

Transportation & Logistics (TL)

TL 116. Business Software Applications. 3 Credits.

Exploration of how microcomputers are used in business with an emphasis in developing proficiency in Microsoft Excel and introduction to Microsoft Access. Credit will be awarded only for TL 116, CSCI 114, or CSCI 116 but not more than one.

TL 320. Integrated Supply Chain Management. 3 Credits.

Identification of the key elements in a firm's management of their supply chain. Theory and practical applications for analyzing and developing strategies to assist firms in obtaining and maintaining a competitive advantage. Restricted to College of Business professional major or minor and a 2.50 minimum NDSU grade point average.

TL 330. Supply Chain Analysis and Analytics. 3 Credits.

Introduction to quantitative tools for compiling, presenting, and analyzing, numerical data to make inferences and decisions in the face of uncertainty. In addition, an understanding and application of analytics to large data. These tools are needed by all supply chain professionals. Prereq: TL 116 and restricted to College of Business professional major or minor and a 2.50 minimum NDSU grade point average.

TL 360. Operations Management. 3 Credits.

Study and application of concepts and managerial techniques for manufacturing and service operations. Includes production technology, facility location/layout, inventory management, MRP, just-in-time manufacturing, and total quality management. Prereq: MGMT 320, STAT 330 and MATH 144 or MATH 146. Restricted to College of Business professional major or minor and a 2.50 minimum NDSU grade point average.

TL 462. Modeling the Supply Chain. 3 Credits.

Development of spreadsheet models representing different positions in the supply chain. The models can be used to enhance decision making and achieve a better understanding of how the different stages in a supply chain interact. Prereq: MGMT 320, STAT 330 and at least a cumulative GPA of 2.50.

TL 711. Supply Chain Systems. 3 Credits.

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. Introduction to ERP. 3 Credits.

This course introduces students to Enterprise Systems and their implementation. Topics covered include: process integration, value chain management, change management, project management, and knowledge management.

TL 719. Crisis Analysis and Homeland Security. 3 Credits.

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. Global Supply Chain Management. 3 Credits.

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 725. ERP Configuration. 3 Credits.

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 731. Logistics Decision Analysis. 3 Credits.

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 Supply Chain. 3 Credits.

This course will focus on actual supply chain 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 Credits.

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 Cyber-Physical Security. 3 Credits.

Fundamentals of multimodal transportation physical security and cybersecurity, governance, standards, and best practices.

TL 752. Transportation Planning and Environmental Compliance. 3 Credits.

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 754. Urban Transportation Systems Analysis. 3 Credits.

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 Credits.

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 Credits.

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 Credits.

Fundamentals and field studies of information technologies deployed and emerging to address critical transportation issues such as congestion, safety, security, and energy efficiency.

TL 785. Spatial Analysis in Transportation. 3 Credits.

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 Credits.

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.

TL 787. Public Transportation II. 3 Credits.

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 for Transportation & Supply Chain Professionals. 3 Credits.

This course focuses on exploring theories, concepts, and practices of leadership and their application to transportation and supply chain issues. The most current leadership theories and practices will be examined and applied to the discipline the student is pursuing.

TL 790. Graduate Seminar. 1-5 Credits.

TL 791. Temporary/Trial Topics. 1-5 Credits.

TL 792. Graduate Teaching Experience. 1-6 Credits.

TL 793. Individual Study. 1-5 Credits.

TL 794. Practicum/Internship. 1-8 Credits.

TL 795. Field Experience. 1-10 Credits.

TL 796. Special Topics. 1-5 Credits.

TL 797. Master's Paper. 1-3 Credits.

TL 798. Master's Thesis. 1-10 Credits.

TL 811. Modeling for Logistics Research. 4 Credits.

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 831. Modeling for Transportation and Logistics Decision Analysis. 3 Credits.

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. Prereq: ENGR 770.

TL 881. Mixed Methods in Transportation Research. 3 Credits.

This introduction to mixed methods research (MMR) focuses on integrating qualitative and quantitative data to capture stakeholder perspectives in investigating research questions. Learning how to strengthen research with a variety of techniques is valuable in addressing complex research questions. Students will study MMR concepts, strategies and practices in the field of transportation. The course will also cover formulating research problems, selecting appropriate data, choosing proper research method design, and applying the mixed methods design in transportation program planning and policy decisions.

TL 882. Highway Planning and Logistics. 3 Credits.

This course provides an overview of highway transportation system, including: relationships between transportation, the motor vehicle industries, the economy, environment, and land use. Topics are focused on highway and freight transportation including: demand, capacity, cost, service, and investment analysis.

TL 883. Introduction to Rail Transportation. 3 Credits.

This course provides an overview of rail transportation and industry including: rail transportation system components, regulations, organizations, the economy, environmental considerations, operations, route analysis, line capacities, technology, and multimodal freight issues. The emphasis is on railway and freight transportation including: planning, operations, capacity, sustainability and environmental considerations. Prereq: TL 882.

TL 885. Spatial Analysis in Transportation & Logistics. 3 Credits.

Fundamentals of geospatial analysis and optimization with applications in transportation and logistics. Highlighted topics include mobility optimization, logistical distribution balancing, facility coverage optimization, spatial autocorrelation, and spatial regression.

TL 888. Research in Transportation and Logistics. 3 Credits.

This course focuses on the conduct of scientific research in transportation and the application of a wide range of quantitative methods to transportation problems. The emphasis is on selecting the appropriate techniques for a problem and integrating them into interdisciplinary models. Critical research issues are highlighted.

TL 892. Graduate Teaching Experience. 1-6 Credits.**TL 893. Individual Study/Tutorial. 1-5 Credits.****TL 899. Doctoral Dissertation. 1-15 Credits.**