

# Transportation and Logistics

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## Department Information

- **Program Director:**  
Denver Tolliver, Ph.D.
- **Department Chair:**  
Joseph Szmerekovsky, Ph.D.
- **Academic Coordinator:**  
Jody Bohn Baldock
- **Email:**  
jody.bohn.baldock@ndsu.edu
- **Department Location:**  
Upper Great Plains Transportation Institute, Quentin Burdick Building 448
- **Department Phone:**  
(701) 231-7767
- **Department Web Site:**  
[www.ndsu.edu/business/programs/phd/](http://www.ndsu.edu/business/programs/phd/)
- **Application Deadline:**  
See Admission Requirements
- **Credential Offered:**  
Ph.D.
- **Test Requirement:**  
GRE (GMAT may be substituted)
- **English Proficiency Requirements:**  
TOEFL iBT 71, IELTS 6

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## Program Description

The Department of Transportation, Logistics and Finance offers a Ph.D. degree in Transportation and Logistics (TL). The degree is awarded through the College of Business in collaboration with the Upper Great Plains Transportation Institute to provide high-quality graduate programs for students. The program takes an interdisciplinary approach to transportation and logistics and attracts students with backgrounds in transportation and logistics, as well as agribusiness, applied economics, civil engineering, construction management, emergency management, finance, geosciences, industrial/manufacturing engineering, and supply chain management.

The TL Ph.D. program offers the following concentration routes:

- Transportation
- Supply Chain
- Transportation Science and Technology
- Transportation Data Science

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## Admission Requirements

The Transportation and Logistics Ph.D. program is open to qualified graduates of universities and colleges of recognized standing. To be admitted with full standing, the applicant must:

1. Hold a master's degree (preferred) from an educational institution of recognized learning, baccalaureate degree a minimum.
2. Have adequate preparation in one or more of the disciplines comprising transportation and logistics
3. Have shown the potential to undertake advanced study and research as evidenced by prior academic performance
4. Have earned a cumulative grade point average of at least 3.0 or equivalent in all courses completed at the highest education level reached
5. Submit a Graduate Record Examination (GRE) score at the time of the application. If a student has a recent GMAT score it may be substituted for the GRE.
6. Submit an NDSU Graduate School application consisting of the application, letter of intent, official transcripts, letters of reference, and English proficiency scores (if applicable). Additional documents that may be submitted could include resume and professional vita. Applications for

admission will be submitted via the Graduate School website. Applicants must meet all application requirements of the graduate school and department before being considered for acceptance.

- Domestic applicants requesting funding and all international applicants, the application deadline is April 1 for fall semester and September 1 for spring semester.
- Domestic applicants not requesting funding, the application deadline is July 1 for fall semester and December 1 for spring semester.

Students who do not meet all requirements for admission or have deficiencies in prerequisite course work, but show satisfactory potential for graduate study, may be admitted conditionally. The conditional status may be changed to full graduate standing after the first or second semester of study, based on the student's academic performance.

## Apply for Admission

To apply for admission, please visit the Admission Information page (<https://bulletin.ndsu.edu/graduate/admission-information>).

## Financial Assistance

The number of assistantships vary from year to year, depending on grant availability and the number of students in residence. Applicants are considered on the basis of merit and potential to undertake advanced study and research.

To be considered for an assistantship, an applicant must complete a Graduate School application, be accepted by the department, and identify the desire for an assistantship or financial need in the statement of purpose.

Graduate tuition is waived for students with assistantships, but all fees are the student's responsibility.

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## Degree Requirements

The Ph.D. program requires the completion of a minimum of 90 credits of graduate study beyond the baccalaureate degree with an overall GPA of 3.0 or higher. Each student must develop a plan of study under the guidance of a faculty adviser and a supervisory committee. Twenty-four of the graduate credit hours must consist of the core courses below. A minimum of 9 credit hours must be taken in the student's area of concentration and 6 credit hours in quantitative methods. A minimum of 30 credit hours must consist of research-based dissertation credits.

Students must take a qualifying examination upon completion of the core courses. The qualifying exam will include two components: (1) core transportation and logistics knowledge and (2) competency in quantitative methods. After passage of the qualifying examination and successful completion of the courses designated in the plan of study, the student may schedule a comprehensive examination. The comprehensive exam includes written and oral components related to the student's area of concentration. The comprehensive exam also includes a dissertation prospectus examination in which the student must present and defend a plan for undertaking and completing a dissertation. After passage of the comprehensive exam and completion of the dissertation, the doctoral candidate must pass a final examination in which the completed dissertation is presented and defended.

Code	Title	Credits
<b>Core Courses (≥ 24 credits)</b>		
TL 757	Intelligent Transportation Solutions	3
TL 781	Traffic Safety and Evaluation	3
TL 782	Highway Planning and Logistics	3
TL 783	Transportation Systems II	3
TL 788	Research in Transportation and Logistics	3
TL 789	Leadership, Ethics, and Academic Conduct in Transportation	3
TL 831	Modeling for Transportation and Logistics Decision Analysis	3
TL 885	Geospatial Information Systems for Transportation	3
TL 892		1-6
GEOG 655	Introduction to Geographic Information Systems	4
<b>Quantitative Methods (≥ 6 credits)</b>		
COMM 707	Quantitative Research Methods in Communication	3
EDUC 885	Structural Equation Modeling Fundamentals	3
ENGR 771	Probabilistic and Deterministic Methods	3
SOC 700	Qualitative Methods	3
SOC 701	Quantitative Methods	3
<b>Dissertation (≥ 30 credits)</b>		
TL 899		1-15

**Concentration Elective Courses**

**Transportation (≥ 9 credits)**

TL 751	Transportation Cyber-Physical 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	3
TL 756	Transportation and Land Use Integration	3
TL 785	Spatial Analysis in Transportation	3
TL 786	Public Transportation	3
TL 787	Public Transportation II	3

**Supply Chain (≥ 9 credits)**

TL 715	Introduction to ERP	3
TL 719	Crisis Analysis and Homeland Security	3
TL 721	International Logistics Management	3
TL 725	ERP Configuration	3
TL 733	Case Studies in Logistics	3
TL 735	Practical Data Analytics	3
TL 811	Modeling for Logistics Research	4
TL 823	Contemporary Supply Chain Research	3
TL 829	Supply Chain Risk Management	3

**Transportation Science and Technology (≥9 Credits)**

TL 711	Logistics Systems	3
TL 725	ERP Configuration	3
TL 729	Adaptive Planning in Logistics Systems	3
TL 731	Logistics Decision Analysis	3
TL 735	Practical Data Analytics	3
TL 751	Transportation Cyber-Physical Security	3
TL 753	Transportation System Modeling	3
TL 754	Urban Transportation Systems Analysis	3
TL 756	Transportation and Land Use Integration	3
TL 785	Spatial Analysis in Transportation	3
TL 811	Modeling for Logistics Research	4
TL 823	Contemporary Supply Chain Research	3
ENGR 770	Quantitative Modeling	3
ENGR 771	Probabilistic and Deterministic Methods	3
GEOG 656	Advanced Geographic Information Systems	3

**Transportation Data Science (≥ 9 credits)**

TL 731	Logistics Decision Analysis	3
TL 735	Practical Data Analytics	3
TL 753	Transportation System Modeling	3
TL 811	Modeling for Logistics Research	4
GEOG 656	Advanced Geographic Information Systems	3
STAT 664	Discrete Data Analysis	3
STAT 670	Statistical SAS Programming	3
STAT 761	Advanced Regression	3
STAT 777	Multivariate Theory	3
STAT 852	Longitudinal Data Analysis	3
STAT 859	Applied Spatial Statistics	3
CSCI 679	Introduction to Data Mining	3
CSCI 736	Advanced Intelligent Systems	3
CSCI 760	Dynamic Programming	3

CSCI 835	Neural Networks	3
CSCI 862	Network Flows	3
CSCI 879	Advanced Data Mining	3
CSCI 880	Methods of Optimization	3

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## Faculty

**Raj Bridgelall, Ph.D.**

North Dakota State University, 2015

Research Interests: Big Data Analytics, Internet-of-Things (IoT), Cloud Computing; Connected and Autonomous Vehicles (CAV), Shared Mobility, Intelligent Transportation Solutions; Signal Processing and Mathematical Modeling of Transportation Systems; Remote Sensing with Unmanned Aircraft Systems; Hyperspectral Image Analysis; Radio Frequency Identification (RFID); Real-Time Locating Systems (RTLS); Energy Harvesting and Massive Scale Autonomous Wireless Sensor Networks

Department: Transportation, Logistics 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: Transportation, Logistics and Finance

**Ranjit Godavarthy, Ph.D.**

Kansas State University, 2012

Research Interests: Public Transportation in Small Urban and Rural Areas, Demand Response Transit and Paratransit, Bike Share, Roundabouts, Traffic Engineering and Operations, Transportation and Highway Safety

Department: Transportation, Logistics and Finance

**Jill Hough, Ph.D.**

University of California-Davis, 2007

Research Interests: Public Transportation in Rural and Small Urban Locations, Workforce Development, Mobility of the Aging, Transportation Planning and Policy, Intelligent Transportation Systems

Department: Transportation, Logistics and Finance

**Pan Lu, Ph.D.**

North Dakota State University, 2011

Research Interests: Connected and Autonomous Vehicles, Smart Material and Structure Health Monitoring, Big Data Analytics for Transportation, Smart Transportation, Transportation System, Asset Management, Multimodal Transportation, Geospatial Transportation Modeling

Department: Transportation, Logistics and Finance

**Jeremy Mattson, Ph.D.**

North Dakota State University, 2017

Research Interests: Public Transportation, Transportation Economics, Demand Modeling, Travel Behavior, Built Environment

Department: Transportation, Logistics and Finance

**Diomo Motuba, Ph.D.**

North Dakota State University, 2009

Research Interests: Transportation and Land Use Planning, Freight Modeling, Transportation Economics, Connected Automated Vehicles, Logistics and Supply Chain Management, Transportation Safety

Department: Transportation, Logistics and Finance

**Tim O. Peterson, Ph.D.**

Texas A&M University, 1988

Research Interests: Managerial Leadership, Application of Information Technology to Organizational Issues, Scholarship of Teaching

Department: Management and Marketing

**Fred Riggins, Ph.D.**

Carnegie Mellon University, 1994

Research Interests: Economics of Information Systems, Interorganization Systems, Adoption of New Technology, Radio Frequency Identification (RFID), Internet-of-Things (IoT), Blockchain, Cryptoeconomics, Information and Communication Technology in Microfinance

Department: Accounting and Information Systems

**Joseph Szmerekovsky, Ph.D.**

Case Western Reserve University, 2003

Research Interests: Project Management and Scheduling, Supply Chain Management and Technology, Energy Supply Chain Management, Healthcare Logistics

Department: Transportation, Logistics and Finance

**Denver Tolliver, Ph.D.**

Virginia Polytechnic Institute and State University, 1989

Research Interests: Highway Systems Modeling, Multimodal Transportation Planning, Freight Transportation, Energy and Environmental Analysis

Department: Transportation, Logistics and Finance

**Kimberly Vachal, Ph.D.**

George Mason University, 2005

Research Interests: Human Factors in Traffic Safety, Healthy Community Transport, Agricultural and Biofuels Transportation, Commercial Motor Vehicle Safety & Security, Containerized and Identity Preserved Grain Marketing, Regional Economic Development

Department: Transportation, Logistics and Finance