MarTREC Tier 1 UTC Project Request Form
MarTREC Project 7033
Completed form cannot exceed 2 pages

Submission Date *(select from calendar)*: 5/1/2026
Lead Recipient/Grant Number: University of Arkansas / 69A3552348331
Principal Investigator Institution *(select drop down)*: Jackson State University
Center Name: Maritime Transportation Research and Education Center
Research Priority: Preserving the Existing Transportation System
Principal Investigator(s) with ORCID(s) and Contact Information: *Dr. Kejun Wen, 0000-0003-3124-1424*
Project Partners: *Mississippi Department of Transportation, Federal Highway Administration*
Project Type (*select drop down*): Education and Workforce Development
Project Research Topic Type (*select drop down*): Resilient Maritime Infrastructure
Transportation Modes Involved (*check all that apply*): ☐Waterway ☐Road ☐Rail ☐Pipeline ☒Other
Total Funding Requested ($): *$82,500* \| **Federal Funding Requested ($):** *$55,000*
% of Total for Tech Transfer (%): *23%* | **Non-Federal Match Requested ($):** *$27,500*
Project Start and End Dates (*month/day/year to month/day/year*): 7/1/2026-06/30/2027
Project Title: Mississippi Summer Transportation Institute -2027
Project Abstract (Brief Description): The MSTI Program aims at introducing a group of motivated pre-college students (9th to 12th grade) to the transportation industry. During the two-week program, students will participate in academic and enhancement activities designed to improve their skills in Science, Technology, Engineering, and Mathematics (STEM) and leadership.
USDOT Priorities: Section left blank until USDOT's new priorities and RD&T strategic goals are available in Spring 2026
Outputs (results of the work performed): *Jackson State University hosted the MSTI Program for more than 10 years (2009 –2025) with the support from Mississippi Department of Transportation (MDOT) and FHWA. Based on feedback received from participants, parents and the community, these programs successfully influenced students' perception and knowledge of the importance of pursuing studies in STEM disciplines for future careers in transportation. Many students study Civil Engineering major at JSU. We will continue to build on our previous experiences and successes while expanding our horizons to make the next MSTI program even better. The MSTI curriculum will expose students to presentations on planning, design, construction, operations, maintenance and management of transportation facilities, various modes of transportation, transportation of people and cargo, transportation laws, regulations and policy, traffic safety, emergency evacuation management and preparedness, and transportation related environmental issues. The students will also be exposed to the advanced topics in Transportation related industry such as drone, autonomous, traffic signal design and 3D printing. The students will also have the opportunities to do some hands-on activities with the 3D printer and drone that are equipped in the Department of Civil and Environmental Engineering.*
Participants will be taken on field trips to various transportation facilities in the area to learn the available transportation modes and intermodal facilities, and to meet related transportation industry, builders, and stakeholders. Students will experience and discover various transportation careers and functions from experts at these sites. Additionally, there will be presentations by MDOT Materials Engineer, Rail Division Project Manager, Traffic Engineer, State Planner and Law Enforcement Supervisor. Also, Jackson State University Civil and Environmental Engineering faculty and graduate students will

present lectures and demonstrate lab activities during tours to the Civil Engineering Laboratories. Meanwhile, the faculty from the data science and physical Department will also demonstrate their updated research projects that are related to Transportation to these students. The curriculum content will be covered through presentations to provide literature and information, group discussions, assignments, and activities that help improve STEM capabilities.

With support from MarTREC, one week of the two-week MSTI 2027 program will focus on marine transportation. Students will participate in hands-on activities related to ports, inland waterways, vessel design, maritime logistics, navigation, safety, and environmental protection. The program may include field trips to ports or river facilities, guest lectures from maritime professionals, boat design and cargo-loading challenges, and team projects addressing sustainable port or waterway transportation. These activities will introduce students to marine transportation systems and related careers in engineering, logistics, port management, and environmental science. This program will provide a well-balanced curriculum and an environment that is conducive to both academic and personal development, promotes interpersonal skills and exposes students to real-world transportation issues. These will be accomplished through a series of classroom activities, field trips, design projects, and recreational activities. Bridge competition, and traffic improvement design will be included to enhance their design ability and teamwork skills. All participants will receive a scholarship to attend this two-week non-residential summer program.

Outcomes/Impacts: *The high school students will participate in academic and extra-curricular activities designed to improve their Science, Technology, Engineering, and Mathematics (STEM) knowledge and leadership skills. Furthermore, the MSTI Program strives to:*

- ☐ *Increase students' awareness of transportation rules, regulations and safety*
- ☐ *Enhance students' understanding of transportation related topics and challenges.*
- ☐ *Inspire students' interests in transportation industry*
- ☐ *Expose students to a variety of transportation career opportunities*
- ☐ *Improve students' creative, analytical and problem-solving skills*
- ☐ *Develop students' interpersonal and leadership skills*
- ☐ *Provide college and career guidance*

Technology Transfer Activities: *All the camp materials and activity handout will be shared with general public. A report will be submitted to MarTREC within 4 weeks after the project ends.* Training modules developed for K–12 educators will be made publicly available.

Final Research Report: Upon completion of the project, provide a URL link to final report will be provided

Project Deliverables: ☒ PI agrees to submit all deliverables within 4 weeks of the project end date.

Data Management Plan (DMP): ☒ PI has reviewed and agrees to adhere to MarTREC DMP. Proposed project DMP must be submitted with this form.

USDOT Approval Date: 7.20.26