

TEXAS SOUTHERN UNIVERSITY
2024-2025 Title III Part B; Strengthening HBCU & HBGI Programs
Enhancement of M.S. Degree Program in Transportation Planning and Management

NARRATIVE

The Department of Transportation Studies offers an M.S. degree in Transportation Planning and Management, which is designed to train students for successful careers in the various fields of transportation. This is the largest M.S. degree offered within the College of Science, Engineering, and Technology (COSET). Currently, there are 25 Graduate students in our department. Our transportation program is to provide education that builds on the latest data, systems, and technologies in transportation.

The M.S. degree program was established in 1983 since that time, over 300 M.S. degrees have been awarded. The department strives to provide an environment that enables students to develop their maximum potential and skills that are needed for the next generation of transportation professionals. For this purpose, cutting-edge research facilities for training and developing our students are needed and more financial support is also needed to enable our graduate students to more focus on their studies and research work.

To optimize enrollment and maintain TSU as a high-quality research institution, we are presenting three requests for HGBI funding. *Firstly*, we request research assistance (RA) stipends for 6 graduate students in the Transportation program. It is necessary to provide continued support to the current Title III funding-supported students and ensure they achieve success in our program. *Secondly*, we request funding for maintaining and enhancing the existing driving simulator lab/ virtual driving lab with the latest technology and software systems. This will enable our program to remain cutting-edge by conducting advanced transportation research. *Lastly*, we request funding for purchasing some traffic data collection equipment. It will enhance our capabilities in conducting advanced transportation research. These requests are vital for securing external grants related to transportation research in the future. By investing in these areas, TSU can continue to be a leader in transportation research, maintain its status as a high-quality research institution, and attract top talents.

STATEMENT OF THE PROBLEM or NEED

In preparing the next generation of transportation professionals, we pay special attention to attracting and retaining individuals who represent diverse backgrounds socially, economically, and academically, especially those who have not been well represented among transportation professionals in the past. We are committed to providing access and opportunity to our ethnically diverse student body (including a large number of African American students) to enable them to develop their full potential. However, the primary obstacle to recruiting the highest quality students and ensuring that all of our graduate students are maximally productive, committed to their studies, and fully engaged in their research projects remains student financial strain/cost of study. In the last two years, with the support of Title III funding, we have successfully recruited 10 high-quality students. This is necessary to provide continued support to the current Title III funding-supported students and ensure they achieve success in our program. Note that, we plan to recruit more highest quality students for the year 2024-2025. The requested RA stipends will not only provide our students with the needed financial support to allow them to focus on their studies but also the opportunities to work closely with their professors on their research projects,

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which will provide them with an excellent learning environment, valuable research skills, and actual work experiences.

Second, currently, with the support of Title III funding, we are developing an advanced driving simulator lab/ virtual driving lab, which includes an advanced driving simulator and a bike simulator and they can work together into one simulation and allow us to conduct some advanced research work on driving safety, bicycle safety and Autonomous Vehicles (AV). For this lab, we need to continue to enhance it with the latest technology and software systems. Especially, a pedestrian simulator can be added to that lab to offer a powerful platform for advancing pedestrian safety research.

Third, our transportation program continually strives to enhance its research capabilities and educational offerings to remain at the forefront of transportation science. To support this goal, we propose the acquisition of the following two sets of advanced traffic data collection equipment.

- Driving Distance Measuring System: This system is essential for accurately collecting data on vehicle travel distances and speeds under various traffic conditions. Its precision and reliability support detailed analysis of vehicular flow and density, which is crucial for developing traffic management solutions and infrastructure improvements.
- Traffic Turning Movement Accounting System: Turning movements are critical data points in traffic engineering, providing insights into intersection performance, signal timing optimization, and the safety of both vehicular and pedestrian traffic. The Traffic Turning Movement Accounting System will allow for precise measurement of these movements, enabling researchers and students to devise innovative solutions to improve intersection design and reduce traffic-related accidents.

The above three requirements will significantly contribute to our educational objectives and enhance our research capabilities.

Specific goal:

Our goal is to increase the enrollment of qualified students and to establish cutting-edge transportation research facilities at TSU, thereby sustaining TSU as a high-quality institution.

OBJECTIVES AND ACTION STEPS

Objectives:

1. Provide research assistance (RA) stipends support to 6 student workers
2. Continue enhancing the existing driving simulator lab/ virtual driving lab by adding an advanced pedestrian simulator with virtual reality capabilities.
3. Acquisition of two sets of advanced traffic data collection equipment, including a Driving Distance Measuring System and a Traffic Turning Movement Accounting System
4. Continue to develop and foster student-centered scholarly activities for our current and prospective transportation students.
 - Publish at least 3 peer-reviewed publications in scientific journals

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- Submit at least 3 external grant proposals
- Students present their research work in Transportation conferences/meetings
- Organize at least 3 Transportation seminars in the Department

Action Steps:

1. Award 6 student workers a stipend of \$18,000 + 13.65% fringe each.
2. This support will be used as a recruitment tool to attract good students into the program and increase enrollment. The transportation program will be advertised through TSU/COSET website and recruitment flyers.
3. Maintain and enhance the existing driving simulator lab/ virtual driving lab by adding an advanced pedestrian simulator with virtual reality capabilities.
4. All Title III fellows will help with maintaining the equipment in our simulator labs and work on designing and developing the driving simulation scenarios.
5. Continue to develop and foster student-centered scholarly activities:
 - Students will be informed about upcoming conferences/meetings and encouraged to submit their abstracts/papers and participate in transportation conferences and meetings. The department will support the students to attend the meeting.
 - Faculty will submit research proposals to TxDOT, USDOT, NSF, FHWA, etc. to attract external grants.
 - Faculty members will publish their research work in peer-reviewed scientific journals
 - Faculty members will attend the transportation conferences to present their research work
 - Research conducted by students will be published in scientific journals.
 - The Transportation Department organizes a research seminar series every semester for graduate students in the COSET.

SUMMARY

To achieve these objectives through the action steps that we have thoughtfully presented above, we will require a Title III funding award for our M.S. level program in Transportation planning and management for FY24-25. It will enable us to increase the enrollment of qualified students and establish cutting-edge transportation research facilities at TSU, thereby sustaining TSU as a high-quality institution.