The National University Rail (NURail) Center is a consortium of seven partner colleges and universities offering an unparalleled combination of strengths in railway engineering and transportation research and education in North America.

Partner Colleges and Universities

The NURail Center is the only USDOT-RITA University Transportation Center dedicated to the advancement of North American Rail Transportation. The Center is headquartered at the University of Illinois at Urbana-Champaign and includes researchers and educators who are experts and national leaders in railway infrastructure, systems and vehicles from seven prestigious academic institutions in the United States.

Michigan Technological University
Massachusetts Institute of Technology
University of Illinois at Chicago
University of Illinois at Urbana-Champaign
Rose-Hulman Institute of Technology
University of Kentucky
University of Tennessee - Knoxville

Rail Education

In recent years work has begun to reintroduce railway transport to engineering curricula. The NURail Center will expand and accelerate this effort by involving additional experienced faculty in development of rail educational materials, courses and curricula; engaging and encouraging new faculty interest in teaching rail topics, with the objective of inspiring the interest of more students on NURail Center campuses and beyond. NURail Center educators are actively increasing the breadth and depth of rail educational materials for undergraduate and graduate students as well as increasing course availability through both traditional and on-line course delivery.

Workforce Development

The NURail Center mission extends to advancing rail education and outreach to various stakeholders with the goal of developing the railway workforce of the future. Primary and secondary students are engaged through on-campus rail engineering education events, tours, presentations and summer programs hosted by NURail Center partner institutions. Undergraduate students gain valuable rail industry exposure and experience through student internships and co-operative industry programs. Rail industry and government expert presentations hosted on NURail campus sites and broadcast online are open to the entire engineering community, encouraging continuing education of the railway workforce.

Technology Transfer

The NURail Center partner institutions have a long history of conducting applied research for the rail industry and have developed many close relationships with railroads, and rail supply firms. Fundamental to these pursuits is the understanding that sponsored research results must be applicable in the rail industry thereby facilitating technology transfer. The NURail Center is building on this model to further expand the quality and content of these technology transfer relationships. Research will also be published in UTC Research Briefs and presented at rail transportation practitioner forums. The NuRail Center consortium will also assume a lead role in the planning of the 2013 Joint Rail Conference at the University of Tennessee-Knoxville and other special topic-focused workshops relating to the center research themes.
The National University Rail (NURail) Center has selected Shared Rail Corridors as the central theme of its proposed research and educational program. This topic is critically important to sustaining and expanding U.S. freight railroad transportation excellence, while at the same time developing commuter and intercity passenger rail corridors.

**Strategic Development Planning**

Strategic development planning involves collaboration among the NURail center partners to develop the long-term vision, activities, technical research tasks and timeline for specific thematic research topics. Plan activities may include establishing a working group consisting of leaders in particular fields from multiple NURail Center institutions, identifying the state of the art practice from current research efforts or organizing a symposium to coordinate ongoing technical research.

**Technical Research**

The overarching objective of the NURail Center technical research plan is to sustain and expand U.S. freight railroad transportation safety, capacity, efficiency and reliability, while at the same time developing commuter and intercity passenger rail systems. The diverging needs of freight and passenger trains on a shared corridor present complex infrastructure, rolling stock, operational and institutional problems, and drives research towards critical cutting-edge challenges and solutions that have a strong relevance to the rail community. To meet this objective, NURail Center research thrust areas are railroad infrastructure, railroad vehicles and railroad systems.

**Research Themes**

The NURail Center has identified six thematic research topics that will be the subject of strategic development planning and ongoing technical research:

- Integrated railroad Vehicle/Track Interaction and Dynamics
- Railroad Safety and Risk
- Rail Network Capacity Analysis and Planning
- Urban, Regional and High-Speed Passenger Rail Implementation
- Multimodal Freight Transportation
- Funding, Finance, Community and Economic Development

**Cooperative Research and Development**

In addition to research collaboration between the NURail Center partner institutions, NURail Center researchers are actively involved in collaborations and cooperative research and development projects with other colleges and universities, railroads, railway supply firms, rail consultants and railway organizations such as the AAR and FRA. The NURail Center collaboration and strategic development planning process strengthens these other efforts by providing means for increased communication and interaction between NURail Center participants involved in the respective programs, allowing synergies to be more easily identified and capitalized upon. The NURail Center as a whole is also actively engaged in developing international cooperative research agreements with universities, railway research institutes and railroads in Europe and Asia, allowing the consortium to draw upon the global body of railroad knowledge.