



NATIONAL UNIVERSITY RAIL CENTER OF EXCELLENCE

The National University Rail Center of Excellence (NURail CoE) is a nine-university consortium led by the University of Illinois Urbana-Champaign (UIUC) and is the first academic research and education center to be supported by the U.S. Department of Transportation Federal Railroad Administration (FRA). Our mission is to develop solutions that will lead to a safer, more efficient, and reliable passenger and freight rail transportation system in the United States. NURail CoE will attract, inspire, and educate a new and diverse generation of students in railway transportation engineering and provide them with the knowledge to implement these solutions in their pursuit of rail careers.

The nine-partner institutions that comprise the NURail CoE are:



UNIVERSITY OF
ILLINOIS
URBANA-CHAMPAIGN



UNIVERSITY OF
ILLINOIS CHICAGO



KANSAS STATE
UNIVERSITY



**Michigan
Technological
University**



MORGAN
STATE UNIVERSITY



**RUTGERS
UNIVERSITY**



TEXAS
The University of Texas at Austin



TUSKEGEE
UNIVERSITY

nurailcoe.railtec.illinois.edu

About

The National University Rail Center of Excellence (NURail CoE) is a consortium of nine partner universities offering a combination of strengths in railway transportation engineering research and education in North America. The center is the first of its kind to be sponsored by the Federal Railroad Administration.

NURail CoE's mission is to develop solutions that will lead to a safer, more efficient, sustainable, equitable, and reliable rail transportation system in the United States. The center will attract, inspire, and educate a new and diverse generation of students in railway transportation engineering and provide them with the knowledge to implement these solutions in their pursuit of rail careers.



Research Projects

NURail CoE will foster research collaboration in order to tap into the technical expertise and capabilities of its consortium members. NURail CoE's research partners are experts in railway safety, infrastructure, and system connectivity with an emphasis on safety and efficiency.

NURail CoE's research will develop solutions to tackle the strategic objectives identified by the US DOT, as well as specific priorities of the FRA, FTA, AAR, and other rail sector organizations. In addition, input from private- and public-sector rail stakeholders will shape NURail CoE's research in infrastructure and vehicle engineering, operations planning, safety and risk mitigation, systems integration, and finance and policy.

Research also will focus on challenges such as achieving zero derailments, decarbonizing operation and infrastructure, reducing the cost of rail infrastructure while increasing its service life and ability to support longer and heavier trains, eliminating trespass and grade crossing incidents, and addressing historical inequities and environmental justice concerns of rail transportation system development. The proposed solutions will help facilitate advances in the safety, project delivery, efficiency, reliability, resiliency, and sustainability of passenger and freight rail transportation. NURail CoE's research also will provide faculty and students with a fuller understanding of vital engineering, operational, and policy issues.

Education and Workforce Development

In addition to research, NURail CoE's mission is to expand rail transportation education and workforce development to meet future demands for a qualified workforce. NURail CoE's education and workforce development projects will ensure more students have an opportunity to attain at least an introductory understanding of rail systems and engineering by the time of their graduation.

NURail CoE will support rail-focused K-12 student outreach with an emphasis on attracting groups underrepresented in the transportation and Science, Technology, Engineering and Mathematics (STEM) fields; disseminate learning modules on railroad topics that can be adapted to introductory and other transportation courses; offer courses dedicated to various aspects of rail transportation; develop seminars and workshops for undergraduate and graduate students; formalize and recognize rail-focused education through certificate programs; and provide undergraduate and graduate students with experiential learning and workforce development opportunities through NURail CoE-funded research.

NURail CoE partner institutions include HBCUs, MSIs and HSIs. As top leaders of today's North American railway education, NURail CoE's faculty team specializes in transportation, engineering, urban transport, urban planning, and public policy. Graduate Student Research Assistants (GRAs), funded through NURail CoE research, will participate in collaborative research, summer student research exchanges and internships, and campus visits.

Technology Transfer Activity

Because of their long history of research contributions to the rail industry, NURail CoE partners have developed and maintained relationships with private- and public-sector rail companies and organizations. Fundamental to this success is understanding that research results must be applicable in the rail industry, thereby facilitating technology transfer. NURail CoE will continue to expand the quality and content of these relationships by publishing and presenting research findings at railroad meetings, workshops, and conferences.

In addition, NURail CoE will market the talents developed in our students and faculty through technology transfer activities. These activities will ensure that NURail CoE research reaches current transportation practitioners, and that our students – tomorrow's practitioners and leaders – can make good use of concepts developed by the NURail CoE.





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NURail CoE Leadership

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NURail CoE Faculty, Staff, and Students Attending the Michigan Rail Conference and 1st NURail CoE Annual Meeting.