

**New Program Proposal  
 Master of Transportation Safety Administration  
 Clemson University**

**Executive Summary**

Clemson University requests approval to offer a program leading to the Master of Transportation Safety Administration to be implemented in Fall 2019 through online instruction. The following chart outlines the stages of approval for the proposal. The Advisory Committee on Academic Programs (ACAP) voted to recommend approval of the proposal. The full program proposal is attached.

<b>Stages of Consideration</b>	<b>Date</b>	<b>Comments</b>
Program Proposal Received	8/1/18	Not Applicable
ACAP Consideration	9/27/18	<p>Representatives from Clemson University (CU) introduced the proposed program, citing statewide need, program uniqueness, recruitment strategy, and broad employer and stakeholder support.</p> <p>The Advisory Committee on Academic Programs (ACAP) discussed the proposed program, inquiring about CU's interdisciplinary curriculum development and delivery, student recruitment, personnel, program costs, and licensure. Representatives confirmed Clemson would use extant coursework, with minimal addition of new courses (three), in tandem with managing total degree credit hours (30), and online delivery, all strategies to minimize implementation costs. Almost two dozen stakeholders and nine (9) state offices indicate strong program support, in addition to a former safety and security official from the SC Dept. of Transportation, who stressed the need for transportation safety management in-state, and who explained the viability of program completion for potential employment particularly in health service sectors. Program completion prepares students to develop professional mastery. No new faculty are needed, and support services are in place. Additional program support staff would be recruited only with enrollment growth and not prior to year two of implementation. Other costs include indirect program support and debt service.</p> <p>After remaining discussion, ACAP voted to recommend approval of the program. Staff transmitted remaining questions for additional clarity.</p>
Comments and suggestions from CHE staff sent to the institution	10/1/18	Staff requested the proposal be revised to include explanations provided at ACAP about in-state stakeholders, need for the program, other costs, and certification.

Stages of Consideration	Date	Comments
Revised Program Proposal Received	10/8/18	The revised proposal satisfactorily addressed the requests.

**Recommendation**

The staff recommends the Committee on Academic Affairs and Licensing approve the program leading to the Master of Transportation Safety Administration to be implemented in Fall 2019.

**Clemson University Student and Program Data**

<b>Graduate In-/Out-of-State Enrollment, Fall 2017</b>	2,058 (41.28%)/2,927(58.72%)
<b>Number of Approved Programs in 10 Yrs. (FY 2008- 2018)</b>	37
<b>Number of Terminated Programs in 10 Yrs. (FY 2008- 2018)</b>	18

**Industry Related Occupational Wages and Projections in South Carolina, 2016 – 2026\***

Occupational Field <sup>1</sup>	2016 Median Income <sup>2</sup>	2016 Estimated Employment <sup>3</sup>	2026 Projected Employment	Total 2016-2026 Employment Change	2016-2026 Annual Avg. Percent Change	Total Percent Change
Transportation and Material Moving	\$28,270	152,350	177,175	24,825	1.52%	16.29%

<sup>1</sup> “Occupational Field” represents the closest related occupation category that includes the occupations aligned with the program proposal.

<sup>2</sup> SC Department of Employment & Workforce (DEW), Labor Market Information. (2018). Occupational Employment and Wage Rates (OES) for All Major Groups in South Carolina in 2016 [Data file]. Retrieved from <https://jobs.scworks.org/vosnet/lmi/default.aspx?pu=1>

<sup>3</sup> SC Department of Employment & Workforce (DEW), Labor Market Information. (2018). Occupational Projections (Long-term) for Multiple Occupations in South Carolina in 2016-2026 [Data file]. Retrieved from <https://jobs.scworks.org/vosnet/lmi/default.aspx?pu=1>

\* Data downloaded October 8, 2018; Most recent data available.

**NEW PROGRAM PROPOSAL FORM**

Name of Institution: Clemson University

Name of Program (include degree designation and all concentrations, options, or tracks):  
Master of Transportation Safety Administration (MTSA)

Program Designation:

- Associate's Degree                       Master's Degree  
 Bachelor's Degree: 4 Year               Specialist  
 Bachelor's Degree: 5 Year               Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA)  
 Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.)

Consider the program for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes  
 No

Proposed Date of Implementation: Fall 2019

CIP Code:              52.0209

Delivery Site(s): Online (85750) only

Delivery Mode:

- Traditional/face-to-face                       Distance Education  
\*select if less than 25% online                       100% online  
 Blended/hybrid (50% or more online)  
 Blended/hybrid (25-49% online)  
 Other distance education (explain if selected)\*

Program Contact Information (name, title, telephone number, and email address):

Dr. Kim E. Alexander, Executive Director, Clemson University's Institute for Global Road Safety and Security (IGRSS).  
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Dr. James B. Rafert, MTSA Program Coordinator, Professor Emeritus, Clemson University. 864.710.7267.  
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Dr. Jeremy King, Associate Provost for Institutional Effectiveness, Clemson University. 864.656.5274 or  
864.656.4592 [jking2@clemson.edu](mailto:jking2@clemson.edu)

Institutional Approvals and Dates of Approval (include department through Provost/Chief Academic Officer, President, and Board of Trustees approval):

1. IGRSS Advancement Board – October 20, 2016
2. Clemson University Board of Trustees – July 13, 2017
3. Clemson University Interdisciplinary Curriculum Committee – November 28, 2017
4. Clemson University Graduate Curriculum Committee – February 9, 2018

## Background Information

### **State the nature and purpose of the proposed program, including target audience, centrality to institutional mission, and relation to the strategic plan.**

The Master of Transportation Safety Administration (MTSA) is a two-year, 30-credit-hour online interdisciplinary transportation (road) safety education curriculum designed to develop professionals skilled at administering and managing road safety programs involving the complex interactions of the human-vehicle-road system. This program will utilize many existing Clemson courses across multiple departments and colleges, modified for online delivery. In addition, faculty will develop three new courses specifically for the degree.

The MTSA degree specifically targets employees of corporations and government agencies; including the U.S. Department of Transportation (USDOT), State DOTs, State Highway Safety Offices, the Federal Highway Administration, and other transportation-related groups, including similar professionals in other countries, where transportation safety is a significant issue.

This program supports Clemson's strategic plan through a connection to the focus area of Energy, Transportation, and Advanced Manufacturing, and leverages the Institute for Global Roadway Safety and Security. The program addresses the critical need for a road safety workforce capable of deploying evidence-based strategies and best practices supported by ongoing research. The program will engage students in activities related to current international issues and best practices in road safety, and aligns directly with the core competencies identified by the Transportation Research Board (TRB).

#### *Critical Need for the MTSA Degree Program in South Carolina*

Motor vehicle crashes are the leading cause of unintentional injuries and deaths not only in the United States, but also worldwide. Road safety is a significant and costly problem in South Carolina. From 2012 – 2016 (the most recent data available) there were approximately 4,452 motor vehicle-related deaths in South Carolina. In 2016 alone, South Carolina had the highest fatality rate per 100 million VMT (1.89), which is approximately 62% higher than the national VMT rate of 1.16.

Traffic collisions are responsible for billions of dollars in economic loss to South Carolina each year. Economic loss includes property damage, medical costs and lost productivity, but does not include intangible costs such as grief and suffering. In 2016, \$4.54 billion dollars in estimated loss was incurred which is a 5.0% increase from 2015. Furthermore, the economic loss to South Carolina has increased over 58% from 2012 to 2016. (South Carolina Traffic Collision Fact Book, 2016).

The MTSA degree will directly address the crises of roadway crashes in South Carolina by preparing a road safety management workforce whose skills or roles will be employed in reducing the personal and economic cost to our citizens as well as to our state. Through this first-of-its-kind degree program, we will train professionals to utilize new and improved methods for identifying and diagnosing safety issues and for evaluating the effectiveness of countermeasures and programs which are developing at a rapid pace.

## Assessment of Need

### **Provide an assessment of the need for the program for the institution, the state, the region, and beyond, if applicable.**

Clemson's Master of Transportation Safety Administration will be one of the first degrees of its kind focused on safety, and will address the need for a road safety workforce capable of deploying evidence-based strategies and best practices supported by ongoing research. Demand estimates by the Transportation Research Board (TRB) indicate as many as 100,000 professionals in the U.S. alone who contribute to the road safety workforce and need safety-related knowledge and training. An Education Advisory Board (EAB) study found that a "robust national demand validates Clemson's proposed online MTSA program." EAB indicates demand for professionals seeking this

proposed degree has increased 36% since 2013, with nearly 5,000 job postings in the last year. Advertised annual salaries for master's-level transportation safety administration professionals can range between \$50,000 and \$93,000. The report suggests the online modality of the MTSA will differentiate the program from potential competitors, providing a competitive advantage in the market.

A much larger demand for this graduate degree program can be anticipated by widening the reach to include an international audience. Currently, 22 stakeholders and nine state offices across the nation strongly support this degree and indicate a strong demand for these professionals within their agencies.

#### **Transfer and Articulation**

**Identify any special articulation agreements for the proposed program. Provide the articulation agreement or Memorandum of Agreement/Understanding.**

None.

**Employment Opportunities**

Occupation	State		National		Data Type and Source
	Expected Number of Jobs	Employment Projection	Expected Number of Jobs	Employment Projection	
Urban and Regional Planners	390 (current)	13.2% (by 2026)	36,000 (current)	12.8% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/life-physical-and-social-science/urban-and-regional-planners.htm">https://www.bls.gov/ooh/life-physical-and-social-science/urban-and-regional-planners.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Training and Development Managers	770 (current)	13.5% (by 2026)	34,500 (current)	10.4% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/management/training-and-development-managers.htm">https://www.bls.gov/ooh/management/training-and-development-managers.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Civil Engineers	5,950 (current)	11.8% (by 2026)	303,500 (current)	10.6% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/architecture-and-engineering/civil-engineers.htm">https://www.bls.gov/ooh/architecture-and-engineering/civil-engineers.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Law Enforcement (Police and Patrol Officers only, for purposes of data accuracy)	12,080 (current)	7.1% (by 2026)	684,200 (current)	7.0% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/management/medical-and-health-services-managers.htm">https://www.bls.gov/ooh/management/medical-and-health-services-managers.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Health Services Managers	5,450 (current)	24.5% (by 2026)	352,200 (current)	20.5% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm">https://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Health Educators	960 (current)	16.7% (by 2026)	61,000 (current)	14.6% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/community-and-social-service/health-educators.htm">https://www.bls.gov/ooh/community-and-social-service/health-educators.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
Community Health Workers	290 (current)	17.5% (by 2026)	57,500 (current)	17.9% (by 2026)	Bureau of Labor Statistics <a href="https://www.bls.gov/ooh/community-and-social-service/health-educators.htm">https://www.bls.gov/ooh/community-and-social-service/health-educators.htm</a> AND <a href="http://www.projectionscentral.com/Projections/LongTerm">http://www.projectionscentral.com/Projections/LongTerm</a>
<b>TOTAL</b>	25,890 (current)		1,528,900 (current)		

**Supporting Evidence of Anticipated Employment Opportunities**  
**Provide supporting evidence of anticipated employment opportunities for graduates.**

The precise scale and scope of employment opportunities for the MTSA degree are difficult to estimate because of the thousands of public agencies with road safety responsibilities, and the diversity of expertise required for the road safety management profession. The employment opportunities for the occupations listed in the table above reflect only a small number of the job categories for which MTSA graduates would be qualified. Additional opportunities for graduates of the program, for example, include:

- Governor’s Highway Safety Representative
- Commander State Highway Patrol
- State Safety Engineer
- State Highway Safety Office Coordinator
- State Highway Safety Office Legislative Liaison
- State DOT Legislative Liaison
- State DOT Highway Safety Improvement Program Manager
- Highway Safety Specialist (USDOT, Office of Emergency Management Service)
- Highway Safety Specialist (NHTSA)
- Traffic Safety Engineer (FHWA)
- Transportation Safety Director
- Strategic Highway Safety Plan Coordinator
- Injury Prevention and Control Scientific Administration Fellowship (CDC)
- Director of Worldwide Fleet Safety

A web search in May 2018 for jobs related to road safety management the United States returned the following results. According to the job postings, graduates of the Master of Transportation Safety Administration (MTSA) degree program will compete for jobs in a salary range between \$52,000 and \$185,000. While by no means an exhaustive search, 254 such job openings were identified. Although many job titles included the categories of highway or transportation safety professionals, other relevant positions and titles were identified with descriptions including: transportation planner, transportation or traffic engineer, chief of police, and Vision Zero professional.

Finally, a joint report by the U.S. Departments of Education, Transportation, and Labor estimates that, between 2012 and 2022, the average employment growth rate of 11% across transportation subsectors is similar to that of the entire economy (10.8%) and of the infrastructure industry (11%). The report further indicates that projected annual job openings are 68 percent larger than the number of students who are completing related educational programs annually across selected transportation occupational groups ([https://s3.amazonaws.com/PCRN/docs/Strengthening\\_Skills\\_Training\\_and\\_Career\\_Pathways\\_Across\\_Transportation\\_Industry\\_Data\\_Report.pdf](https://s3.amazonaws.com/PCRN/docs/Strengthening_Skills_Training_and_Career_Pathways_Across_Transportation_Industry_Data_Report.pdf)).

**Description of the Program**

Year	Projected Enrollment		
	Fall Headcount	Spring Headcount	Summer Headcount
2019-2020	25	50	50
2020-2021	75	100	100
2021-2022	100	100	100
2022-2023	100	100	100
2023-2024	100	100	100

**Explain how the enrollment projections were calculated.**

Initial enrollment is planned for Fall 2019. The projected enrollment numbers assume 25 new students will enroll each fall and spring semester, with a maximum headcount of 100.

**Besides the general institutional admission requirements, are there any separate or additional admission requirements for the proposed program? If yes, explain.**

Yes

No

**Curriculum**

**New Courses**

**List and provide course descriptions for new courses.**

The follow new core courses have been proposed for the MTSA degree program:

<b>Course Name</b>	<b>Description</b>
MTSA 8000 Introduction to Road Safety	This course introduces the complex, interdisciplinary, and multimodal nature of the road safety profession. Specific topics include examining road safety from a science-based perspective and strategies to achieve cooperation among the disciplines in the profession. A group project involves designing a stakeholder meeting for a grant-funded project.
MTSA 8420 Road Safety Culture	This course explores theories, strategy formation, implementation, and evaluation for road safety programs using a culture-based approach. Students will learn how to treat the origin of risk behaviors and apply a complex adaptive systems approach to culture-based interventions in order to support best practices in road safety management.
MTSA 8300 Road Safety Management	This course explores the fundamental organizational leadership strategies and support needs for effective and efficient road safety management. Using complexity theory, students learn how to establish and sustain effective multidisciplinary collaborative relationships, develop opportunities to stimulate change, and identify current research to support best practices in road safety management.

The remainder of the courses will be existing Clemson courses across multiple departments and colleges, modified for online delivery.

Total Credit Hours Required: 30

Curriculum by Year					
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours
<b>Year 1</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
MTSA 8000 Introduction to Road Safety	3	MTSA 8420 Road Safety Culture	3	ENGL 8400 Digital Creativity	3
HRD 8450 Needs Assessment	3	MTSA 8300 Road Safety Management	3		
Total Semester Hours	6	Total Semester Hours	6	Total Semester Hours	3
<b>Year 2</b>					
<b>Fall</b>		<b>Spring</b>		<b>Summer</b>	
ME 6930 Traffic Safety	3	COMM 8560 Trends in Public Relations	3	PADM 8220 Public Policy	3
CE 8150 Transportation Safety Engineering	3	IE 6910 Human Factors in Transportation	3		
Total Semester Hours	6	Total Semester Hours	6	Total Semester Hours	3

Note: The ten courses listed in this table are illustrative of the typical progression of the average student completing the 30-hour degree requirement in two years.

**Similar Programs in South Carolina offered by Public and Independent Institutions**

Identify the similar programs offered and describe the similarities and differences for each program.

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
Master of Science in Transportation (MST)	36	South Carolina State University	<p>Both are Master’s level degree programs in transportation</p> <p>Some similarity in transportation safety material. (SC State program includes safety in up to 15% of the course content.)</p>	<p>Clemson’s program is administrative/management oriented; SC State is science and engineering focused</p> <p>Clemson’s degree program focuses on safety; SC State program includes safety as a small focus of the transportation program (15% or less of degree)</p> <p>Clemson’s degree program is online; SC State program is face-to face</p> <p>Clemson’s degree program is 30 credit hours; SC State program is 36 credit hours</p> <p>Clemson’s degree includes multiple colleges and departments (interdisciplinary); SC State is with a single engineering department</p>

**Note:** There are currently no Master’s degrees in transportation safety administration in South Carolina.

Faculty

Rank and Full- or Part-time	Courses Taught for the Program	Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major	Other Qualifications and Relevant Professional Experience (e.g., licensures, certifications, years in industry, etc.)
Clinical Associate Professor; Full-time	Fall Yr 1: MTSA 8000 Intro to Road Safety (3 cr. hrs.)  Fall Yr 2: MTSA 8000 Intro to Road Safety (3 cr. hrs.)	EdD in Career & Technical Education, Clemson University. Dissertation: The Effect of Risk Perception Training on a Youth Traffic Safety Education Program (2006)	28 years of experience analyzing, planning, designing, developing, implementing, and evaluating road safety programs focusing on risk perception training, teacher training, leadership development and the attitudinal, behavioral, cognitive, cultural, and social aspects and underlying forces related to novice drivers and other road user subpopulations.  28 years of experience conducting educational research in road safety and traffic injury prevention. Society of Automotive Engineers (SAE)
Clinical Associate Professor; Full-time	Spring Yr 1: MTSA 8420 Road Safety Culture (3 cr. hrs.)  Spring Yr 2: MTSA 8420 Road Safety Culture (3 cr. hrs.)	EdD in Career & Technical Education, Clemson University. Dissertation: The Effect of Transformational Leadership Training on a Youth Traffic Safety Education Program (2005)	20 years of experience developing, planning, implementing, and evaluating road safety programs focusing on leadership training, teacher training, and attitudinal, behavioral, cognitive, social, and cultural factors of novice drivers.  20 years of experience conducting educational research in road safety and traffic injury prevention.
Professor Emeritus; Part-time	Spring Yr 1: MTSA 8300 Road Safety Management (3 cr. hrs.)  Spring Yr 2: MTSA 8300 Road Safety Management (3 cr. hrs.)	PhD in Astronomy, University of Florida (1979)	35+ years of research and teaching in Remote Sensing Physics, including 3 years as Professor of Physics while working for the Upper Great Plains Transportation Institute at their regional office in Denver, Colorado. Extensive interdisciplinary pedagogical and research activities including multiple publications in physics, space sciences, astronomy, remote sensing physics, and transportation infrastructure. Former Teacher and Researcher of the year, and former graduate school dean (Clemson) and Provost (NDSU)
Associate Professor; Full-time	Fall Yr 1: CE 8150 Transportation Safety Engineering (3 cr. hrs.)  Fall Yr 2: CE 8150 Transportation Safety Engineering (3 cr. hrs.)	PhD in Civil Engineering, Georgia Institute of Technology (2005)	A faculty member in the Department of Civil Engineering; American Society of Engineers; Institute of Transportation Engineers (ITE); Society of Automotive Engineers (SAE)

Assistant Professor; Full-time	Fall Yr 1: HRD 8450 Needs Assessment (3 cr. hrs.)  Summer Yr 4: HRD 8490 Program Evaluation (3 cr. hrs.)	EdD in Curriculum & Instruction in Educational Technology (2012)	A faculty member in the Department of Educational and Organizational Leadership Development; Faculty Director for Clemson University Center for Workforce Development (CUCWD) and the National Science Foundation Advanced Technological Education Center for Aviation and Automotive Technological Education using Virtual E-Schools (CA2VES)
Associate Professor; Full-time	Spring Yr 1: IE 6010 Human Factors in Transportation (3 cr. hrs.)	PhD in Industrial Engineering (2010)	A faculty member in the Department of Industrial Engineering; Institute of Industrial and Systems Engineers (IIE); Human Factors and Ergonomics Society (HFES).
Associate Professor; Full-time	Summer Yr 1: ENGL 8400 Digital Creativity (3 cr. hrs.)	DrArt in Humanistic Informatics (2004)	A faculty member in the Department of English specializing in interactive and social media visual communication, humanistic informatics, and emerging electronic media.
Professor; Full-time	Fall Yr 2: ME 6930 Traffic Safety (3 cr. hrs.)	PhD in Mechanical Engineering (1989)	A faculty member in the Department of Mechanical Engineering; registered professional mechanical engineer and an ASME Fellow.
Assistant Professor; Full-time	Spring Yr 2: COMM 8560 Trends in Public Relations (3 cr. hrs.)	PhD in Communication (2014)	A faculty member in the Department of Communication Studies.
Assistant Professor; Full-time	Spring Yr 2: HRD 8470 Instructional Systems Design (3 cr. hrs.)  Spring Yr 5: HRD 8970 Applied Research and Development (3 cr. hrs.)	EdD in Adult and Higher Education (2014)	A faculty member in the Department of Educational and Organizational Leadership Development.
Assistant Professor; Full-time	Summer Yr 2: PADM 8220 Public Policy (3 cr. hrs.)  Spring Yr 4: PADM 8480 Strategic Planning (3 cr. hrs.)  Summer Yr 4: PADM 8220 Public Policy (3 cr. hrs.)	PhD in Policy Studies (2011)	A faculty member in the Department of Parks, Recreation, and Tourism Management; Program Director of the Master of Public Administration Program
Professor;	Summer Yr 2: PSYCH	PhD in Industrial and	A faculty member in the Department of

Full-time	8990 Judgment and Decision Making (3 cr. hrs.)	Organizational Psychology (1988)	Psychology.
Associate Professor; Full-time	Summer Yr 3: CRP Transportation Planning (3 cr. hrs.)	PhD in Urban Planning (2011)	A faculty member in the Department of City and Regional Planning.
Professor; Full-time	Summer Yr 5: POST 8430 Public Management (3 cr. hrs.)	PhD in Government (1988)	A faculty member in the Department of Political Science; Chair of Policy Studies, Strom Thurmond Institute.

Total FTE needed to support the proposed program:

Faculty: 2.0\*

Staff: 0.5\*\*

Administration: 1.5\*\*\*

\*Assumes 2 course-load per term

\*\*This amount is matched by another 0.5 FTE for IGRSS research staff effort

\*\*\*This amount is matched by another 0.5 FTE for IGRSS research staff effort and includes 0.5 FTE for the MTSA program coordinator.

**Faculty, Staff, and Administrative Personnel**

**Discuss the Faculty, Staff, and Administrative Personnel needs of the program.**

As the degree is based primarily upon utilization of existing Clemson courses, there is an exceptional economy in faculty effort (e.g., only three of the MTSA courses for the program are new courses).

Existing IGRSS administrators will see a shift in load and responsibilities to cover all administrative aspects of the new program (2.0 existing FTE).

**Resources**

**Library and Learning Resources**

**Explain how current library/learning collections, databases, resources, and services specific to the discipline, including those provided by PASCAL, can support the proposed program. Identify additional library resources needed.**

Both due to the quality of existing Clemson University Libraries holdings—field-specific print and e-books, journals, and databases—and the interdisciplinary nature of the degree, no new journals or materials are required for the library to support this program. The Library already maintains access to databases such as the National Academies of Sciences, Engineering, and Medicine’s TRID, as well as transportation-related journals through Sage Publications, Taylor and Francis, ASCE, and many others. The Library also maintains in-person and online research resources specific to the Transportation field. Likewise, extensive additional resources for the proposed program are available through Interlibrary Loan and PASCAL, which are available to students and faculty without cost.

### **Student Support Services**

**Explain how current academic support services will support the proposed program. Identify new services needed and provide any estimated costs associated with these services.**

The MTSA requires the following student support services:

- **Graduate admissions** (built into budget)
- **Graduate retention** (built into budget)
- **Information technology** (classroom support build into budget)
- **Homework and examination grading** (graduate assistants built into budget)

In addition to library and learning resources, a number of academic and student support services are available to all graduate students—including online students—at Clemson University:

- **Clemson Computing and Information Technology (CCIT)** provides a leading-edge integrated information environment integral to learning and research. Graduates students may (but are not limited to) take advantage of services such as Clemson email account, emergency text messages, mobile guidebooks, video conferencing, web development, and data storage. Help services are available via phone, email, or online chat.
- **Student Accessibility Services** – Graduate Students may register with Student Accessibility Services to use services such as academic access letters, assistive technology, communication services, test proctoring center and electronic textbooks.
- **Center for Career and Professional Development** – Clemson University is dedicated to engaging students in career development that will empower them to successfully pursue their educational and professional goals. Services provided by the career center include career workshops, resume writing, career development, job search assistance, and networking.
- **Legal Assistance** - All Clemson students are eligible to receive one legal aid voucher per semester. Each voucher entitles the student to one-half hour consultation with a lawyer off campus.
- **Counseling and Psychological Services (CAPS)** - Counseling and Psychological Services (CAPS), the mental health department of Student Health Services, offers a wide array of services along a continuum of intensity for various psychological issues.
- **Graduate Student Life** – Operating under the Division of Student Affairs, this is a central body that collaborates with the Graduate School and Graduate Student Government to enhance the overall graduate student life experience.
- **Clemson University Writing Center** – The goal of the writing center is to help all members of the Clemson community become more confident and effective writers.
- **The Harvey and Lucinda Gantt Multicultural Center** - The Harvey and Lucinda Gantt Multicultural Center is committed to creating diverse learning environments that enhance the intercultural competence of our students. The center supports and advocates for the needs of all students, challenges students to think critically about themselves and their communities, provides engaging experiential learning opportunities and empowers students to be positive change agents.
- **Clemson Online** - Clemson Online staff are here to ensure that all online students have access to the same resources and support that a first-class Clemson education comprises for students enrolled in in-person programs. Clemson University is devoted to ensuring an innovative and substantive educational experience for all students.

**Physical Resources/Facilities**

**Identify the physical facilities needed to support the program and the institution's plan for meeting the requirements.**

Clemson University's campuses have adequate space to support the MTSA program faculty and their delivery of the online content. No physical plant modifications are necessary to implement this program.

**Equipment**

**Identify new instructional equipment needed for the proposed program.**

None. Any resources for video recording or specialized software are already available via Clemson Online or CCIT services. The program does not anticipate a need for new or additional instructional equipment beyond what is already offered to faculty.

**Impact on Existing Programs**

**Will the proposed program impact existing degree programs or services at the institution (e.g., course offerings or enrollment)? If yes, explain.**

Yes

No

**Financial Support**

**Sources of Financing for the Program by Year**

Category	1st 2019-20 (Fall 2019)		2nd 2020-21		3rd 2021-22		4th 2022-2023		5th 2023-2024		Grand Total	
	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Tuition Funding	\$753,027	\$753,027	\$1,745,140	\$1,745,140	\$1,997,215	\$1,997,215	\$2,057,132	\$2,057,132	\$2,118,846	\$2,118,846	\$8,671,360	\$8,671,360
Program-Specific Fees												
Special State Appropriation												
Reallocation of Existing Funds												
Federal, Grant or Other Funding												
<b>TOTAL</b>	<b>\$753,027</b>	<b>\$753,027</b>	<b>\$1,745,140</b>	<b>\$1,745,140</b>	<b>\$1,997,215</b>	<b>\$1,997,215</b>	<b>\$2,057,132</b>	<b>\$2,057,132</b>	<b>\$2,118,846</b>	<b>\$2,118,846</b>	<b>\$8,671,360</b>	<b>\$8,671,360</b>

**Estimated Costs Associated with implementing the Program by Year**

Category	1st		2nd		3rd		4th		5th		Grand Total	
	New	Total										
Program Administration, and Faculty and Staff Salaries	\$485,946	\$640,632	\$604,908	\$763,311	\$693,919	\$857,587	\$839,637	\$1,008,757	\$865,886	\$1,040,655	\$3,490,297	\$4,310,942
Facilities, Equipment, Supplies and Materials	\$182,901	\$182,901	\$166,919	\$166,919	\$122,813	\$122,813	\$93,121	\$93,121	\$94,983	\$94,983	\$660,738	\$660,738
Library Resources												
Debt Service to State Treasurer	\$31,342	\$31,342	\$119,655	\$119,655	\$206,112	\$206,112	\$251,870	\$251,870	\$94,983	\$94,983	\$703,962	\$703,962
Administrative Overhead	\$188,257	\$188,257	\$436,285	\$436,285	\$499,304	\$499,304	\$514,283	\$514,283	\$529,711	\$529,711	\$2,167,840	\$2,167,840
<b>TOTAL</b>	<b>\$888,445</b>	<b>\$1,043,131</b>	<b>\$1,327,768</b>	<b>\$1,486,171</b>	<b>\$1,522,148</b>	<b>\$1,685,816</b>	<b>\$1,698,911</b>	<b>\$1,868,032</b>	<b>\$1,585,564</b>	<b>\$1,760,333</b>	<b>\$7,022,837</b>	<b>\$7,843,482</b>
<b>Net Total</b> (Sources of Financing Minus Estimated Costs)	<b>\$(135,418)</b>	<b>\$(290,104)</b>	<b>\$417,372</b>	<b>\$258,969</b>	<b>\$475,067</b>	<b>\$311,399</b>	<b>\$358,220</b>	<b>\$189,100</b>	<b>\$533,282</b>	<b>\$358,513</b>	<b>\$1,648,522</b>	<b>\$827,877</b>

**Note:** New costs - costs incurred solely as a result of implementing this program. Total costs - new costs; program's share of costs of existing resources used to support the program; and any other costs redirected to the program.

### **Budget Justification**

**Provide an explanation for all costs and sources of financing identified in the Financial Support table. Include an analysis of cost-effectiveness and return on investment and address any impacts to tuition, other programs, services, facilities, and the institution overall.**

#### Revenue Highlights:

- **Tuition and Fees:** Benchmarking supports an online Tier 1 rate of \$1,215 per credit hour for in-state and out-of-state students. The total program cost is estimated at approximately \$36.9K for the master's degree. Program length is six semesters. The financial plan assumes that tuition and fees grow at 3% annually.
- **Additional Revenue Source:** An additional revenue source includes offering non-credit courses for professional development projected at \$50K per year starting in year three.

#### Expense Highlights:

- **Personnel Costs:**
  - Existing courses and faculty across multiple colleges will be leveraged to support this program. Significant costs to support new course sections for increased enrollment are included. Funding for anticipated overload, summer pay, and adjunct costs are projected to grow to approximately \$400K per year. No new tenure track faculty or start-up packages are needed for this program.
  - Salaries to support two existing faculty members, as well as two additional hires, are included. These four employees will serve as the program development and management team. They will also support the delivery of the core MTSA curriculum. A new Administrative Assistant and IT Support position are also included, starting in year two.
  - The program anticipates offering approximately 16 graduate teaching assistantships across multiple colleges by year five, with annual stipends ranging from \$12.0K-\$20K to support faculty with the MTSA's enrollment targets. This unusually large number of teaching assistants is necessary to support the additional teaching program requirements for existing faculty.
- **Operational Costs:**
  - The Clemson Online office will support targeted marketing efforts. Additional expenses of approximately \$40K annually are included to support industry targeted marketing efforts.
  - Costs to ensure federal online program compliance are included, as well as programmatic costs and support for honorariums.
  - No new space is required for the program; however, \$50K is included for up-fit and renovation of existing space.
- **Other Costs:**
  - Debt Service to State Treasurer reflects the portion of student revenue which must be transferred to the State Treasurer's Office per state statute. This is not an expense or use of funds related to the academic program, but is a proportional share revenues allocated on a per-student basis to this program.
  - Administrative Overhead represents a portion of centralized services needed to support a breadth of needs for students enrolled in a program. Indirect program support from the degree offering department, college and university dedicated to supporting students in the proposed academic program.

Over five years at the modeled enrollment and pricing assumptions, the program is expected to generate approximately \$1.65 million in new net revenue over the first five years—a modest and reasonable 20% return on the cost investment. This net margin will be reinvested in IGRSS's and participating academic units' programmatic and research activities. It is understood that the pricing strategy and fee increases will be reviewed on an annual basis to determine appropriate pricing in relation to the market, demand, financial performance, etc. and approved through established processes and procedures.

**Evaluation and Assessment**

<b>Program Objectives</b>	<b>Student Learning Outcomes Aligned to Program Objectives</b>	<b>Methods of Assessment</b>
To train road safety professionals to meet the needs of business, industry, educational institutions, and government agencies for the State of South Carolina as well as for the nation and the world.	Students analyze and synthesize crash, injury, and fatality data to identify safety problems, plan interventions, and evaluate results AND Students identify and explain the legislative initiatives, program development and delivery structures, research initiatives, and other factors that have shaped road safety management practices	Core courses: CE 8150, MTSA 8300. Participation in online discussions, collaborative postings, case studies, quizzes, homework, individual and group projects, self-assessments, peer reviews, papers, exams, digital portfolio. AND Core courses: MTSA 8000, CE 8150, MTSA 8300, MTSA 8420. Participation in online discussions, collaborative postings, case studies, quizzes, homework, individual and group projects, self-assessments, peer reviews, papers, exams, digital portfolio.
To engage students in activities related to best practices in road safety and current international issues.	Students articulate a comprehensive definition of multidisciplinary science-based road safety from a scientific perspective AND Students evaluate methods and resources for selecting effective countermeasures by identifying factors that contribute to crashes	Core courses: MTSA 8000, CE 8150, MTSA 8300. Participation in online discussions, collaborative postings, case studies, quizzes, presentations, homework, individual and group projects, self-assessments, peer reviews, papers, exams, digital portfolio. AND Core courses: CE 8150, MTSA 8300, MTSA 8420. Participation in online discussions, collaborative postings, case studies, quizzes, homework, individual and group projects, self-assessments, peer reviews, papers, exams, digital portfolio.
To provide students with opportunities to cultivate effective multidisciplinary collaborative relationships while offering excellent opportunities for professional development.	Students create a dynamic Road Safety Management Portfolio of work that showcases examples of methods and strategies for integrating safety into the transportation planning process	Core courses: MTSA 8300. Participation in online discussions, collaborative postings, case studies, individual and group projects, self-assessments, peer reviews, report, digital portfolio.

**Explain how the proposed program, including all program objectives, will be evaluated, along with plans to track employment. Describe how assessment data will be used.**

Three levels of program assessment will be provided: instructor and course assessments (utilizing Clemson’s regular instructor and course evaluation process), program assessments that each student will provide at the completion of their degree, and assessment of program efficacy based on tracking all graduates at one, five, and 10-year waypoints.

The program leadership will evaluate all instructor and course evaluations to ensure quality delivery and address any deficiencies. Additionally, data-informed periodic adjustments and improvements will reflect student, instructor, and professional stakeholder input.

Each interdisciplinary degree program like MTSA must have an advisory committee composed of faculty and other key stakeholders. This advisory committee's recommendations to the program leadership as needed to ensure the program is highly valuable to students and meets the requirements of employers and other stakeholders. Further, the program leadership will host an annual retreat of all course instructors to ensure quality, uniformity of experience, and adoption of innovation and best practices across the curriculum.

Finally, program leadership will present an annual report to the leadership in the Graduate School as well as the IGRSS Advancement Board, summarizing enrollments, student satisfaction, instructor performance, and employer satisfaction, in addition to other metrics as necessary. This broad reporting and input will contribute to a strong program.

### **Accreditation and Licensure/Certification**

**Will the institution seek program-specific accreditation (e.g., CAEP, ABET, NASM, etc.)? If yes, describe the institution's plans to seek accreditation, including the expected timeline.**

Yes

No

**Will the proposed program lead to licensure or certification? If yes, identify the licensure or certification.**

Yes

No\*

**Explain how the program will prepare students for this licensure or certification.**

\*Certification will be available for the road safety profession as the first exams will be offered in October 2018 by the Transportation Professional Certification Board (TPCB). The proposed MTSA courses and field experiences have been designed to directly prepare students to develop mastery of the domains, subdomains, and core competencies for the road safety profession that will be covered in the exams. In addition to the educational benefits of earning an MTSA degree, the certification will assist students in becoming a part of a recognized profession.

**If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)? If yes, describe the institution's plans to seek national recognition, including the expected timeline.**

Yes

No