



## TENNESSEE HIGHER EDUCATION COMMISSION

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**REGULAR CALENDER ITEM:** I. B.

**MEETING DATE:** January 28, 2022

**SUBJECT:** New Academic Program  
Middle Tennessee State University  
Data Science, Master of Science  
CIP Code: 30.7001 (Data Science, General)

**ITEM TYPE:** Action

**ACTION RECOMMENDATION:** Approval

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### PROGRAM DESCRIPTION

Middle Tennessee State University (MTSU) proposes a Master of Science (MS) in Data Science which will consist of 36 credit hours and will produce graduates with the skills and knowledge required to apply data science techniques and theory to datasets and research problems. Some of the primary goals of the proposed program are to ensure students have a strong foundation in predictive modeling alongside an understanding of the real-world applications of data science. The proposed MS compliments MTSU's Bachelor of Science and Graduate Certificate programs in Data Science, and is supported by their Data Science Institute, which provides students with many opportunities for real-world, interdisciplinary research and experience.

Currently, there are four graduate level Data Science programs in Tennessee at Tennessee State University, University of Memphis, Lipscomb University, and Vanderbilt University. Additionally, East Tennessee State University is in the process of developing an Applied Data Science, MS program.

The proposed Master of Science in Data Science program was approved by the Middle Tennessee State University Board of Trustees on December 8, 2021 and will be implemented May 2022.

### CURRICULUM

The Data Science, MS will require 36 credit hours including 24 credit hours of core courses and 12 credit hours of electives. The proposed curriculum is designed to produce data scientists who demonstrate the ability to:

- Identify data-driven business questions.
- Appropriately identify data science methods and techniques to solve data driven problems.
- Apply the knowledge and skills needed to perform data science techniques from areas such as statistics, computational programming, and business.
- Appraise ethical issues associated with data science applications.
- Effectively communicate quantitative analyses and conclusions.
- Demonstrate the ability to work with individuals and groups on data driven solutions.

### PROGRAM PRODUCTIVITY

The proposed Data Science, MS projects an initial enrollment of eight students increasing to 28 students by year five and projects graduates beginning in year two and increasing to 19 graduates per year by year four.

MTSU anticipates an attrition rate of 12 percent based on enrollment and graduation rates of students in the existing graduate certificate in data science.

	2022	2023	2024	2025	2026
<b>Enrollment</b>	8	20	21	22	28
<b>Graduates</b>	--	7	18	19	19

**EXTERNAL JUDGEMENT**

An external review of the proposed program was conducted during a virtual institution site visit on May 3, 2021 by Dr. Philip Bourne, Founding Dean in the School of Data Science and Professor of Biomedical Engineering at the University of Virginia. The site visit included meetings with campus administrators, faculty, prospective students, and community partners.

Dr. Bourne made a recommendation for approval of the proposed program and stated "The private sector, state and local government folks interviewed were highly enthusiastic about the launch of the program and so they should be. This represents a further opportunity for bidirectional engagement - for example a workforce pipeline in one direction; corporate sponsorship in the other."

**COMMUNITY PARTNERS**

Letters of support for the proposed program were provided by the Rutherford County Chamber of Commerce, Healthcare Bluebook, juiceanalytics, HCA Healthcare, Bridgestone, and TN Dept. of Human Services.

**PROGRAM COSTS**

The proposed one time and recurring expenditures for the Data Science, MS program are listed in Table 1. MTSU plans to hire two new full-time and three adjunct faculty to support the program. The first full-time faculty member will be hired in fall 2022 and the second full-time faculty member will be hired in the fall 2025. The anticipated starting salary for both of these positions is \$120,000. Additionally, the program plans to fund several graduate assistant positions – three starting in year one and ramping up to six by year five.

**Table 1: Estimated Costs to Deliver the Proposed Program**

<b>One-Time Expenditures</b>						
<b>Category</b>	<b>Planning</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Accreditation						
Consultants	\$1,500					
Equipment		\$5,000				\$5,000
Information Technology						
Library						
Marketing						
Facilities						
Travel						
Other						
<b>Total One-Time Expenditures</b>	<b>\$1,500</b>	<b>\$5,000</b>				<b>\$5,000</b>

<b>Recurring Expenditures</b>						
<b>Category</b>	<b>Planning</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Accreditation						
Consultants						
Equipment						
Information Tech						
Library						
Marketing	\$2,500	\$2,500	\$2,000	\$1,500	\$1,500	\$1,500
Facilities						
Travel		\$7,500	\$7,500	\$7,500	\$7,500	\$7,500
Other: Graduate Assts		\$55,752	\$55,752	\$73,002	\$94,254	\$115,506
<b>Total Recurring Expenditures</b>	<b>\$2,500</b>	<b>\$65,752</b>	<b>\$65,252</b>	<b>\$82,002</b>	<b>\$103,254</b>	<b>\$124,506</b>
<b>Grand Total (One-Time and Recurring)</b>	<b>\$4,000</b>	<b>\$70,252</b>	<b>\$65,252</b>	<b>\$82,002</b>	<b>\$103,254</b>	<b>\$129,506</b>

### **ASSESSMENT AND POST-APPROVAL MONITORING**

An annual performance review of the proposed program will be conducted for the first five years following program approval. The review will be based on benchmarks established in the approved proposal. At the end of this period, the campus, institutional governing board, and THEC staff will perform a summative evaluation. The benchmarks include, but are not limited to, enrollment and graduation, program cost, progress toward accreditation, and other metrics set by the institution and staff. If benchmarks are not met during the monitoring period, the Commission may recommend that the institutional governing board terminate the program. If additional time is needed and requested by the institutional governing board, the Commission may choose to extend the monitoring period.