



MID-AMERICA TRANSPORTATION CENTER

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MATC's Spring Virtual Scholars Program



From left to right: Guest speakers Dr. Robert Hampshire from the USDOT, Ms. Tamiko Brim-Burnell from the USDOT, Mr. Paul C. Ajegba, P.E. from the Michigan Department of Transportation, and Dr. Brian G. Easily from the USDOT.

The Scholars Program, sponsored by the Mid-America Transportation Center and the Nebraska Department of Transportation, is a multi-day conference designed to encourage students in underrepresented groups in the STEM fields. With the help of diverse faculty and on-site professionals, students are taught the necessary skills to succeed in higher education and continue on to obtain graduate degrees in their chosen STEM-related fields.

Due to the limitations of COVID-19, the eleventh iteration of the program was held virtually over three weeks. Using a series of Zoom sessions, students from historically black colleges and universities, tribal colleges, and other minority-serving institutions heard from experienced professionals and faculty during seminars and networking sessions. This year's program hosted attendees from Prairie View A&M University, University of Nebraska - Lincoln, North Carolina Agricultural and Technical State University, University of Maryland Eastern Shore, Lincoln University, Southern University, and New Mexico State University.

The program began with a welcome reception where students and faculty were given the chance to learn about each other. The students shared their goals and aspirations in the STEM field and the agenda of the rest of the program was discussed. Each week was themed to explore a different topic. The first week gave "the why and how of graduate school" where Drs. Robert Hampshire and Marcus A. Huggans spoke on the opportunities available for graduate students, and past MATC scholars program participants led a panel on their experiences in graduate school.

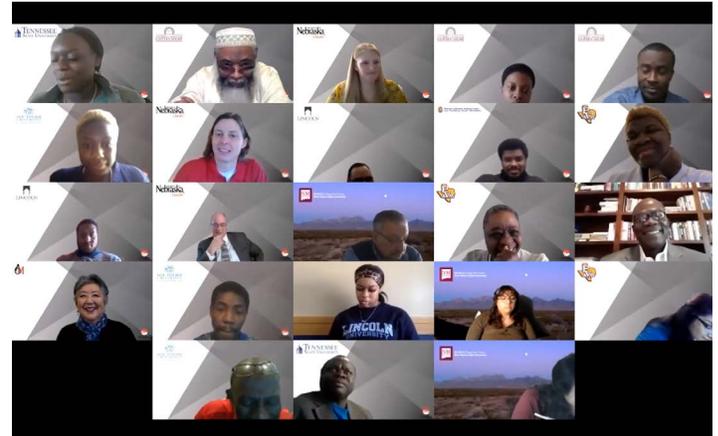
Week two events revolved around "strategies for succeeding in graduate school" where students learned the ins and outs of graduate admissions, research fellowships and internship programs, and field studies. Week three was dedicated to the Industry and Graduate Expo and gave the students the opportunity for networking while learning about possible career and graduate paths.

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The program was organized by MATC and NTC staff with the help of Professor and Interim Department Head at Prairie View A&M University, Dr. Judy Perkins. MATC gives special thanks to the faculty of the participating universities who gave presentations, attended the conference, and encouraged their students to participate.

All Scholars Program presentations are available on the MATC YouTube channel: <https://www.youtube.com/user/MidAmericaTrans/featured>



Above: Dr. Judy Perkins participating in the Scholars Program

Left and Right: Students, staff, and guest speakers discussing the benefits of continuing education and how to succeed.

Lincoln Public School After School Program Learns About Native American Culture and Historical Transportation

Lincoln Public School students who participated in MATC's Roads, Rails, and Race Cars (RRRC) after school program were treated to all new lessons and activities that connected them to Nebraska's Native American cultural heritage.



The connection was made through the implementation of new curriculum created by Michele Blackbird Barcelona during MATC's 2020 Summer Institute. The Summer Institute is a program in which K-12 educators and university faculty collaborate to create STEM curriculum and other instructional materials. Barcelona is an educator at the Umóⁿhoⁿ Nation Public School and has been a host teacher for RRRC since 2017.

Barcelona's lessons place STEM concepts such as transportation and simple machines in a historical context, in this case, the Umóⁿhoⁿ People's role in trade along the Missouri River during the period of US Western Expansion. The activities associated with the lessons include designing and building a river barge that holds cargo, and designing and building a series of simple machines to unload cargo from the barge and move it to a designated spot. Barcelona's lessons and activities will become part of the regular RRRC curriculum in future semesters.

Due to the Covid-19 pandemic, RRRC's outreach was limited to less school than usual during Spring 2021. Although MATC prefers to interact with students in-person, host teachers at Culler Middle School, Mickle Middle School, and Park Middle School took the initiative to lead this semester's weekly clubs with video lessons and materials provided by MATC. Schools and cultures have come together in a significant way to keep future STEM leaders interested and engaged while social distancing. This connection promises to yield many more meaningful learning opportunities for future RRRC students.

Steven Corns Webinar Starts the Semester



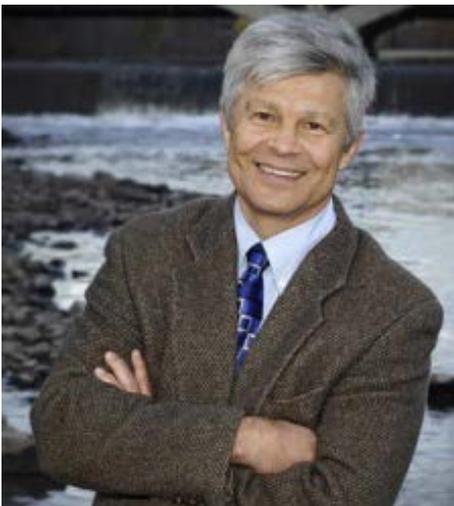
MATC hosted one webinar this semester thanks to Dr. Steven Corns, Associate Professor of Engineering Management and Systems Engineering at Missouri University of Science and Technology. His talk, “Deep Learning Techniques for Flash Flood Management” gave insight into his research finding a methodology that provides both risk quantification and optimal rerouting guidance for flash flooding.

The speed at which flash flooding occurs makes it both more dangerous and makes predicting its occurrence more challenging. Dr. Corns’ research uses publicly available geospatial data to create a historic flash flood database which can in turn be used to develop a deep learning model for classifying flash flood risk. Specifically, this project looks at elevation, slope, aspect, and curvature data for a subwatershed in Greene County, Missouri that frequently experiences flash floods.

Three machine learning models were analyzed and resulted in the artificial neural network exhibiting superior performance over logistic regression and support vector machine. Research also suggests future advancement in the capture of in-route traffic and road segments at high risk for flash flood event data for transportation officials to gain critical information to guide the deployment of resources more efficiently to reduce risk exposure to motorists.

Dr. Corns’ presentation is available on the MATC YouTube channel at <https://www.youtube.com/watch?v=42U9ndVm33I>

Krajewski Elected to the National Academy of Engineering



The National Academy of Engineering (NAE) is a private, independent, nonprofit institution that provides engineering leadership by promoting a vibrant engineering profession through the participation of eminent engineers. Dr. Witold Krajewski is joining a group of more than 2,000 peer-elected members who are among the world’s most accomplished engineers to provide expertise for numerous projects focused on relationships between engineering, technology, and the quality of life.

Dr. Krajewski has been a Professor in Civil and Environmental Engineering and Research Engineering at IIHR—Hydroscience and Engineering at the University of Iowa since 1987. He is also the founding director of the Iowa Flood Center, where science-based information and technology about flooding is made accessible to Iowa’s decision-makers, emergency managers, home- and business-owners, and the general public through their Iowa Flood Information System (IFIS). The online tool communicated real-time information about stream levels, flood alerts and forecasts, and hydraulic conditions and has been accessed by more than 3.5 million users. His accomplishments in education, research, and public service have led to his reception of one of the highest honors in the field of engineering.

Share your News with MATC!

If you are a student, faculty member, or other affiliate of the Mid-America Transportation Center, we are eager to share news of your work and accomplishments.

Send your information to Madison Schmidt at mschmidt24@unl.edu and it could appear in the next issue as well as MATC’s website, Facebook, and Twitter.

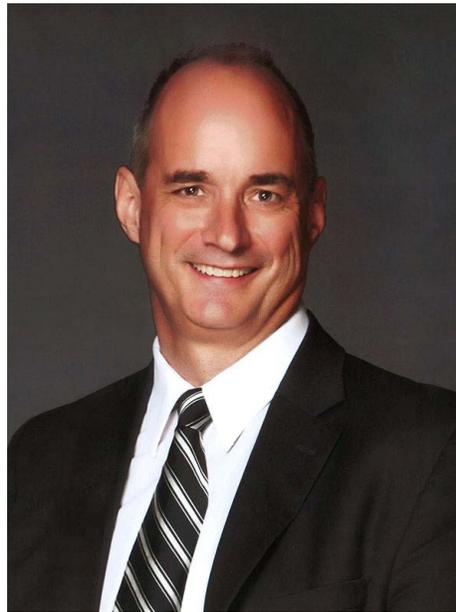
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Dr. Rilett Receives ASCE's Frank M. Masters Award

Dr. Laurence Rilett was selected to receive the 2021 Frank M. Masters Transportation Engineering Award. His “contributions to innovative research on transportation systems and collaborative leadership to develop a diverse workforce in transportation engineering” was recognized by the American Society of Civil Engineers (ASCE) in reference to his work as a both a Distinguished Professor in Civil and Environmental Engineering at the University of Nebraska – Lincoln, and his position as Director of MATC and NTC.



The award is given as a memorial to the outstanding professional accomplishments of Frank M. Masters and supported by the income from a bequest from Mr. Masters. It is given to a member of the society who demonstrates the best example of innovative or noteworthy planning, design, or construction of transportation facilities and chosen by the Awards Committee of the Transportation and Development Institute out of nominees selected by the Honors and Awards program. Dr. Rilett accepted the award during the ICTD/Pavements virtual conference that took place early June 2021 where he remarked “it is one of my career highlights and I am both grateful and humbled to receive it.”

About the Mid-America Transportation Center

Since 2006, MATC has been designated as the US DOT Region VII University Transportation Center. Region VII is composed of Iowa, Kansas, Missouri, and Nebraska. MATC is a consortium of nine universities. The University of Nebraska-Lincoln (UNL) serves as the lead institution, and MATC has its headquarters on the UNL campus.

MATC's research priority is promoting safety with an emphasis on reducing the number of incidents involving hazardous material transport, mitigating the negative effects of crashes, and improving emergency response to unexpected events.

MATC's education priority includes increasing the number of students from underrepresented groups in STEM education and transportation-related careers.



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