Science and/or a Doctor of Philosophy degree.

**MASTER OF SCIENCE IN TRANSPORTATION**

This is a program for students from diverse educational backgrounds with a variety of career goals that prepares them for careers in designing, planning, operating, maintaining and managing urban and rural transportation systems. The master’s degree is

---

*USDOT 2000

**SAMPLE TRANSPORTATION RESEARCH**

- Aesthetic Design of Noise Barrier Walls
- Air Quality Monitoring Computer Systems
- Container Port Operations
- Design and Evaluation of Toll Plaza Systems
- Digital Map Requirements for Automatic Vehicle Location
- Estimation of Freight Flow: Data Analysis and Gravity Modeling
- Mobility and the Costs of Congestion in New Jersey
- Performance Evaluation Study for EDA Pipeline Infrastructure Study
- Seismic Retrofitting and Design of Highway Bridges in New Jersey
- Moving Telecommunication Forward
- The Mature Driver: Safety and Mobility Issues
- Transportation Economic and Land Use Systems (TELUS)

**FOR FURTHER INFORMATION CONTACT**

Dr. Athanassios K. Bladikas, Director 973.596.3649

e-mail: bladikas@admin.njit.edu

**PLEASE VISIT OUR WEB SITE AT**

transportation.njit.edu
a valued professional credential for individuals engaged in the transportation field.

**Off-Campus Programs**

At the New Jersey Department of Transportation (NJDOT), in Trenton, NJIT offers sufficient courses to fulfill all degree requirements. All courses are taught by NJIT faculty and are open to non-DOT employees.

**Admission Requirements**

Applicants should have a bachelor’s degree from an accredited institution with some undergraduate background in economics, mathematics, probability and statistics, and computers.

**Bridge Program**

Students who lack an appropriate background may be admitted and required to make up deficiencies by taking a program of courses designed in consultation with graduate advisors. These courses are taken in addition to the degree requirements.

**Degree Requirements**

Students must select one area of specialization and take a minimum of 30 credits. Tran 792 Seminar is required for all students who receive departmental or research-based awards. A maximum of 6 credits may be taken from the 500-level courses for the master of science.

Three general areas of specialization are available. While they share a common methodological core, each is designed to suit various interests:

**Transportation Engineering** focuses on traffic engineering, physical design and operational aspects of transportation systems. This area is best suited for students with an undergraduate engineering degree.

**Transportation Planning** emphasizes the analysis and planning aspects, in particular the integration of transportation systems with urban and regional considerations such as economics, land use, and the environment.

**Advanced Transportation Systems and Technologies** emphasizes the use of emerging technologies such as intelligent transportation systems in planning, design and operations of multi- and inter-modal transportation systems.

**Doctor of Philosophy**

The doctoral program is for well-qualified students who are mature in scholarship and purpose. It offers a well-balanced mixture of theoretical studies and experimental research. A student must demonstrate creative thinking, self-motivation, and ability to do independent research. In their research, students are expected to deal with complex issues, effectively formulate difficult problems, devise new methodology, and achieve new and exceptional results.

**Admission Requirements**

Students should have adequate preparation in mathematical and other analytical techniques, and substantial knowledge of the ideas and techniques of synthesis. A thorough understanding of the social and economic factors intrinsic to the functioning and development of transport in urban areas also is necessary. It is expected that students will have earned a minimum GPA of 3.5 in a master’s degree program in engineering, planning, or business administration from an accredited university. Outstanding students with baccalaureate degrees also may be accepted. All applicants must take the GRE. Full-time study is preferred for doctoral studies.

**Degree Requirements**

Requirements consist of a minimum of 54 credits of course work beyond the bachelor’s degree, including at least 12 credits of 700-level courses, passage of a qualifying examination, a minimum of 36 credits of Tran 790 Doctoral Dissertation, and Tran 791 Doctoral Seminar. Independent original research must be conducted by the candidate in a specific area of transportation. Dissertation work must be of publishable quality.

**Qualifying Examination**

All doctoral students must pass a doctoral qualifying examination. To prepare adequately for the examination, students should take appropriate course work in transportation engineering, transportation planning, and advanced transportation systems and technologies, as well as other related subjects.

**Graduate Courses in Transportation include:**

- Tran 552 Geometric Design of Transportation Facilities
- Tran 553 Design and Construction of Asphalt Pavements
- Tran 592 Co-op Work Experience
- Tran 602 Geographic Information Systems
- Tran 603 Introduction to Urban Transportation Planning
- Tran 608 Behavioral Issues in Transportation Studies
- Tran 610 Transportation Economics
- Tran 615 Traffic Studies and Capacity
- Tran 625 Public Transportation Operations and Technology
- Tran 640 Distribution Logistics
- Tran 643 Transportation Finance
- Tran 650 Urban Systems Engineering
- Tran 653 Traffic Safety
- Tran 655 Land Use Planning
- Tran 659 Flexible and Rigid Pavements
- Tran 670 Transportation Demand Management
- Tran 700 Master’s Project
- Tran 701 Master’s Thesis
- Tran 702 Selected Topics in Transportation
- Tran 705 Mass Transportation Systems
- Tran 720 Discrete Choice Modeling for Travel Demand Forecasting
- Tran 740 Management of Transportation Carriers
- Tran 751 Transportation Design
In addition to the above areas, students are encouraged to take selected courses offered by the departments of civil, electrical, industrial and manufacturing engineering, management, social science and policy studies, and computer and information sciences.

**MASTER OF SCIENCE IN LOGISTICS**

As companies in this era of E-Commerce try to provide better customer service, become more efficient and coordinate the flow of goods produced in multiple facilities world-wide, logistics/supply chain management occupations have become very prominent and are growing in number. The new MS in Logistics program expects to enroll students in fall 2000. It aims to educate professionals to enter or advance in logistics positions in such industries as transportation carriers of all modes, manufacturers, distributors, and chain store retailers.

Individuals with undergraduate degrees in engineering, the sciences or business may apply. The busy water, air, rail, highway intermodal and distribution facilities in northern New Jersey provide an ideal laboratory for the program. This new program has an applied, quantitative and information technology-rich content and focuses not only on the technical aspects of operating the supply chain, but also on the managerial and coalition-building skills needed for partnerships, and the information systems that control the process. Qualified students may continue their studies for the Ph.D. in Transportation or Industrial Engineering.

**PARTICIPATING FACULTY**

Michael Bieber, Associate Professor of Computer and Information Science; Ph.D. 1990, University of Pennsylvania.

Athanassios K. Bladikas, Director, Interdisciplinary Program in Transportation; Chair, Department of Industrial and Manufacturing Engineering; Ph.D. 1983, Polytechnic Institute of New York.

Xiuli Chao, Professor of Industrial and Manufacturing Engineering; Ph.D. 1989, Columbia University.

Steven Chien, Assistant Professor of Civil & Environmental Engineering; Ph.D. 1995, University of Maryland.

Janice Daniel, Assistant Professor of Civil and Environmental Engineering; Ph.D. 1995 Texas A&M University.

Sanchoy Das, Associate Professor of Industrial and Manufacturing Engineering, Ph.D. 1989, Virginia Polytechnic Institute and State University.

Edward Dauenheimer, Professor of Civil and Environmental Engineering; M.E. 1966; Rensselaer Polytechnic Institute.

Harold Deutschman, Professor of Civil and Environmental Engineering; Ph.D. 1969; Northwestern University.

Robert Dresnack, Professor of Civil Engineering; Ph.D. 1966, New York University.

Kenneth Farmer, Associate Professor of Physics, Director, Microelectronics Research Center, NJIT; Ph.D. 1990, Cornell University.

Eugene Golub, Professor of Civil Engineering; Ph.D. 1969, Polytechnic Institute of Brooklyn.

Haim Grebel, Professor of Electrical Engineering; Director, The Electronic Imaging Center, NJIT; Ph.D. 1985, The Weizmann Institute of Science.

Joshua Greenfeld, Associate Professor of Civil Engineering; Program Coordinator for Surveying Engineering Technology, NJIT; Ph.D. 1987, Ohio State University.

One-Jang Jeng, Assistant Professor of Industrial and Manufacturing Engineering, Ph.D. 1994, University of Wisconsin-Madison.

Kenneth D. Lawrence, Professor of Management; Ed.D. 1979, Rutgers, The State University of New Jersey.

Jay Meegoda, Associate Professor of Civil and Environmental Engineering; Ph.D. 1985, University of California at Davis.

Naomi Rotter, Professor of Management; Ph.D. 1974, New York University.

M.Ala Saadeghvaziri, Associate Professor of Civil Engineering; Ph.D. 1988, University of Illinois at Urbana-Champaign.

Hindy L. Schachter, Professor of Management; Ph.D. 1978, Columbia University.

Lazar N. Spasovic, Director, NCTIP; Director, IITC, Associate Professor of Transportation and Management; Ph.D. 1989, University of Pennsylvania.

John Tavantzis, Professor of Mathematics; Ph.D. 1976, New York University.

H. Joseph Wen, Associate Professor of Management; Ph.D. 1993, Virginia Commonwealth University.

**TRANSPORTATION RESEARCH AT NJIT**

NJIT’s research centers explore promising areas, often in partnership with industry and with other universities. NJIT’s nationally rec-
ognized and substantial transportation research activities are primarily carried out within one of several different entities. Current research efforts address significant topical issues of concern to both the private and public sectors.

The National Center for Transportation and Industrial Productivity (NCTIP)

NCTIP is one of four national centers designated under the landmark 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), which the U.S. Congress reauthorized in 1998 as the Transportation Equity Act for the 21st century (TEA-21). Chartered under the U.S. Department of Transportation's (USDOT) University Transportation Centers Program, NCTIP supports USDOT's strategic goals of mobility and economic growth, as well as National Transportation Science and Technology strategies of enhancing goods and freight movement at domestic and international gateways; increasing global competitiveness; optimizing intermodal passenger and freight transportation systems; and modeling tools for transportation planning, design and operations. NCTIP is a research resource for the N.J. Department of Transportation, which provides funding for mutually acceptable state-of-the-art research.

The International Intermodal Transportation Center (IITC)

IITC is a university-based resource Center for advanced intermodal transportation research and economic planning. Funded under the Special Projects section of TEA-21, its creation is intended to complement Portway, New Jersey's high-priority International Intermodal Freight Corridor Improvement and Development Project which will strengthen and improve the immediate access corridor between the Newark-Elizabeth Seaport/Airport Complex, nearby rail and trucking warehousing terminals, and the interstate and international surface distribution network. Driven by the multimodal and intermodal nature of transportation within the target area and surrounding communities, IITC will provide opportunities to leverage, integrate and sequence private and public infrastructure investments key to sustaining growth both in the target area and throughout New Jersey.

Transportation Information and Decision Engineering (TIDE) Center

A joint project of NJIT, Princeton and Rutgers Universities, the TIDE Center is sponsored by the New Jersey Commission on Science and Technology. Its goal is to develop technologies that will help individuals and commercial enterprises make better transportation-related decisions. TIDE's purpose is to collaborate with private industries in New Jersey for the commercialization of research products, and establish a viable traveler information industry in New Jersey. It aims to establish working relationships with public agencies for the enhancement of traveler information services, and involve both graduate and undergraduate students from a variety of departments at the three universities in its research projects.

Informatio and Technology Resources

NJIT's information and technology resources are designed with the goal of providing members of the university community with universal access to the resources and services available over the NJIT network. Students have the opportunity to sample many aspects of a virtual university. The latest advances in telecommunications and multimedia technology are used to enhance the delivery of courses and overall educational experience for all students, not just those enrolled in distance learning programs.

The Newark campus' ATM network backbone connects more than 3,000 nodes in classrooms, laboratories, residence halls, faculty and staff offices, the library, student organization offices, and others. The network provides access to a wealth of shared information services. Some of these include high-end computer servers providing CPU "horsepower" for simulation and computational research, disk arrays for storage of large data sets, communication servers for electronic mail and document exchange, databases, digital journal subscriptions, and a virtual "Help Desk." Access points are not limited to just the Newark and Mount Laurel campuses. A virtual private network combined with Internet access, plus a large ISDN modem bank extend campus information resources to faculty, staff, and students who may be working at home, work, or any of the university's many extension sites.

Primary academic computing is provided via a distributed computing environment using the Andrew File System (AFS). Students receive a simple log-on account that can provide access to hundreds of Unix-based workstations on the campus network for programming, computation, Internet access, graphics and visualization facilities and many other applications. Powerful statistical analysis software is provided on a separate VMS computing system. The Academic Computing Facility in the Student Mall has several hundred PCs for student use. Additional PC clusters are available in the Honors Center, Library, Learning Center, and many departmental facilities.

The Robert Van Houton Library's Information Commons provides a convenient and relaxed atmosphere to search the Web, access many electronic databases, view videotapes for some class lecture, or retrieve scholarly publications through digital library subscriptions. Reference librarians are available to help students sort through the vast amounts of information resources available and access what they need.

The Transportation program has its own fully equipped, state-of-the-art research lab and a library area.