

Transportation and Urban Systems

www.ndsu.edu/transportation/tus/

Program Director: Dr. Denver Tolliver

Assistant to the Director of

Educational Programs: Jody Bohn (Jody.Bohn@ndsu.edu)

Program Location: Upper Great Plains Transportation Institute

Telephone Number: (701) 231-7938

Degrees Offered: M.S., MTUS, Certificate

Application Deadline: July 1 for fall semester and December 1 for spring semester

English Proficiency TOEFL ibT 71

Requirements: IELTS 6

Program Description

North Dakota State University offers an interdisciplinary program leading to a Master of Science in Transportation and Urban Systems (M.S.), a Master of Transportation and Urban Systems (MTUS) and a Certificate in Transportation and Urban Systems. The program is a collaborative effort of four colleges and includes faculty from Agribusiness & Applied Economics; Civil Engineering; Computer Science and Operations Research; Emergency Management; Industrial Engineering; Management, Marketing & Finance; and the Upper Great Plains Transportation Institute.

Master of Science (M.S.) in Transportation & Urban Systems

This degree focuses on: (1) urban transportation systems; (2) relationships between transportation, land use, environment, emergency response, and logistical delivery systems; (3) coordinated planning, operations, and security; and (4) the spatial dimensions of urban systems. The curriculum is built around the topics of: public transportation systems, geographic information systems, freight transportation and logistical delivery systems, urban geography and land use, the environmental impacts of transportation systems, transportation systems security, and the sustainability of transportation and urban systems. Because the M.S. degree requires a thesis, it is targeted at students with strong research interests.

Master of Transportation & Urban Systems (MTUS)

This is a non-disquisition degree that is primarily intended for professional planners and engineers. Students in the M.S. and MTUS programs can select from a common set of courses. However, students enrolled in the non-disquisition (MTUS) program have more opportunities for synthesis of practice and additional course work, with less emphasis on research.

Certificate in Transportation & Urban Systems

The certificate in Transportation & Urban Systems is primarily targeted at practicing professionals who are unable to study in residency, but who wish to gain additional knowledge in the emerging fields of transportation and urban systems. The certificate requires a minimum of 9 course credits that can be selected from a list of on-line courses, including: Transportation Systems Security, Transportation Planning and Environmental Compliance, Transportation System Modeling, Urban

Transportation Systems Analysis, Context Sensitive Solutions, and Public Transportation.

Admission Requirements

The Transportation and Urban Systems master's program is open to qualified graduates of universities and colleges of recognized standing. In addition to the Graduate School admission requirements, the applicant must have adequate preparation in one or more of the disciplines comprising Transportation and Logistics and have a stated interest in transportation and the capability to conduct transportation research and have professional experience or interests in community practice.

Students will be accepted from many disciplinary backgrounds, including (but not limited to): architecture, business, civil engineering, environmental engineering or science, geography, government, political science, sociology, and urban affairs. However, acceptance is on an individualized basis.

Degree Requirements

Master of Science

A minimum of 30 credits is required for the degree. At least 16 of these credits must be completed using approved courses numbered from 601-689, 691, 700-789. All students must take a final examination which covers the course work taken by the candidate, as well as the thesis topic.

Each thesis will contribute new models or knowledge. The former may be achieved through the synthesis of several techniques, the modification of existing models, or new applications of analytical techniques to transportation/urban problems. The latter may be accomplished through the collection and analysis of original data or the development of innovative planning techniques. Each thesis must be of sufficient depth and quality to warrant at least 6 graduate credits. However, no more than 10 credits can be earned for any thesis.

Master of Transportation & Urban Systems Degree Requirements

The Master of Transportation & Urban Systems degree is a non-thesis degree. However, each student must complete a creative component – which can be a case study, practicum, or paper. In the creative component, a student may develop a case study of a metropolitan region, transit system, or public program. Case studies may include: (1) comprehensive transportation planning processes in metropolitan areas, (2) urban transit systems or operations, (3) emergency or disaster response case studies or plans, (4) security programs or issues, and (5) integrated transportation/environmental plans. The case study must be approved by the student's adviser, and should involve transportation and community professionals from federal, state, or local agencies, or private industries. In lieu of a case study, the adviser may approve other activities or outcomes that would comprise the creative component.

A minimum of 30 credits is required for the Master of Transportation & Urban Systems degree. At least 21 of these credits must be completed using approved courses numbered from 601-689, 691, 700-789, and 791. A minimum of 2 credits and a maximum of 4 credits will be awarded for the creative component.

Certificate Requirements

The certificate in Transportation & Urban Systems will consist of a minimum of 9 course credits selected from the list of on-line courses. At present, this list includes: TL 751 Transportation Systems Security, TL 752 Transportation Planning and Environmental Compliance, TL 753 Transportation System Modeling, TL 754 Urban Transportation Systems Analysis, TL 755 Context Sensitive Solutions, TL756 Transportation Systems Laboratory and TL 786 Public Transportation. Additional courses may be offered on line in future years.

Program Requirements

Requirements for the degree will be met by each student formulating their plan of study utilizing the following courses as required.

Core Courses

TL 751	Transportation Systems Security	3
TL 752	Transportation Planning and Environmental Compliance	3
TL 753	Transportation System Modeling	3
TL 754	Urban Transportation Systems Analysis	3
TL 755	Context Sensitive Solutions	2
TL 756	Transportation Systems Laboratory	3
TL 786	Public Transportation	3

Electives

TL 711	Logistics Systems	4
TL 721	International Logistics Management	4
TL 723	Advanced Supply-Chain Planning Across the Enterprise	3
TL 729	Adaptive Planning in Logistics Systems	3
TL 731	Logistics Decision Analysis	3
TL 735	Acquisition Contracts: Law and Management	3
TL 797	Master's Paper	3
TL 798	Master's Thesis	3

Areas of focus

Spatial Analysis

GEOG 655	Introduction to Geographic Information Systems	4
GEOG 656	Advanced Geographic Information Systems	3
TL 785	Spatial Analysis in Transportation	3

Information Systems Technologies

TL 725	Technology Advances and Logistics	3
--------	-----------------------------------	---

Enterprise Management

TL 715	Enterprise Resource Planning	3
TL 727	Organizational Change Management	3

Transportation Planning

TL 788	Research in Transportation and Logistics	3
CE 780	Transportation Planning	3

Emergency Response and Disaster

TL 719	Crisis Analysis and Homeland Security	3
--------	---------------------------------------	---

Magdy Abdelrahman, Ph.D.

University of Illinois-Urbana, 1996

Research Interests: Characterization of Modified Asphalt Binders and Mixes; Pavement Maintenance and Rehabilitation Techniques; Performance-Related Specifications for Pavement Materials; Quality Control and Quality Assurance in Pavement Construction
Department: Civil Engineering

Canan Bilen-Green, Ph.D.

University of Wyoming, 1998

Research Interests: vQuality and Reliability Engineering, Design and Auditing of Quality and Productivity Monitoring Systems, Statistical Modeling and Applications, Applied Operations Research
Department: Industrial and Manufacturing Engineering

John Bitzan, Ph.D.

University of Wisconsin-Milwaukee, 1997

Research Interests: Transportation Economics
Department: Management, Marketing and Finance

Alan Dybing, Ph.D.

North Dakota State University, 2013

Research Interests: Asset Management, Energy Impacts, Freight Transportation, Agricultural Transportation, Supply Chain Management, Transportation Economics, Spatial Analysis, Transportation Systems Modeling
Department: Upper Great Plains Transportation Institute

Robert Hearne, Ph.D.

University of Minnesota, 1995

Research Interests: Natural Resource and Environmental Economics
Department: Agribusiness and Applied Economics

Siew Hoon Lim, Ph.D.

University of Georgia, 2005

Research Interests: Production Economics, Transportation, Industrial Organization
Department: Agribusiness and Applied Economics

Jill Hough, Ph.D.

University of California-Davis, 2007

Research Interests: Public Transportation, Travel Behavior, Built Environment, Accessibility and Mobility of Seniors
Department: Upper Great Plains Transportation Institute

Won Koo, Ph.D.

Iowa State University, 1974

Research Interests: International Trade
Department: Agribusiness and Applied Economics

Brenda Lantz, Ph.D.

Pennsylvania State University, 2006

Research Interests: Commercial vehicle safety systems and analysis, supply chain, intelligent transportation systems for commercial vehicle operations, and statistical modeling and diagnostics.
Department: Upper Great Plains Transportation Institute

EunSu Lee, Ph.D.

North Dakota State University, 2011

Research Interests: Transportation systems modeling, informatics, spatial analysis, logistics, supply chain management, Industrial engineering
Department: Upper Great Plains Transportation Institute

Pan Lu, Ph.D.

North Dakota State University, 2011

Research Interests: Asset Management, Freight Transportation, Statistical Modeling and Applications, Multi-Modal Transportation, Applied Operation Research
Department: Upper Great Plains Transportation Institute

Wesley Marshall, Ph.D.

University of Connecticut, 2009
Research Interests: Road Safety, Active Transportation, Transit, Street Networks, Transportation Planning and Land Use Modeling, Parking, Sustainability, Livability, and Resiliency
Department: University of Colorado Denver, Department of Civil Engineering

Subhro Mitra, Ph.D., P.E.

North Dakota State University, 2007
Research Interests: Freight Travel Demand modeling, Urban Travel Demand Modeling, Asset Management and Life-Cycle Cost Study Optimizing Logistics Network, Economic Appraisal of Infrastructure Investment
Department: University of North Texas at Dallas, Business School

Diomo Motuba, Ph.D.

North Dakota State University, 2009
Research Interests: Transportation Economics, Transportation Systems Modeling, Freight Transportation, Econometrics, Logistics, Supply Chain Management
Department: Upper Great Plains Transportation Institute

Peter O'Dour, Ph.D.

University of Missouri-Rolla, 2004
Research Interests: GIS, Groundwater contamination, Remote sensing
Department: Geosciences

Richard J. Porter, Ph.D.

Pennsylvania State University, 2007
Research Interests: Road Safety, Highway and Street Design, Project Development, Risk and Reliability Analysis, Traffic Operations
Department: University of Utah, Department of Civil & Environmental Engineering

Joseph Szmerekovsky, Ph.D.

Case Western Reserve University, 2003
Research Interests: Project management and scheduling, Complex systems and flexible manufacturing and using linear and nonlinear dynamic and integer programming and network flows
Department: Management, Marketing and Finance

Denver D. Tolliver, Ph.D.

Virginia Polytechnic University, 1989
Research Interests: Transportation Systems Planning, Freight Transportation, Economic Analysis
Department: Upper Great Plains Transportation Institute

Rodney D. Traub, Ph.D.

Purdue University, 1994
Field: Operations Management
Department: Management, Marketing, and Finance

Kim Vachal, Ph.D.

George Mason University, 2005
Research Interests: Policy, Economics, Regional Development
Department: Upper Great Plains Transportation Institute

Amiy Varma, Ph.D.

Purdue University, 1993

Research Interests: Transportation Systems and Planning, Traffic Engineering, Airports, and Infrastructure Management
Department: Civil Engineering

Nadim Wehbe, Ph.D.

University of Nevada, Reno, 1997
Research Interests: Reinforced and Prestressed Concrete Structures, Bridge Engineering, Earthquake-Resistant Bridges, Advanced Composites
Department: South Dakota State University, Department of Civil and Environmental Engineering

David L. Wells, Ph.D.

University of Missouri-Rolla, 1996
Research Interests: International Studies in Manufacturing Technology, Strategic Management, Economic Development Strategies
Department: Industrial and Manufacturing Engineering

William W. Wilson, Ph.D.

University of Manitoba, 1980
Research Interests: Commodity Marketing, Agribusiness, Industrial Organization
Department: Agribusiness and Applied Economics

Frank Yazdani, Ph.D., PE

University of New Mexico, 1987
Research Interests: Structural Engineering/Mechanics, Constitutive Modeling of Materials, Damage Mechanics, Plasticity, Computational Plasticity, Finite Elements, Concrete and Masonry Materials
Department: Civil Engineering