

# NDSU

Department of Transportation,  
Logistics & Finance  
College of Business  
Upper Great Plains Transportation Institute

ONLINE graduate programs

## Transportation & Logistics Program

### Courses Offered

**TL 711 Logistics Systems (4).** Foundation material critical to establishing effective supply chains in various decision making environments. Topics include inventory theory, forecasting, aggregate planning, and project management. Decision making techniques include linear programming, process flow analysis, and simulation.

**TL 715 Enterprise Resource Planning (3).** This course introduces students to Enterprise Resource Planning (ERP) and its implementation. Topics covered from the perspective of ERP include: process integration, value chain management, international implementations, organizational change management, project management, and knowledge management.

**TL 719 Crisis Analysis and Homeland Security (3).** Provides an integrated approach to crisis analysis and response within the contexts of military logistics and homeland security. Focus is on the social and cultural context of emergencies, disasters and catastrophes.

**TL 721 International Logistics Management (4).** This course provides a coherent perspective on contemporary global logistics from raw materials through production to the customer. Addresses the roles of governments and intermediaries, international sourcing and the application of local trade laws. Discussion of economic, political, and social issues that may affect international transportation. Prereq: TL 711.

**TL 723 Advanced Supply-chain Across the Enterprise (3).** Builds on theories and tools developed in TL 711. By understanding both current capabilities and evolving needs of an organization, the appropriate modifications to the organization's supply chain can be identified. Prereq: TL 711.

**TL 725 ERP Configuration (3).** Examines the impact of sensor network systems driving business data collection, and the configuration of Enterprise Systems. Includes peer reviewed articles pertaining to enterprise network system application theory with a focus on supply chain systems. Prereq: TL 715.

**TL 727 Organizational Change Management (3).** Change management as the process of making either incremental improvements or radical changes to an organization for the purpose of enhancing both organizational and individual effectiveness. A multi-perspective systems viewpoint is employed, stressing pragmatic implications for leadership.

**TL 729 Adaptive Planning in Logistics Systems (3).** Presents a systems view with a focus on how remote sensing technology enables sense and respond logistics. Topics include organizational structure, strategic alliances, programmed decision making, supply-chain dynamics, and the value of information transparency. Prereq: TL 711.

**TL 731 Logistics Decision Analysis (3).** This course covers collection, management and analysis of logistics information necessary to make

good decisions as well as quantitative decision analysis models for systematic evaluation of decision situations involving uncertainty, complexity, alternatives and preferences.

**TL 733 Case Studies in Logistics (3).** This course will focus on actual logistics cases along with solutions and how individual/organizational decisions relate to the ultimate outcome. Analyzing processes which would have reduced/eliminated the supply chain's susceptibility to success or failure.

**TL 735 Practical Data Analytics (3).** This course provides a comprehensive overview of data analytics and business intelligence concepts with practical experience using market-leading enterprise software solutions. Topics include data management, the extract-transform-load process, data cleansing, data reporting and visualization, building dashboards, development and use of online analytical processing (OLAP) cubes, data warehouses, and data mining.

**TL 751 Transportation Systems Security (3).** This course examines security threats and solutions related to transportation systems. Specific focus is placed securing passenger and freight modes of transportation including railroad, highway, aviation, maritime and pipelines from acts of terrorism and intentional disruption.

**TL 752 Transportation Planning and Environmental Compliance (3).** This course provides an overview of the procedures of transportation planning and environmental compliance, to include an understanding of the related policies and procedures as they relate to transportation systems, and compliance with local, state and federal laws. A discussion of emissions, hazardous cargo, and permitting also will be provided.

**TL 753 Transportation System Modeling (3).** This course focuses on quantitative techniques used for planning and operation of transportation systems. Topics include: system capacities and flows, comprehensive models of transportation and urban systems, and understanding how political processes, new technologies, and economic considerations affect transportation decisions.

**TL 754 Urban Transportation Systems Analysis (3).** This course provides students with an understanding of system analysis tools used in urban transportation. Students will work with analytical techniques employed in urban transportation planning, such as traffic forecasting and system capacity analysis and apply these techniques using real-world data for analyzing both the demand and supply of transportation.

**TL 755 Context Sensitive Solutions (3).** Examine traditional transportation engineering factors, impacts on communities, and natural and human environments. Introduce students to principles of CSS and allow them to learn how they are applied through case studies and demonstrated principles.

**TL 756 Transportation and Land Use Integration (3).** This course provides students with an understanding of the interrelationships that exist between land use and transportation and the related impacts to the economy, environment, and to society as a whole in the planning context.

**TL 757 Intelligent Transportation Solutions (3).** Fundamentals and field studies of information technologies deployed and emerging to address critical transportation issues such as congestion, safety, security and energy efficiency.

**TL 781 Program Evaluation (3).** This course details program evaluation and its usefulness to organizational planning. Students will learn how program data is relevant to evaluation, scoping, research methods, assessment, planning and sharing findings with topic experts.

**TL 782 Highway Planning and Logistics (3).** Fundamentals of highway transportation and freight logistics, including motor carrier economics and operations, truck size and weight issues, highway infrastructure and capacity planning, applications of advanced technologies to transportation problems, and intelligent transportation solutions for smart cities.

**TL 783 Transportation Systems II (3).** This course focuses on railroads and freight multimodal planning. It includes an introduction to railroads, an overview of the railroad industry and services, cost models, regulations, energy requirements, route analysis, operations, line capacities, intermodal terminals, environmental considerations, and multimodal freight issues. Prereq: TL 782.

**TL 785 Spatial Analysis in Transportation (3).** This course focuses on applications of Geographic Information Systems (GIS) to transportation networks and problems. The emphasis is on data modeling. Topics include: linear referencing, dynamic segmentation, network analysis, urban and land use planning, routing of hazardous materials and asset management applications.

**TL 786 Public Transportation (3).** This course focuses on public transportation issues and models. Topics include: policy issues, government's role in transit, transit planning, demand forecasting, performance evaluation, and system costing. Students will work on projects directly related to a transit system. Industry experts will provide guest lectures. Prereq: TL 782.

**TL 787 Public Transportation II (3).** This course focuses on concepts and modeling procedures used when planning and operating public transportation systems. Topics covered include transit demand analysis, quality of service concepts and estimation, bus and rail capacity, and service planning. Prereq: TL 786.

**TL 789 Leadership, Ethics, and Academic Conduct in Transportation (3).** This course focuses on academic conduct in students' educational program and then goes on to explore theories, concepts, and practices of leadership and ethics that students may apply to their academic program and transportation careers.

**TL 811 Modeling for Logistics Research (4).** Models used in logistics research are studied. Topics include statistical models, mathematical programming, network models, stochastic decision processes, and simulation. The ability to perform and present logistics research is cultivated.

**TL 823 Contemporary Supply Chain Research (3).** This course focuses on contemporary research in supply chain management. Topics include advertising, information technology, game theory, supply chain contracts, and sustainability. The ability to perform and present supply chain research is cultivated. Prereq: TL 811.

**TL 829 Supply Chain Risk Management (3).** This course focuses on risk management in supply chains. Topics include random yields, exchange rates, real options, complex systems, and disruptions. The ability to perform and present supply chain risk management research is cultivated. Prereq: TL 811.

**TL 831 Modeling for Transportation and Logistics Decision Analysis (3).** This course emphasizes critical thinking skills and excel spreadsheet modeling skills to solve, and analyze logistics and transportation issues. It includes an introduction to modeling, excel, add-in tools, optimization, and uncertainty analysis.

**TL 885 Geospatial Information Systems for Transportation (3).** This course focuses on spatial analysis in transportation using Geographic Information Systems to build research framework and solve problems in transportation and logistics. The emphasis is on data modeling and the cutting-edge theories. Prereq: GEOG 655 or TL 785.

**TL 899 Doctoral Dissertation (1-15)**

**ENGR 770 Quantitative Modeling (3).** Applications modeling and optimization methods. Domains: transportation, logistics, manufacturing, service systems scheduling, and supply-chain management. Decision models: linear programming and sensitivity analysis, transportation and assignment, network models and algorithms, and integer, dynamic and nonlinear programming. Cross-listed with IME 770.

**ENGR 771 Probabilistic and Deterministic Methods (3).** Applications modeling. Domains include transportation, logistics, manufacturing, service systems scheduling, and supply-chain management. Quantitative models and tools include Markov chains, stochastic processes, queuing, deterministic and stochastic decision analysis, time series, forecasting, and regression modeling. Prereq: IME 660. Cross-listed with IME 771.

**AGEC 771 Economics of Transportation Systems (3).** The course will provide an understanding of transportation economics and policy issues facing society. Topics include transportation demand, model costs, transportation competition and market power, transportation regulation, transportation investment, and the economics of transportation safety. Cross-listed with CE 771.

**GEOG 655 Introduction to Geographic Information Systems (4).** Application of the principles of geographic information systems and integrally related mapping to solve problems related to environment site characterizations, resource exploration, soil and groundwater contamination, geological and geotechnical investigations, waste management, construction, etc. Comprehensive lab assignments included to give students hands-on experience solving problems with current state-of-the-art software and hardware, digitizers, scanners, and GPS units.

**GEOG 656 Advanced Geographic Information Systems (3).** Application and analysis of advanced techniques and principles of geographic information systems and remote sensing technologies to fully address spatial and time related problems related to urban site characterizations, hydrologic analyses, risk assessment, policy making, disaster response and strategic defense techniques. Comprehensive lab assignments included to give students hands-on experience solving problems with current state-of-the-art software and hardware, digitizers, scanners, and GPS units. Prereq: GEOG 655.

**SOC 700. Qualitative Methods(3).** Advanced analysis of the methods used in qualitative research projects such as intensive interviewing, focus groups, and participant observation.

**SOC 701. Quantitative Methods (3).** Advanced analysis of the methods used in quantitative research projects, such as survey design, experimental design, and evaluation research. Prereq: STAT 725.

### Visit with Us

Contact us at [jody.bohn.baldock@ndsu.edu](mailto:jody.bohn.baldock@ndsu.edu) or 701.231.7767.

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