

A banner image for the NDSU Upper Great Plains Transportation Institute. It features a perspective view of a two-lane highway stretching into the distance under a hazy, orange-tinted sky. The text 'NDSU' is in a large, bold, serif font, and 'UPPER GREAT PLAINS TRANSPORTATION INSTITUTE' is in a smaller, all-caps, sans-serif font, both overlaid on the image.

# NDSU UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

North Dakota State University • Fargo

**Mission:** Providing innovative transportation research, education, and outreach that promote the safe and efficient movement of people and goods.

- Research – Conducting applied and advanced research in highway, transit, rail, air, and waterway transportation that addresses the critical issues of the state, region, and nation.
- Education – Educating the transportation workforce of tomorrow through multidisciplinary curricula that focus on transportation economics, management, infrastructure planning, mobility, and supply chain logistics.
- Outreach – Improving the skills and knowledge of the existing workforce through training, technical assistance, and the transfer of research results to practitioners.

The UGPTI was created in 1967 at NDSU by the North Dakota Legislature. It now has an annual budget of about \$10 million. Approximately 50 staff are located at three locations: NDSU in Fargo, Bismarck and Lakewood, CO. The UGPTI also employs about 50 graduate and undergraduate students.

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## UGPTI Program Areas:

The **Advanced Traffic Analysis Center (ATAC)** enhances transportation systems in small to medium-size cities by using advanced traffic analysis and Intelligent Transportation Systems to improve safety and mobility. The center's primary role is to support decision makers responsible for planning, operating and funding transportation systems at the local, regional and state level. Primary efforts focus on intelligent transportation systems, traffic operations and travel demand modeling.

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The **Agriculture & Freight Center** vision is to improve the competitive position of producers and businesses in the region through reliable, safe/secure, and cost effective freight transportation. Industry experts are engaged in an ongoing program of research, including economic analyses, transportation planning and network modeling, along with outreach. Work encourages effective resource and policy decisions that will enhance local and global market connectivity for agriculture and existing/future freight-based industries.

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The **Center for Surface Mobility Applications & Real-time Simulation environments (SMARTSe<sup>SM</sup>)** applies advancements in low-power sensing, wireless communications, and mobile computing to demonstrate leaps in multi-modal and intermodal transportation system efficiencies, responsiveness, reliability, sustainability, safety, and security. Agricultural, industrial and residential settings provide real-world test beds for SMARTSe research and development.

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The **DOT Support Center (DOTSC)** provides intellectual capital to the North Dakota Department of Transportation (NDDOT) to solve complex problems. The center also addresses regional issues within North Dakota and surrounding states. The center includes a student roadway design section supervised by on-site DOT design staff to employ, train and utilize undergraduate students in DOT design projects. The section provides real-life experience for engineering students so that upon graduation they bring valuable marketable experiences to employers. The center provides Information Technology support and development to the NDDOT and UGPTI research activities.

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The **Mountain-Plains Consortium (MPC)** conducts research, education and training on transportation infrastructure and the movement of passengers and freight. It is a competitively selected university program sponsored by the U.S. Department of Transportation attracting the nation's best talent to study transportation and develop new transportation strategies and concepts. The consortium includes Colorado State University, North Dakota State University, South Dakota State University, University of Colorado Denver, University of Denver, University of Utah, Utah State University, and University of Wyoming.

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The **North Dakota Local Technical Assistance Program (NDLTAP)** fosters safe, efficient, environmentally sound, and cost effective highway, road, and street systems by facilitating the exchange of transportation technology among local units of government and other transportation agencies through training, technical assistance, and information services as part of the U.S. Federal Highway Administration's nationwide LTAP network. NDLTAP provides quality training and education at an affordable cost to transportation-related entities.

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The **Rural Transportation Safety and Security Center (RTSSC)** vision is to promote and enhance the region's transportation safety and security through research, education, and outreach, in a partnership with stakeholders. It is a collaborative effort between UGPTI and the NDDOT with funding from the Federal Highway Administration.

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The **Small Urban and Rural Transit Center (SURTC)** provides workforce development for transit stakeholders, users, providers, suppliers and agencies by facilitating information exchange and training on technology and enhanced management and operations to increase the mobility of small urban and rural residents through improved public transportation. Research focuses on transit coordination, ITS applications and mobility planning. SURTC offers an "Introduction to Public Transportation" graduate course at universities in several states via interactive video.

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The **Transportation Learning Network (TLN)** is a workforce training initiative linking the transportation departments in Montana, North Dakota, South Dakota, and Wyoming and the Mountain-Plains Consortium universities. TLN efficiently provides workforce training and development primarily in transportation engineering areas by using technology to enhance technical skills, communication, education, professional development, technology transfer and research.

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The **Transportation Safety Systems Center (TSSC)** based in Lakewood, CO, develops and maintains software used by state and federal safety specialists nationwide at weigh stations and ports-of-entry for inspecting commercial vehicles. Additional software is used by safety specialists during on-site reviews of commercial carriers. In addition, the center is also extensively involved in safety-related research and analysis to improve targeting of enforcement and to enhance software programs.

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**Traffic modeling** has become a key strength for UGPTI. Staff have developed detailed rural road traffic models to estimate traffic volumes on North Dakota's road network. Staff use the models to estimate the impact to state, county and local roads due to oil development in the Bakken formation in North Dakota and Montana. In addition, changing agricultural production and marketing practices and their impacts on North Dakota's road network are being analyzed.

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## EDUCATION PROGRAMS

The UGPTI coordinates the NDSU multidisciplinary program of course work and experiential learning that prepares professionals for careers in transportation and logistics. These students will be the professionals who will plan, construct and operate the freight and passenger transportation systems of the future. Options include:

- Doctorate in Transportation & Logistics
- Master of Managerial Logistics
- Master of Transportation and Urban Systems
- Transportation Leadership Graduate Certificate

