

**Interdisciplinary Transportation Education and Workforce Development
Modules (ITEWDM)**

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ABSTRACT

The transportation industry will face a shortage of skilled workforce to manage future advanced transportation systems as the current workforce begins to retire. Education and training of future transportation professionals is critical in view of the projected shortage of skills to meet increasing needs to design, implement, and maintain the nation's sophisticated transportation systems. As this issue comes to the forefront there is heightened awareness that there is a dearth of minority professionals in transportation technical and techno-managerial positions. To meet this challenge, Hampton University developed a series of interdisciplinary education and workforce development modules by integrating existing transportation curriculum from across campus along with experiential learning, research projects, guest lectures, fellowships, and introducing few new courses. Consolidating the University's "islands of transportation education and workforce development" into transportation education and workforce development modules offers student the opportunity to enhance their techno-managerial skills.

The overall objective of the Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) is to strengthen the intermodal transportation skills of faculty and students to meet the growing need for qualified transportation professionals. The ITEWDM framework is designed to build up these skills through independent modules that can be assembled together to suit the career interest of the students. The modules have been grouped into two sections: Education and Workforce Development. The Education modules contain programs and courses that earn academic credit towards a major/minor degree in Aviation Management or Concentration in Transportation Management. The existing transportation curricula offered by different departments across the campus were re-designed to offer students flexibility in pursuing an interdisciplinary academic program with emphasis on workforce development. Individual courses may also be taken as electives by all majors in the University who are seeking preliminary knowledge of transportation management. Contacts were established with the National Highway Institute to enhance the ITEWDM's quality of transportation curriculum and access state-of-the-art course material. The Workforce Development modules supplements classroom knowledge through guest lectures, internships, fellowships, and working on research projects.

The ITEWDM has consolidated transportation-related education and workforce development programs into a single framework making it convenient for students to select modules that suit their needs. It can also be used as a guideline by academic advisors during the student advisement process. The in-built flexibility allows modules within ITEWDM to be modified or deleted and new modules added as and when required without affecting the other modules within the framework

The ITEWDM offers a blend of education and workforce development in intermodal transportation operations that will produce a steady source of transportation professionals with techno-managerial skills. Graduate and undergraduate students are offered modified courses in intermodal transportation and experiential learning that reflect real-world applications. Hampton University already offers an accredited undergraduate degree in Aviation Management which prepares students for careers in air transportation which is a

necessary mode in intermodal transport systems. The students graduating from this program have secured jobs in the field of aviation with federal agencies and airports around the nation. A Minor in Aviation Management and Concentration in Transportation Management have been introduced for students from other majors. Each semester, an average of 18 MBA students enrolls in transportation-related courses. At the undergraduate level, an average of 48 students enrolls in the Aviation Management Major, 45 students in the Concentration in Transportation Management, and three students in the Aviation Management Minor. Around two to three research internships and one guest lecture are organized every semester. In the Fall 2013 semester, six faculty from Business, Engineering, and Education along with 12 students from various departments worked on transportation research and education programs. These numbers are expected to grow as more students become aware of the expanding job opportunities and availability of advanced degree programs in transportation. For the past 10 years, the National Summer Transportation Institute has taught high school students the elementary concepts of transportation before they enter post-secondary education.

The ITEWDM project has made positive impacts on the University and its partner institutions. The School of Business has assigned a classroom for conducting ITEWDM modules through state-of-the-art Smart Board technology. The newly installed Driver Simulator at the Hampton University Accident Research Center is being utilized by students and faculty to conduct advanced research on texting-while-driving and driving distraction. These results could possibly be incorporated into the education and workforce development modules.

The ITEWDM's modular approach has generated interest at the national and international levels. The ITEWDM team made presentations at the Annual NCITEC Conference held at Mississippi State University and Poster Board presentation at The UTC Conference for Southeastern Region organized by the University of Florida. A Framework for Implementing ITEWDM in Business Curriculum was presented at the 16th Annual International Conference of the American Society of Business and Behavioral Sciences held in Istanbul, Turkey. ITEWDM team members and associates have produced 17 scholarly presentations and publications nationally and internationally during the conduct of the project. Research associations have been established with researchers in Poland, Australia, New Zealand, and Canada paving the way for future faculty exchange programs. Our partnerships with transportation organizations have been strengthened through a regional symposium, a national conference and workforce development workshop hosted on campus and the University's potential to produce future skilled employees.

Through a multidisciplinary program of course work and experiential learning the ITEWDM project has attracted and educated bright students through well-designed transportation education and workforce development modules along with faculty from across campus to produce a trained, effective, and efficient future workforce. It has encouraged more students and faculty to the field of transportation education and research thus fulfilling the USDOT's goal of advancing U.S. technology and expertise in transportation.

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Hampton University's Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) project team thanks the Management of Hampton Roads Transit (HRT) for offering our students internships and mentoring them during the internship period. We are grateful for the efforts of HRT in organizing guest lectures and providing research opportunities for our students involved in studying transit bus driver distraction. We also extend our thanks to the Management of the Commonwealth of Virginia Department of Transportation (VDOT), Parsons Brinkerhoff (PB), airports, city transportation departments, and other private transportation organizations that provided internships, guest lectures, matching funds, and inputs for updating our education and workforce development modules.

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INTRODUCTION

The expanding transportation industry in the U. S. has a growing need for professionals qualified to manage advanced transportation systems. With up to 50% of the current workforce expected to retire in the next ten years, the industry faces a challenge of finding replacements (CUTC 2012). Although often overlooked, education and training of future professionals is critical in view of the projected shortage of skills to meet transportation's increasing needs. As this issue comes to the forefront there is an increasing awareness that there is a dearth of minority professionals in transportation technical and policy-making positions. The overall goal of the proposed Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) is to attract and educate the next generation of transportation professionals through well-designed program of coursework, guest lectures, field trips, fellowships, case studies, and experiential learning (University of Central Florida 2009) that reinforces classroom knowledge.

Traditional transportation education is generally limited to engineering related fields. Future transportation needs will be more broad-based requiring techno-managerial skills. The ITEWDM offers curriculum and delivery systems for interdisciplinary transportation programs that include courses, guest lectures by transportation professionals, field trips to transportation work sites, case studies on freight and passenger mobility, and internships in intermodal transportation operations. The distinctive feature of the ITEWDM is its interdisciplinary approach covering technological and management issues that offer students from other majors (business, psychology, engineering and technology, etc.) an opportunity to enhance their techno-managerial skills in transportation. The modular approach follows the design of the *Structured Training* system of the Louisiana Model for Transportation Workforce Development that offers varied education and training options to suit an individual's position (Paul 2008). Students have the flexibility in selecting academic or Workforce Development modules from the ITEWDM to suit their career goals. The transportation education modules enhance existing programs offered by various departments within the University by incorporating intermodal transportation concepts into courses. Students are offered research positions on related on-going research projects and experiential learning through co-ops and internships similar to the *Work-Based Learning* component of the Australian Transport Industry (Fraser 2010).

The ITEWDM team developed a database of transportation courses, updated transportation curriculum, mentored student research interns, conducted guest lectures, organized a national conference and regional workshop, revised the course curriculum for the Aviation Management Minor and Concentration in Transportation Management, utilized National Highway Institute (NHI) case studies in the MBA curriculum, presented papers at national and international conferences, and published papers in refereed journals and proceedings. This report presents the objective and scope of the study along with the methodology. The results for each module of the ITEWDM are discussed along with the impact on the transportation and other educational programs at the University and its partners, and scholarly products that emanated from the education and research programs. Finally, the report concludes with some recommendations for application of the ITEWDM.

OBJECTIVE

The objective of the Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) is to strengthen the intermodal transportation skills of faculty and students while helping to meet the need for professionals (particularly minorities and women) qualified and interested in transportation careers.

The major goals of the ITEWDM are as follows:

- To attract and educate the next generation of transportation professionals through well-designed Education and Workforce Development (WFD) modules.
- To revise and integrate existing transportation programs to offer an interdisciplinary education curriculum with emphasis in intermodal transportation.
- To offer a modular approach consisting of varied education and WFD options to suit student's current interest.

SCOPE

The Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) project started on July 01, 2012 and ended on December 31, 2013. The scope of the project is outlined in the Timeline shown in Figure 1. The activities and tasks presented in the Timeline have been completed and the results are reported in this Final Report.

The ITEWDM covers the curriculum and delivery systems for interdisciplinary transportation programs that include courses, guest lectures by transportation professionals, field trips, fellowships, case studies on freight and passenger mobility, and internships in intermodal transportation operations. The School of Business initiated transportation education and training programs that prepare students for management careers in business organizations. The Department of Aviation prepares students for a variety of careers in Aviation. These and other transportation programs were integrated and updated to offer an interdisciplinary education curriculum with emphasis in intermodal transportation.

Activities	2012					2013				
	J	A	S	O	N	D	J	F	M	A
1. Prepare Implementation Plan										
2. Develop DB of all Transportation Courses										
3. Revise AVN MGT and Transportation Minor										
4. Update Transportation Concentration										
5. Prepare Transportation Case Studies										
6. Student Internships										
7. Evaluation of Intern Program										
8. Lecture Series and Field Trips										
9. Participate in NSTI Program										
10. Organize Eisenhower Fellowship Program										
11. Organize Workforce Dev. Workshop										
12. Prepare Scholarly Articles										
Quarterly/Semiannual Reports										
Final Project Report										

Figure 1. Timeline for Major Activities
(Project dates: July 01, 2012 – December 31, 2013)

The objectives and goals of the ITEWDM were achieved by updating existing transportation programs offered across campus, and adding a few new transportation courses. A new transportation-related major in Transportation and Logistics Management (TLM) is under consideration by the University. The course sequence for the TLM major is provided as a reference in Table 1. This is in the planning stage and beyond the scope of this project and hence not included in the accomplishments and results.

Table 1. Course sequence for the planned TLM major.

Fall Semester		Spring Semester	
<u>Freshman Year</u>			
ENG 101 Written Communication	3	ENG 102 Written Comm. II	3
CSC 120 Introduction to Computers	3	COM 103 Oral Comm.	3
BIO 101 Nature of Life	3	HEA 200 Health Education	2
HIS 105/107 World Civ I or Afr-Amer Hist	3	HIS 106 World Civiliz. II	3
MAT 117 Pre-Calculus or Higher	3	MAT 130 Cal. or Higher	3
UNV 101 Individual & Life	1	SCI 102 Intro to Phy. Sc.	3
	16		17
<u>Sophomore Year</u>			
ACC 203 Accounting Principles I	3	ACC 204 Acc. Principles	3
ECO 201 Principles of Economics (Macro)	3	ECO 202 Princ. Of Eco. (Micro)	3
Foreign Language Elective	3	Foreign Language Elective	3
HUM 201 Humanities I	3	HUM 202 Humanities II	3
MGT 215 Principles of Statistics	3	MGT 216 Quantitative Methods	3
Physical Education	1	Physical Education	1
	16		16
<u>Junior Year</u>			
MKT 305 Principles of Marketing	3	FIN 304 Business Finance	3
MGT 301 Bus. Organization & Mgt	3	TLM 370 Fund. of Trans. & Log.	3
		TLM 375 Intermodal Transport.	
MGT 305 Legal Environment of Business	3	Sys.	3
MGT 323 Information / DP Systems	3	TLM 380 Supply Chain Mgt.	3
MGT 340 Business Communication	3	TLM 360 Transport. Intern/Co-op.	3
	15		15
<u>Senior Year</u>			
MGT 402 Production/Operations Mgt	3	MGT 400 Organizational Behavior	3
TLM 385 – Transportation Economics.	3	TLM 400 Transport. Policy & Plan.	3
Non Bus. Rel. Elect. (Adv. Foreign.			
Language)	3	TLM 410 – Strategic Logistic Mgt.	3
Non Bus. Rel. Elect. (Adv. Foreign Language)	3	TLM 420 Mgt. of Adv. Trans. Sys.	3
		Non Bus. Rel. Elect. (Intl.	
Non Bus. Related Elect. (Intl. Studies)	3	Studies.)	3
	15		15

Total number of credit hours = 125

METHODOLOGY

At the commencement of the Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) project, the team responsible for implementing the tasks was assembled (Table 2). The team prepared an Implementation Plan (IP) for the whole project period to guide them through the whole period. A copy of the IP is provided in Appendix 1.

Table 2. ITEWDM Project Team

Name	Project Role
Kelwyn D'Souza, Ph.D.	PI for the ITEWDM project and NCITEC Assoc. Dir. of Education and Workforce Development.
Sharad Maheshwari, Ph.D.	ITEWDM Workforce Development Specialist.
Professor Carey Freeman	ITEWDM Education Specialist.

The ITEWDM was designed to offer curriculum and delivery systems for interdisciplinary transportation programs that include courses, guest lectures by transportation professionals, field trips to work sites, fellowships, case studies on freight and passenger mobility, and research/field internships. The distinctive feature built into the ITEWDM is its interdisciplinary approach covering technological and management issues that will offer students from other majors an opportunity to enhance their techno-managerial skills.

Existing transportation curriculum (Appendix 2) offered across campus were re-engineered and consolidated to offer students flexibility in pursuing an interdisciplinary academic program with research emphasis and workforce development through experiential learning. The ITEWDM solicited case studies from the National Highway Institute (NHI) to enhance the quality of transportation curriculum and access state-of-the-art course material. In addition to partnering with VDOT, HRT, and local transportation organizations, the Department of Aviation also established contacts with the Newport News/Williamsburg International Airport and airports around the nation for placing students in internship positions. Professionals working in transportation organizations participated in the lecture series, workshops, symposiums, and conferences organized by HU.

Promotional materials (Appendices 3 and 4) designed to attract bright students were circulated across campus resulting in a steady increase in enrollment of students in the Aviation Management Major and Concentration in Transportation Management modules of the ITEWDM. The internship program attracted high quality students including a Presidential Scholar and majors from across campus. Several other scholars were invited to participate as *Transportation Fellows* in the ITEWDM's activities such as meetings, guest lectures, and conferences.

Transportation Research and Field Internships were offered during Spring, Fall, and Summer semesters. A survey instrument (Appendix 5) was used to evaluate the impact of internship

program on the student's career plan and on the participating organizations. A series of lectures on transportation-related topics were organized for students and faculty to expand knowledge, and increase awareness of the varied job careers available in the transportation organizations. These lectures were delivered by practicing transportation professionals.

Partnerships and educational arrangements (Table 3) were established with industry and institutes to enhance the Education and WFD modules. The ITEWDM team held monthly teleconference meetings with Parsons Brinckerhoff (PB) representatives to match its research and educational needs with available resources at PB. Our partnership with HRT was extended through the Transit Bus Driver Distraction Study.

Table 3. Partnership and educational arrangements

ORGANIZATION NAME	LOCATION	CONTRIBUTIONS
Hampton Roads Transit (HRT)	Hampton, VA	Provided internship positions and mentoring, and in-kind match.
Institute for Supply Management (ISM)	Phoenix, AZ	Free membership for faculty and students and in kind match. Organizes student case competitions.
National Highway Institute (NHI)	Arlington, VA	Provided access to training and case study materials.
Newport News/Williamsburg International Airport	Newport News, VA	Provided internship positions and mentoring in Air Traffic Management, Airport Operations Management, Flight Operations Management.
Parsons Brinckerhoff (PB)	Norfolk, VA	PB representatives teamed up with ITEWDM team in research/educational fields and provided in-kind match.
Potomac and Rappahannock Transit Commission (PRTC)	Woodbridge, VA	Provided data and conducted survey for driver distraction research project.
Virginia Department of Transportation (VDOT)	Richmond, VA	Workshop participation, Non-Destructive Testing of bridges research projects, inputs for updating the ITEWDM modules.

DISCUSSION OF RESULTS

The ITEWDM consist of modules that were formulated by introducing a few new courses, updating available multidisciplinary programs of course work, and including lecture series, research projects, fellowships, and experiential learning. The ITEWDM framework outlined in Figure 2 comprises of two sections: Education Modules and Workforce Development (WFD) Modules. Each section offers a modular approach consisting of varied education and workforce development modules to suit students' interests.

1. EDUCATION MODULES

Education modules consist of academic programs that were developed through Curriculum Redesign and Classroom and Other Strategies (Refer to Figure 2).

1.1. CURRICULUM REDESIGN

The existing transportation programs within Hampton University (HU) were revised and integrated to offer an interdisciplinary curriculum with emphasis in intermodal transportation. The undergraduate and graduate transportation courses were updated to incorporate intermodal transportation components and case studies.

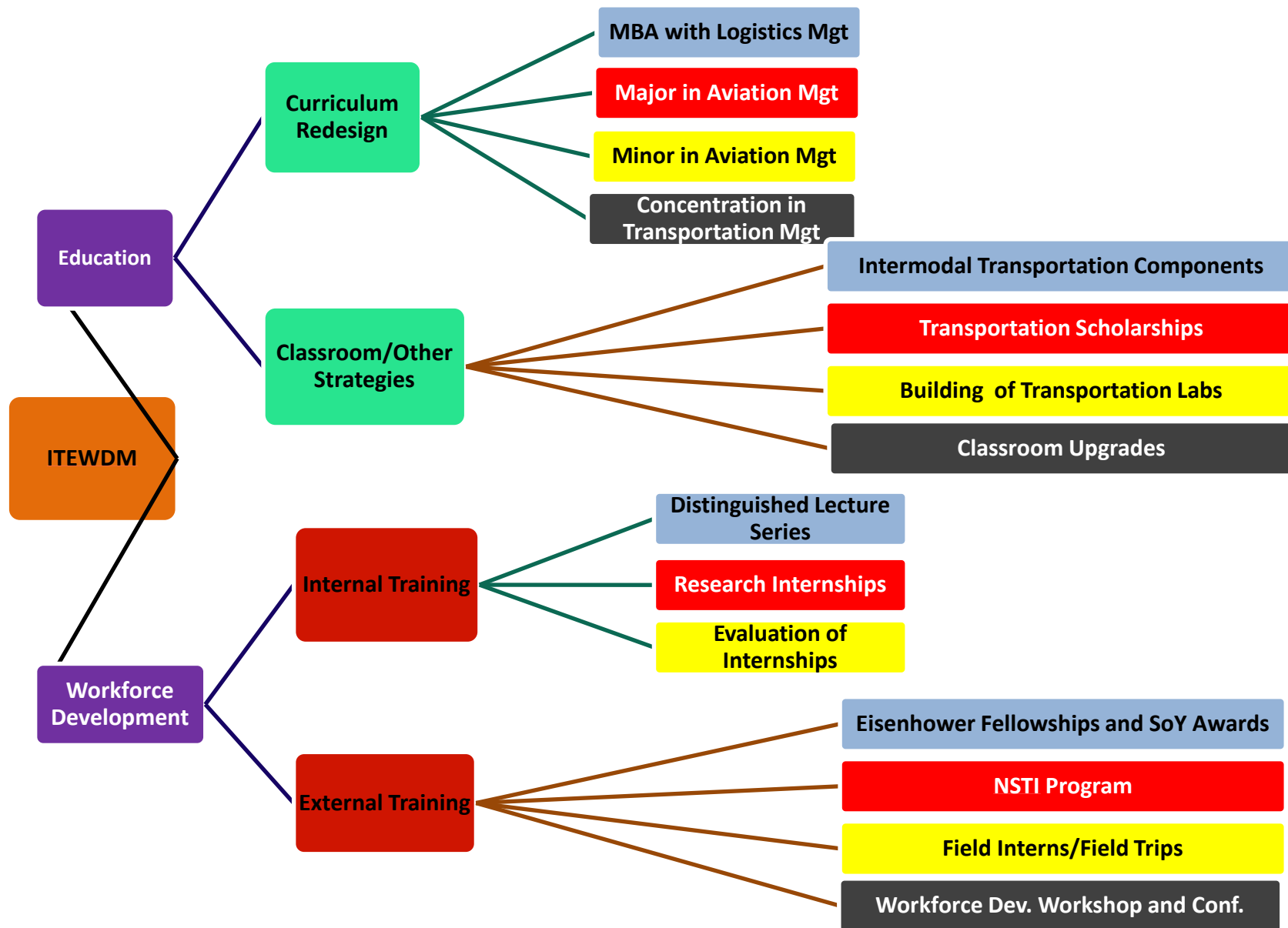
MBA with Logistics Management

The MBA curriculum was revised to include emphasis in intermodal transportation and its impact on business logistics (Table 4). It included topics such as transportation planning, transportation optimization, challenges in logistics due to transportation, etc.

Table 4. Transportation-related courses offered by the MBA program.

SEMESTER	TITLE	INSTRUCTOR	NO. OF STUDENTS
Fall 2013	MBA 600 - Logistics and Transportation Management	Dr. Sharad Maheshwari	18
Spring 2013	MBA 551 –Research and Analysis (focus on transportation research)	Dr. Sharad Maheshwari	8
Spring 2013	MBA 601--Quality and Supply Chain Management	Dr. Sharad Maheshwari	27
Fall 2012	MBA 600 - Logistics and Transportation Management	Dr. Sharad Maheshwari	18

Figure 2. Intermodal Transportation Education and Workforce Development Modules (ITEWDM).



The NHI educational resources were utilized while implementing advanced course materials and case studies that incorporated transportation issues in supply chain/logistics into the MBA 551 curriculum. Graduate students were encouraged to participate in transportation and logistics case competition, conferences, guest lectures, field trips, and workshops to gain an exposure to career opportunities and advanced degree programs in transportation available at other universities.

A case study titled “Road Safety Audits (RSA): Case Studies” from the National Highway Institute (NHI) was used as a teaching tool in the MBA 551 course. One of the case studies from the Road Safety Audits entitled “Standing Rock Sioux tribe (North and South Dakota): RSA of reservation roads.” was used as a model to conduct road safety audits in the City of Norfolk. Four teams of two students each performed safety audits during field trips to the four different signalized intersections in the City of Norfolk: namely “Brambleton Ave. & Granby Street.”, “Military Highway & Lowery Road”, “Little Creek Road & Granby Street” and “Brambleton Avenue & Colley Avenue.” Students reported problems which they observed during their audit, as well as a possible solution to the problem. The topics included impact of different electronic devices on driving safety, child-safety issues in driving, senior citizen driving safety, and distracted driving.

Aviation Management Major and Minor and Concentration in Transportation Management

These aviation modules prepare students to work in the aviation industry, which is a large and growing segment of intermodal transportation, especially in the global economy. A growing number of undergraduate students are currently pursuing a major and minor in Aviation Management, and a Concentration in Transportation Management (Table 5). An increase in airfreight and passenger movement through the region’s two international airports will result in added pressure on the surface transportation modes creating need for skills in air transportation to supplement surface transportation modes.

Table 5. Transportation Management Curriculum

SEMESTER	PROGRAM	# OF STUDENTS
Fall 2012	Major in AVN Management	36
	Minor in AVN Management	1
	Concentration in Transportation Management	45
Spring 2013	Major in AVN Management	55
	Minor in AVN Management	5
	Concentration in Transportation Management	35
Fall 2013	Major in AVN Management	53
	Minor in AVN Management	4
	Concentration in Transportation Management	53

The School of Engineering and Technology offers a major in Aviation Management through the Department of Aviation. The course coverage consists of general education, core aviation courses, and transportation-related electives. The existing transportation-related electives for the Aviation Management major and minor and Concentration in Transportation Management curriculum were updated to provide students with techno-managerial skills in intermodal transportation.

Students majoring in other fields of study were offered an opportunity to earn a minor in Aviation Management. The course curriculum was revised to increase emphasis on intermodal transportation, aviation safety, and legislation courses to ensure safe operations of the civil aviation fleet. Furthermore, information brochures and student scholarships flyers were distributed across campus to encourage participation in this new module (Appendices 3 and 4). This Aviation Management minor module prepares students from varied majors such as Architecture, Electrical Engineering, Biology, and Computer Science to work in the aviation industry. The Aviation Management minor and Concentration in Transportation Management modules of the ITEWDM are developed to attract bright students from other majors to the transportation educational and WFD modules. The Concentration in Transportation Management provides students an opportunity to earn a major degree in their field of study with a concentration in transportation management. It was implemented in both the Aviation and Management departments and is promoted to students through workshops and offering of scholarships.

1.2. CLASSROOM/OTHER STRATEGIES

Intermodal Transportation Components

The intent was to revise and integrate existing transportation programs to offer an interdisciplinary education curriculum with emphasis in intermodal transportation. Nine existing transportation management and related courses offered across campus were identified and stored in a database (Appendix 2). The current undergraduate and graduate transportation and the Aviation Management courses were updated to incorporate intermodal transportation components and case studies. The graduate courses were revised to include emphasis on intermodal transportation as well as its impact on business logistics. Case studies which incorporate transportation concepts on supply chain/logistics management were included in the curriculum.

Transportation Scholarships

The announcement of scholarships and internships encouraged students to consider Aviation Management major/minor and Concentration in Transportation Management modules of the ITEWDM. It has attracted and educated our bright students in transportation. Ms. Lexis Phillips, a Presidential Scholar joined the project team as a student research intern. Other scholars from across campus were selected as *Transportation Fellows* to work on research projects in the *Student Transportation Fellowship Program (STFP)*. (Refer to Table 6). The overall goal of the *STFP* is to attract and educate the next generation of transportation professionals through well-designed education and job training programs. To meet this goal, selected *STFP* students were assigned independent research projects on safety related topics, and attended the transportation workshop, and guest lectures.

Building of Transportation Labs

The computers and equipment used in research projects are made available to students to conduct class experiments and research projects. The HU Accident Research Center (HUARC) located in the School of Business acquired a driving simulator from DriveSquare, Inc. through funding from the USDOT. The simulator has three sensors—brake pedal, accelerator pedal and front wheels that create multiple driving scenarios. It is being used for training as well as generating a data log for each session which includes red light infractions, crossing of yellow lines, severing and number of crashes. The objective of the driving simulator is to study the attitude of drivers towards “Texting-While-Driving” and incorporate the results in the education and training modules.

Table 6. Student Transportation Fellowship Program (STFP).

SR.#	NAME	MAJOR	ASSIGNMENT	RESEARCH TOPIC	MENTOR/SUPERVISOR/RA
1	Jermaine Anderson	Elect. Engg	HUARC	Cellular Phones and Driver Distract	Dr. Maheshwari/Dr. D’Souza/Lexis
2	Shamille Black	Bus Mgt	HUARC	Distraction Outside the Vehicle	Dr. Maheshwari/Dr. Jackson/Lexis
3	Justin Brockman	Bus Mgt	HUARC	Distraction and Public Transport	Dr. Maheshwari/Dr. Jackson/Lexis
4	Tommy Collins	Graphic Design	Annual Report	N/A	Dr. D’Souza/ Dr. Bontemps
5	Anastasia Davis	Bus Mgt	Driver Distraction	Distraction and the Older Driver	Dr. D’Souza/Dr. Jackson/Lexis
6	Kenley Duke	Broadcast Journalism	Museum	N/A	Dr. D’Souza/Shannon Holley
7	Chelsy Gray	5-Year MBA	Harvey Library	N/A	Dr. D’Souza/Shannon Holley
8	Bowman Manzel	Graphic Design	Annual Report	N/A	Dr. D’Souza/ Dr. Bontemps
9	Hal Mckinley	Bus Mgt	Driver Distraction	Measuring Effects of Distracted Driving	Dr. D’Souza/Dr. Jackson/Imani
10	Lexis Phillips	Bus Mgt	HUARC	N/A	Dr. Maheshwari/Dr. D’Souza
11	Imani Rhodes	Psychology	HUARC	N/A	Dr. Maheshwari/Dr. D’Souza
12	Evan Williams	Bus Mgt	Driver Distraction	Factors Impacting Driver Distraction	Dr. D’Souza/Dr. Jackson/Imani

Classroom Upgrades

To educate the next generation of transportation professionals in the usage and application of advanced simulation software packages as well as improve quality of student interaction, advanced simulation software packages and state-of-the-art classroom technology that includes a Smart Board Model 685 with UF75 Projector, Kramer 1x2 XGA Distribution Amplifier, and a Multimedia Lectern have been installed in the *Transportation and Logistics Classroom* (Buckman Hall 208) in the School of Business for use in conducting courses for the ITEWDM education modules.

2. WORKFORCE DEVELOPMENT MODULES

The WFD section of the ITEWDM includes internal and external training modules that are geared towards building the transportation workforce through student research interns working alongside faculty researchers on several research projects, in-plant internships, lecture series, and the fellowship programs.

2.1. INTERNAL TRAINING

Distinguished Lecture Series

A series of lectures and seminars on transportation-related topics were organized for students and faculty to expand knowledge, and increase awareness of the varied job careers available in the transportation organizations. These lectures were delivered by transportation experts and professionals from business (Table 7).

Table 7. Distinguished lecture series.

SEMESTER	LECTURER	TOPIC
Fall 2013	Dr. Wendell Pointe and Mr. Jeff Taylor, D. C. Mega Project.	Role of small businesses in large projects.
	First Officer Darnell Duckett, United Airlines, International Pilot	International transportation operations
	Mr. Ruddy Reed, Manager, Newport News Air Traffic Control Tower	Air Traffic Management issues in Eastern US
Spring 2013	Ms. Keisha Branch, HRT, Hampton.	Regional Transportation Issues.
	First Officer Joe Cook, United Airlines HR	UA Opportunities.
Fall 2012	State Police Trooper Kevin Francis, Commonwealth of Virginia.	Distracted Driving
Fall 2012	Mr. Kamlesh Chowdhary, HRT, Hampton.	Intelligent Transportation Systems (ITS)
Fall 2012	Mr. Brian Hough, Chief Flight Instructor for Horizon Aviation, Mrs. Cathy Fields and Mr. Keenan Jackson, Station Managers for US Airways and Frontier Airlines, Ms. Diane O'Connor, Air Traffic Control Supervisor, and Mr. John Becoat, Air Traffic Controller Capt. David Schmitt, 1st Tactical Fighter Wing, Chief of Flight Safety and F-22 pilot,	Speaker topics included Aviation Human Factors, Airport/Airline Management, Aviation Safety, and Air Traffic Control.

Research Internships

Training a student to be a successful manager in the transportation field cannot be accomplished by classroom lectures alone. On-site experience-based learning is an essential component of the training process, and co-op/internship has proven to be an effective method to achieve this end. Discussions with transportation and transit organizations revealed that several internship positions related to the research area of faculty are available to students from various disciplines. The Research Internship module was developed in conjunction with private and public organizations in the Hampton Roads area, the Commonwealth of Virginia, and nationally at aviation facilities to provide students experiential learning and career opportunities (Table 8).

Table 8. Research Interns

SEMESTER	INTERN	RESEARCH PROJECTS
Fall 2013	Ms. Lexis Phillips	Distracted driving and texting-while-driving research projects.
	Ms. Imani Rhodes	
	Mr. Tommie Collins	Preparing final reports for USDOT transportation projects.
Spring 2013	Andrew Nguyen	Texting while driving using DriveSquare simulator
	Victoria Saunders	

Evaluation of Internships

A survey instrument (Appendix 5) was used to evaluate the impact of internship program on the student and participating organizations. The survey was closely aligned to the one used by the Department of Commerce for the Postsecondary Internship Program (U. S. Department of Commerce 2006). It is based on the feedback from the past participant as well as the stated goals of the internship programs over past several years. Each intern completed the survey to determine desired outcomes and expectations of the internship. In addition, team members performed a summative evaluation by interviewing mentors and interns to examine benefits, costs, and suggestions for future enhancement of the program. The survey was also being administered on the past participants of the internship program to provide longitudinal analysis of the effectiveness of the internship program.

Since 1995, approximately 80 students have participated in the internship program. The 14 former interns that responded to a feedback survey have indicated that the internship experiences were very educational (Figure 3). Although 70% of the interns considered transportation careers at some point of time in their life (Figure 4) however less 10% of the survey respondents secured employment with transportation organizations. Due to the small sample size, final conclusions have not been drawn. The study continues with more number of responses expected from the past interns.

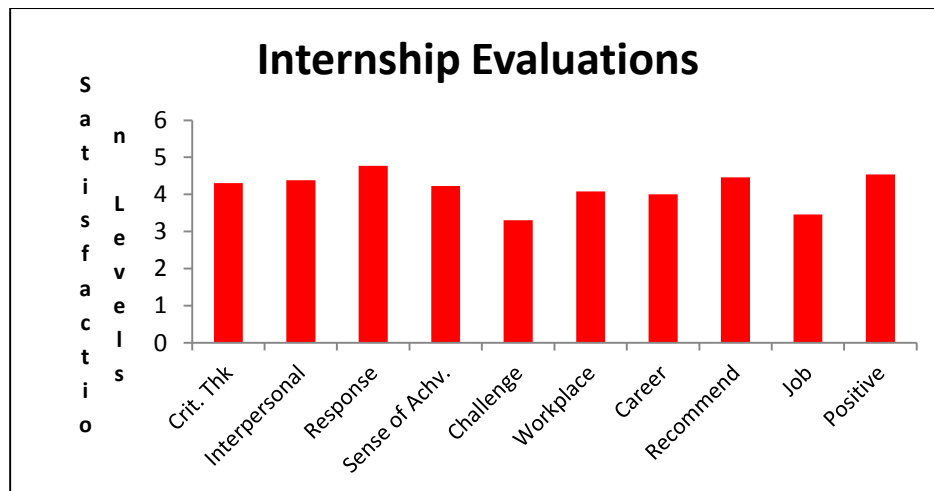


Figure 3. Summary of internship evaluations

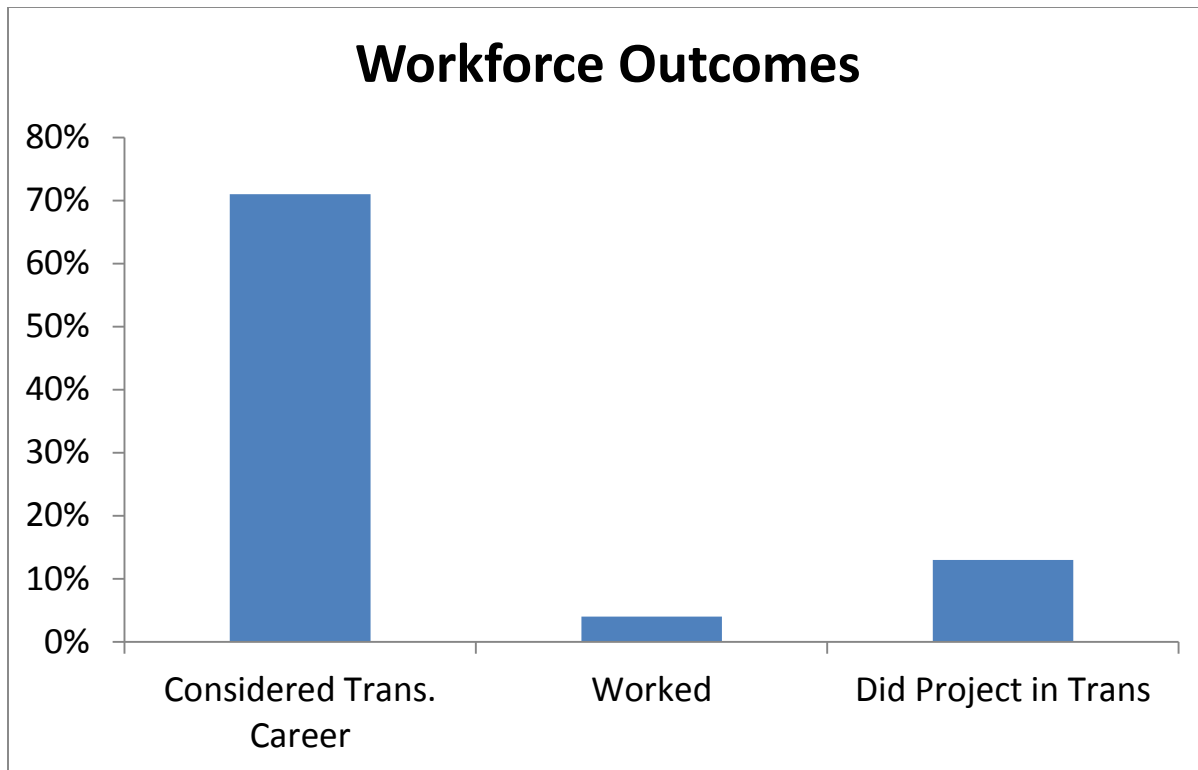


Figure 4. Intern career choices

2.2 EXTERNAL TRAINING

Eisenhower Fellowship and Student of the Year Award

As a leading Historically Black Colleges and Universities (HBCU), HU has been designated to establish a Dwight D. Eisenhower Transportation Fellowship Program through funding from the NHI. The 2012-2013 Eisenhower Transportation Research Fellow, Mr. Henry Norris, participated in the Transportation Research Board (TRB) annual meeting in Washington, D.C. in January 2013. Mr. Norris completed his airport research project to find new ways to develop *Airport Waste Management Programs*. He graduated in May, 2013 and works for the Federal Aviation Administration. Mr. Tyler Crawford was recently selected as the 2013-2014 Eisenhower Fellow. His research was conducted in the area of Air Transportation and Airport Design and presented at the 2014 TRB meeting. Mr. Crawford completed an Airport Management Internship at the San Jose airport in the summer of 2013.

HU sponsors an Outstanding Student Award annually to recognize the top student involved in the transportation research and/or education programs. The outstanding student receives a \$1,000 award and is nominated for the CUTC *Outstanding Student of the Year* award. Ms. Lexis Phillips, a Presidential Scholar was selected as the CUTC 2013 Student of the Year for her academic excellence and research work on driver distraction. She participated in the CUTC award banquet in Washington, D.C. in January 2014. Ms. Alexa Hollinshead was selected for the CUTC 2012 Outstanding Student of the Year award. Ms. Hollinshead worked as a research intern with HRT and PRTC. She assisted with data collection and analysis, and report writing.

for the driver distraction research project. She participated in the NCIT conference held at Hampton University, October 2012 and made a joint presentation of the research results from the *Driver Distraction* project. The corresponding research paper is published in the NCIT proceedings and the *Management and Production Engineering Review*, Vol. 4, No. 1, March 2013.

NSTI Program

The ITEWDM team participated in the National Summer Transportation Institute (NSTI) to explore its impact on generating interest in transportation for middle and high school students. The objective was to assess whether the students that complete the Hampton University NSTI Program are encouraged to seek additional transportation-related opportunities that will prepare them for careers within the field of transportation. A survey (Appendix 6) was mailed to former NSTI participants to ascertain the perceived educational value of the program. A total of 37 participants that responded to the survey reported improvement in various skills sets (Figure 5). The exposure to key personnel in the FHWA and VDOT coupled with mentoring and academic enhancement provided by the program's staff was found to be effective for the students that participated in the NSTI Program. Over 60% of the respondents selected science, technology, engineering and mathematics (STEM) related majors in the college (Figure 6). Consistent with prior research, the HU's NSTI mentorship provided during the 4-week summer program was found to be valuable and effective. The exposure to key personnel in the FHWA and VDOT coupled with mentoring and academic enhancement provided by the program's staff was found effective in enhancing math and technology scores for participants in pursuing higher education including in transportation related fields.

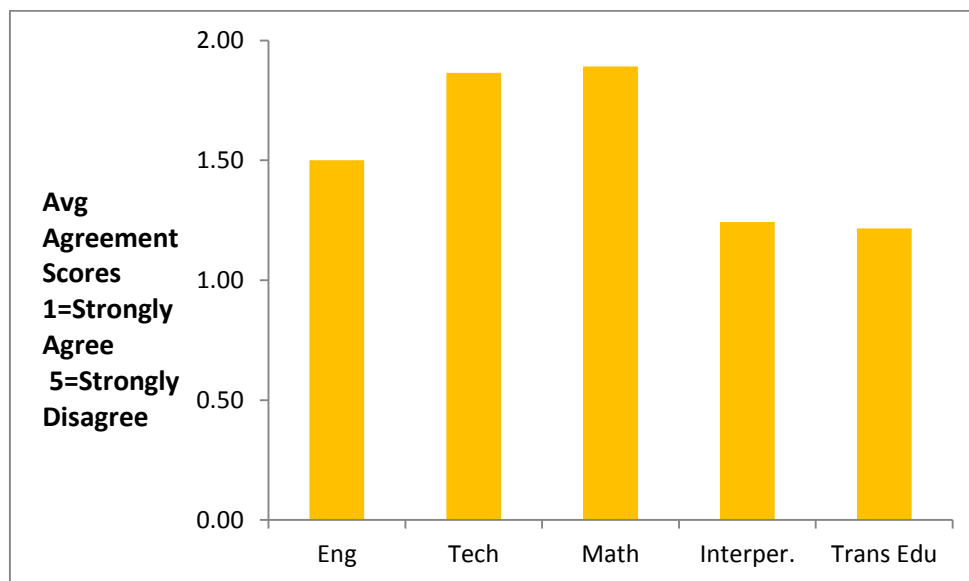


Figure 5. Average agreement scores in improvement of various skills in NSTI.

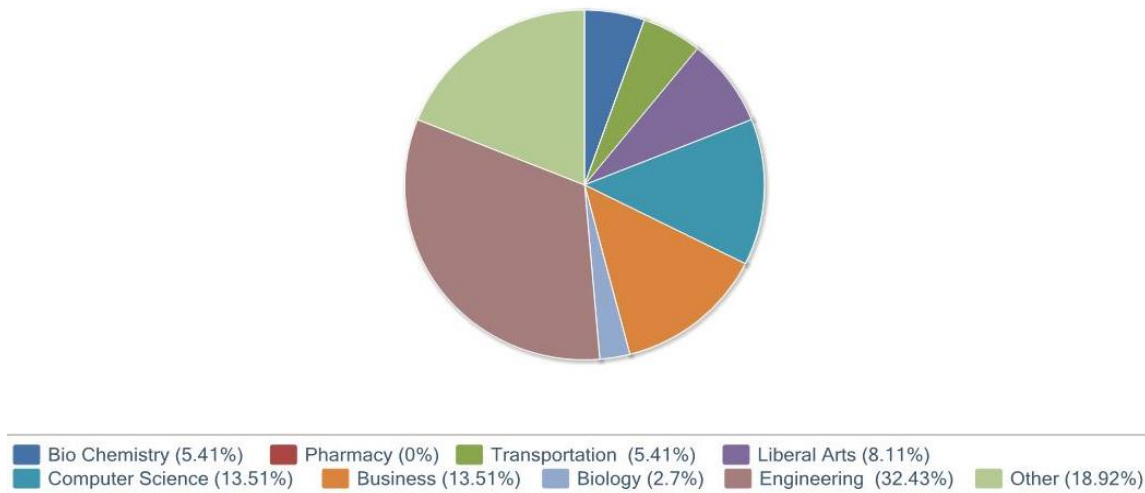


Figure 6. College majors selected by the participants of NSTI.

Field Interns/Field Trips

The following aviation interns have been placed at airports and airlines all across the country:

- 1) Tyler Crawford, Airport Operations Management Intern, San Jose international Airport.
- 2) Brandall Bell, Flight Operations Management Intern, Southwest Airlines.
- 3) Terrence Banks, Flight Operations Management Intern, United Airlines.
- 4) Devin Caffee, Airport Operations Management Intern, Newport News international airport.
- 5) Coby Dikas, Airport Operations Intern, Bush Intercontinental Airport.
- 6) John Mullins, Airport Operations Management Intern, Newport News international airport.
- 7) Anthony Didio, Air Traffic Management Intern, Norfolk International Airport.

Field trips were organized to conduct safety audits of the four different signalized intersections in the City of Norfolk: namely “Brambleton Ave. & Granby Street.”, “Military Highway & Lowery Road”, “Little Creek Road & Granby Street” and “Brambleton Avenue & Colley Avenue.” A field trip to light rail in Norfolk, Virginia (The Tide) was organized in November 2013. The purpose of the trip was to assess the quality, schedule, and management of the service as well as apparent utilization of the light rail. 18 students rode ‘The Tide’ for the entire 7.4 miles from Eastern Virginia Medical School to Newtown Road on different days and times. Students reported a low passenger utilization despite of generally good frequency and service.

Workforce Development Workshop and Conference

The ITEWDM team hosted a regional workshop on *Transportation Workforce Development for Non-Technical Professionals* at HU on November 12, 2013. Around 50 industry, faculty, and students participated in the workshop. The workshop’s focus was on the rapid changes around the nations that are transforming transportation systems and services and transportation education. With large number of retirements of transportation professionals anticipated in the next ten years or so, the US will experience shortages of transportation professionals including qualified educators leaving many transportation sectors without access to quality services. The

inadequate linkages between service demands and educational outputs were discussed. One of the recommendations made at this workshop was that transportation educational programs must be brought in line with future transportation needs through the following approaches:

- Curricula need to be updated in universities to focus on changing transportation priorities;
- Traditional teaching and learning methods often based on rote learning – should refocus on Student development of critical thinking, clinical reasoning and problem-solving skills.

On October 11-12, 2012, HU hosted the 1st National Conference on Intermodal Transportation (NCIT): Problems, Practices, and Policies. More than 130 participants including students, faculty members, city planners, and transportation professionals from all over the world participated in the conference. Around 34 technical papers were presented and 14 other topics were discussed at the various plenary sessions. The conference incorporated a wide range of transportation topics that included transportation policy, safety, security, environment, infrastructure, simulation, education, and workforce development. A Plenary Session on: Transportation Education and Workforce Development entitled: *What's an "Intermodalologist"? Strengthening Connections between Intermodal Transportation and Jobs* chaired by Diana Long, Director of Workforce Development, Rahall Transportation Institute and Lydia E. Mercado, Transportation Workforce Coordinator, Research & Innovative Technology Administration (RITA).

3. DISSEMINATION OF RESULTS

The *Eastern Seaboard Intermodal Transportation Applications Center (ESITAC)* has a website (<http://biz.hamptonu.edu/esitac/>) for reporting the University's transportation activities. In addition, the ITEWDM project has disseminated the results drawn from research and educational projects at national and international conferences (Refer to the following section).

3.1. PRESENTATIONS AND PUBLICATIONS

In a short span of 18 months, the ITEWDM team and associates have made 17 presentations and publications nationally and internationally. The following is a listing of presentations and publications.

D'Souza, K. A. & S. K. Maheshwari. "Comparison of Regional and Urban Transit Bus Driver Distraction". To be presented at *the Urban Transport 2014 Conf.*, Algarve, Portugal. May 28 - 31, 2014 and published in the proceedings.

Maheshwari, S. K. & K. A. D'Souza. "A Framework for Implementing Interdisciplinary Transportation Education and Workforce Development Modules in Business Curriculum". Presented at the Annual NCITEC Conference, Mississippi State University, Starkville, Mississippi, October 31 – November 01, 2013.

Maheshwari, S. K. & K. A. D'Souza. "A Framework for Implementing Interdisciplinary Transportation Education and Workforce Development Modules in Business Curriculum". Presented at the Workshop on Transportation Workforce Development for Non-Technical Professionals, Hampton University, Hampton, Virginia, November 12, 2013.

D'Souza, K. A., & S. K. Maheshwari. "A Framework for Implementing Interdisciplinary Transportation Education and Workforce Development Modules in Business Curriculum." Presented at *The 16th Annual International Conference of the American Society of Business and Behavioral Sciences, Istanbul, Turkey, June 13-16, 2013*.

Maheshwari, S. K and K. A. D'Souza. "Cell Phone Use During Driving Should be Illegal." *Daily Press Local Voices, June 12, 2013*.

Maheshwari, S. K... "A Framework for Implementing Interdisciplinary Transportation Education and Workforce Development Modules in Business Curriculum." Poster Board presented at *The UTC Conference for Southeastern Region, Gainesville, Florida, April 4 - 5, 2013*.

D'Souza, K. A., & S. K. Maheshwari. "Research framework for studying transit bus driver distraction." *Proceedings of the Urban Transport 2013 Conference*, Kos, Greece, May 29-31, 2013. Editors: J.W.S. Longhurst and C.A. Brebbia. Wessex Institute of Technology Press, Southampton, U. K, pp. 137 – 148.

Maheshwari, S. K. & K. A. D'Souza. "Impact Of Education And Awareness Programs On The Usage And Attitude Towards Texting While Driving Among Young Drivers." NCIT, Hampton University, Hampton, VA, October 11 – 12, 2012.

D'Souza, K. A., Hampton University; Denise Siegfeldt, Florida Institute of Technology; and Alexa Hollinshead. *A Conceptual Analysis of Cognitive Distraction for Transit Bus Drivers*. NCIT, Hampton University, Hampton, VA, October 11 – 12, 2012.

D'Souza, K. A. & S. K. Maheshwari. "Research Framework for Studying Transit Bus Driver Distraction in the Commonwealth of Virginia." NCIT, Hampton University, Hampton, VA, October 11 – 12, 2012.

D'Souza, Kelwyn A, Maheshwari Sharad K, and Zbigniew Banaszak. "Research Framework for Studying Driver Distraction on Polish City Highways." *Management and Production Engineering Review*. Vol. 4, No. 2, pp. 12-24, 2013.

D'Souza, K. A., Siegfeldt, D., and A. Hollinshead. "A Conceptual Analysis of Cognitive Distraction for Transit Bus Drivers." *Management and Production Engineering Review*. Vol. 4, No. 1, pp.10-19, 2013.

D'Souza, K. A. & Maheshwari, S. K. "Multivariate Statistical Analysis of Public Transit Bus Driver Distraction." *Journal of Public Transportation: Special Edition: Rural and Intercity Bus*, Vol. 15, No. 3, pp. 1-23, 2012.

D'Souza, K. A., & S. K. Maheshwari. "Modeling and Analysis of Transit Bus Driver Distraction." 20th National Conference for Rural Public and Intercity Bus Transportation, Salt Lake City, Utah. October 14 – 17, 2012.

Sonja Pollard-Mitchell, Shontae Taylor, & Margaret Dismond Martin. “National Summer Transportation Institute Program: Role of Educators and Mentors in the Post-Secondary Achievement of Participants.” NCIT, Hampton University, Hampton, VA, October 11 – 12, 2012.

Maheshwari, S. K. & K. A. D’Souza. “Impact Of Education And Awareness Programs On The Usage And Attitude Towards Texting While Driving Among Young Drivers.” NCIT, Hampton University, Hampton, VA, October 11 – 12, 2012.

D’Souza, K. A., Hampton University; Denise Siegfeldt, Florida Institute of Technology; and Alexa Hollinshead. “A Conceptual Analysis of Cognitive Distraction for Transit Bus Drivers.” NCIT, Hampton University, Hampton, VA, October 11 – 12, 2012.

The following research paper on the development and results of the ITEWDM entitled *Design of Transportation Education and Workforce Development Modules* is under preparation and will be published in a related refereed conference proceeding.

Maheshwari, S. K. & K. A. D’Souza. “Transportation Workforce Development: Measuring Effectiveness of Hampton University Transportation Internship Program’. Working Paper, The Journal of Business and Finance Research.

Student Case Presentation

A student team from Hampton University School of Business consisting of Mr. Emmanuel Benton, Ms. Andrea Payne, Ms. Amber Kearney and Ms. Melanie Spencer participated in the 10th Annual Black Executive Supply Management Summit hosted by the Institute for Supply Management (ISM) from February 5-7, 2013, New Orleans, Louisiana. The team prepared and presented a solution to an assigned transportation and warehousing management case prepared by AT Kearney, Inc. titled “Cookie Monster Inc.” The case assignment included finding the best solution to fill demands from multiple countries with varied transportation and warehousing options and restrictions. The team won third place in the competition.

4. IMPACT ON THE ITEWDM PROJECT

The ITEWDM’s modular approach consisting of varied transportation education and training options has received national and international recognition. It has begun to attract and educate our Presidential Scholars and other scholars who participated in the *Student Transportation Fellowship Program (STFP)* along with six faculty researchers from Business, Engineering, and Education currently working on the MSU sub award grants.

ITEWDM Team Recognition:

HU Provost Award for Academic Excellence: was awarded in Spring 2014 to Dr. Kelwyn A. D’Souza, PI for the ITEWDM project for his contributions to transportation education and research.

International Scientific Advisory Committee: Dr. Kelwyn D’Souza, PI for the ITEWDM project has been selected as a member of the International Scientific Advisory Committee for the 21st Urban Transport 2015 Conference in Valencia, Spain, June 2 – 4, 2015.

International Scientific Advisory Committee: Dr. Kelwyn D’Souza, PI for the ITEWDM project has been selected as a member of the International Scientific Advisory Committee for the 20th Urban Transport 2014 Conference in The Algarve, Portugal, May 28 – 30, 2014.

Poster Session Judge: Dr. Sharad Maheshwari, Co-PI for the ITEWDM project served on the panel of judges at the UTC Conference for the Southeastern Region, Orlando, April 4-5, 2013. The panel was responsible for judging Ph.D. students’ research posters.

International research contacts have been established between Dr. D’Souza and researchers in Poland, Australia, New Zealand, and Canada (Table 9).

Table 9. International research contacts

LOCATION	PROJECT DESCRIPTION
Warsaw University of Technology, Warsaw, Poland	Joint research and publications on driver distraction on Polish city highways (with Dr. Z. Banazak).
Curtain University, Perth, Western Australia	Invited to serve on Ph.D. candidate thesis committee related to highway safety
The University of Auckland, Auckland, New Zealand.	Advised Ph.D. candidate on thesis research related to choice of public transportation over personal vehicle.
University of Quebec, Quebec, Canada	Advising Professor Marek Zaremba, Computer Science and Engineering on visit to HU during upcoming sabbatical leave.

Impact on Physical, Institutional, and Information Resources at the University or Other Partner Institutions

The ITEWDM project has made the following impact on HU and its partner institution:

- The School of Business has designated Buckman Hall 208 classroom for conducting ITEWDM modules through state-of-the-art Smart Board technology.
- The newly installed Driver Simulator at the HUARC is being utilized by students and faculty to conduct advanced research on texting-while-driving and driving distraction whose results could be possibly used in education and workforce development programs.
- The driver distraction research conducted at HRT and PRTC has resulted in several papers and presentations and provides a framework for conducting driver distraction studies at other transit agency in the Commonwealth of Virginia.
- Provides partnering transportation organizations and FAA with a pool of bright young potential employees.
- Strengthened the partnerships with transportation organizations through a workforce development workshop hosted at HU which is similar to the workshop hosted by University of Tennessee, Knoxville (Tennessee Today, 2010)..

Impact on the Development of Transportation Workforce Development

The ITEWDM project has made an impact on transportation workforce development by:

- Offering graduate and undergraduate students updated courses in intermodal transportation and experiential learning that reflect real-world applications.

- Improving transportation skills of minority and women students through research and in-company internships that will increase employment potential transportation related professions.
- Offering internships and scholarships that encourage students to pursue transportation education modules offered by ITEWDM.
- Interaction with transportation organizations for bridging the gap between academic education and professional skills required for management of transportation systems.
- Building up the transportation workforce at HU that include students and faculty (Table 10).

Table 10. HU Workforce working on MSU sub awards in Fall 2013.

SCHOOL	FACULTY	STUDENTS
Business	2	7
Engineering	3	1
Liberal arts and education	1	3
Journalism	-	1
Total	6	12

Technologies or Techniques

The driving simulator purchased from DriveSquare, Inc. through RITA funding was installed in the HUARC located in the School of Business. It was tested in the Spring 2013 Semester and was made available to conduct studies on distracted driving and Texting-While-Driving. Studies were conducted by student research interns under the supervision of Dr. Sharad Maheshwari, lead research investigator of the HUARC. It is being used in subsequent projects to collect data on driver distraction/texting-while-driving and impact of education programs. The School of Business has recently upgraded a classroom for the Transportation and Logistics courses. The classroom has been fitted with a Smart Board and a dedicated PC station and will be used for logistics and transportation courses. It will provide facility for teaching and demonstration of logistics simulation.

Impact on Technology Transfer

The ITEWDM's education, research, and workforce development activities have been communicated to the larger transportation community through newspapers, conferences, and workshops to increase the support from industry. Research findings resulting from the HUARC's research on distracted driving were disseminated to the community through the local newspaper (Maheshwari and D'Souza, 2013). The HUARC received feedback from interested readers as well as request for collaboration with related companies. Research findings resulting from partnerships with the city, state, public and private transportation organizations, and other institutes were disseminated at the HBCU meeting held at Virginia State University in April, 2012 and the NCIT conference in October 2012. The NCIT identified transportation problems facing this region, and brought academicians, professionals, legislators, governmental representatives, and related constituent groups together in order to seek potential solutions. Selected results from current ITEWDM projects were presented at the NCIT conference and published in the proceedings.

CONCLUSIONS AND RECOMMENDATIONS

The objective of the Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM) was to strengthen the intermodal transportation skills of faculty and students interested in transportation careers. The ITEWDM has provided a blending of education and WFD modules that can develop intermodal transportation skills in students along with hands-on experience in techno-managerial applications. The modular approach that provides flexibility while planning transportation research and education programs has attracted a growing interest from faculty and student. In Fall 2013, six faculty researchers and 12 students from diverse academic backgrounds participated in the MSU sub awards (Table 10). Undergraduates from different majors have enrolled in the Production/Operations Management and Aviation Management Minor courses. Each semester, an average of 18 MBA students enroll in transportation-related courses. At the undergraduate level, an average of 48 students enroll in the Aviation Management Major, 45 students in the Concentration in Transportation Management, and three students in the Aviation Management Minor. The major goals of the ITEWDM project have been achieved as it has attracted bright young scholars such as Ms. Lexis Phillips and Ms. Alexa Hollinshead to the Research Internship module and six faculty researchers to the MSU sub awards.

The University has demonstrated its commitment to transportation by providing the necessary infrastructure. A classroom, Buckman Hall 208, has been made available for conducting ITEWDM modules through state-of-the-art Smart Board technology. A lab space has been allocated to house the HUARC which is utilized by students and faculty to conduct advanced research on texting-while-driving and driving distraction whose results could be possibly used in education and workforce development programs. The ITEWDM project has impacted the academic programs across campus by offering modified courses to graduate and undergraduate students in intermodal transportation and experiential learning that reflect real-world applications. The School of Business MBA program is proposing to offer a specialization in logistics and transportation management through existing course work and co-ops/internships.

The ITEWDM's education, research, and workforce development activities have been communicated to the larger transportation community through newspapers and conferences to increase the support from industry and other UTCs. Research findings resulting from the HUARC's research on distracted driving were disseminated through the Daily Press Editorial article (Maheshwari and D'Souza 2013). The driver distraction research conducted by ITEWDM and its associates has resulted in 17 presentations and publications nationally and internationally. Furthermore, research contacts have been established in Poland, Australia, New Zealand, and Canada which would pave the way for future faculty and student exchange program.

The ITEWDM's modular approach has generated interest at the national and international levels as seen from the numerous presentations and publications (Section 3.1). The HUARC received feedback from researchers as well as request for collaboration with related companies. Research findings resulting from partnerships with the city, state, public and private transportation organizations, and other institutes were disseminated at the NCIT conference in October 2012. The NCIT identified transportation problems facing this region, and brought academicians,

professionals, legislators, governmental representatives, and related constituent groups together in order to seek potential solutions. Selected results from current ITEWDM projects were presented at the NCIT conference and published in the proceedings.

Through a multidisciplinary program of course work and experiential learning, the ITEWDM project has attracted faculty from multiple disciplines and educated students through well-designed transportation education and workforce development programs to produce a trained, effective, and efficient future workforce. This fulfills the USDOT's goal of advancing U. S. technology and expertise in transportation that will provide safe, secure, efficient, and interconnected transportation systems.

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

CUTC	Center for University Transportation Center.
ESITAC	Eastern Seaboard Intermodal Transportation Applications Center.
HBCU	Historically Black Colleges and Universities
HRT	Hampton Roads Transit.
HUARC	Hampton University Accident Research Center.
IP	Implementation Plan.
ITS	Intelligent Transportation Center.
ISM	Institute for Supply Management.
ITEWDM	Interdisciplinary Transportation Education and Workforce Development Modules.
MSU	Mississippi State University.
NHI	National Highway Institute.
NCIT	National Conference for Intermodal Transportation.
NSTI	National Summer Transportation Institute.
NCITEC	National Center for Intermodal Transportation for Economic Competitiveness.
PB	Parsons Brinckerhoff.
PRTC	Potomac and Rappahannock Transit Commission.
RSA	Road Safety Audits.
STFP	Student Transportation Fellowship Program.
TLM	Transportation and Logistics Management.
WFD	Work Force Development.

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APPENDICES

APPENDIX 1

IMPLEMENTATION PLAN (07/31/12)

National Center for Intermodal Transportation and Economic Competitiveness (NCITEC) Consortium Member Project

Project Title: *Interdisciplinary Transportation Education and Workforce Development Modules (ITEWDM).*

I. PROJECT PERIOD OF PERFORMANCE AND FUNDING

The period of performance for the ITEWDM Project shall be eighteen (18) months, beginning on July 01, 2012 and ending on December 31, 2013.

II. PROJECT PERSONNEL

The Project personnel comprise of the PI/NCITEC Associate Director (Education and Workforce Development), faculty investigators, and student assistants. The following are key project personnel drawn from the University faculty:

PI/NCITEC Associate Director (Education and Workforce Development)

Dr. Kelwyn A. D'Souza
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ITEWDM Education Specialist

Prof. Carey Freeman
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ITEWDM Workforce Development Specialist

Dr. Sharad K. Maheshwari
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The ITEWDM project personnel are faculty members at Hampton University. The detail description of tasks and responsibilities for each are provided in the following Section III.

III. TASKS AND PERSONNEL RESPONSIBILITIES

The implementation of tasks is described below along with project personnel responsibilities.

Month of July 2012

1. Prepare draft Implementation Plan (IP) according to funded ITEWDM proposal.
2. Discuss IP with Project team members and finalize IP.
3. Incorporate comments/modifications.
4. Participate in the STI Program and organize transportation essay competition.

Personnel Responsible: D'Souza will be responsible for tasks 1, 2, and 3. Maheshwari and Freeman will be responsible for tasks 2 and 3. Freeman will be responsible for task 4.

Month of August 2012

1. Prepare list of educational tools to be purchased for the Transportation and Logistics classroom (BUC 208).
2. Visit transportation organizations to discuss student internship arrangements.
3. Collect information on all UG and G courses offered by HU.

Personnel Responsible: Freeman will be responsible for tasks 1 and 3. D'Souza, and Maheshwari will be responsible for task 2.

Month of September 2012

1. Develop database of all transportation courses offered at HU.
2. Recruit and place student interns in transportation organizations.
3. Organize guest lecture on transportation-related topic.
4. Designate a classroom for conducting transportation and logistics classes.
5. Submit Quarterly Report to NCITEC Director.

Personnel Responsible: Maheshwari and Freeman will be responsible for tasks 1 and 3. D'Souza and Maheshwari will be responsible for tasks 2 and 4. D'Souza will be responsible for task 5.

Month of October 2012

1. Continue to develop database of all transportation courses offered at HU.
2. Supervise student interns in transportation organizations.
3. Follow up with STI participants.
4. Purchase equipment for transportation and logistics classroom.
5. Disseminate results by participating in the NCIT Conference at HU.
6. Develop promotional material for transportation minor and concentration, and student scholarships.
7. Post ITEWDM Project on ESITAC website.

Personnel Responsible: Prof. Freeman will be responsible for tasks 1 and 3. Dr. Maheshwari, will be responsible for tasks 2, 4, 5, and 7. Freeman and Maheshwari, will be responsible for task 6.

Month of November 2012

1. Update existing transportation-related electives for Aviation Management major.
2. Supervise student interns in transportation organizations.
3. Organize guest lecture on transportation-related topic.
4. Revise course curriculum of the Aviation Minor program.
5. Prepare transportation case studies and course materials in collaboration with the NHI.
6. Prepare scholarly articles.
7. Select student transportation scholars.
8. Select and nominate CUTC Student of the Year (SoY).

Personnel Responsible: Freeman will be responsible for tasks 1, 3, 4, 7, and 8. Maheshwari will be responsible for tasks 2 and 5. D'Souza and Maheshwari will be responsible for task 6.

Month of December 2012

1. Update existing transportation-related electives for AM module.
2. Supervise student interns in transportation organizations.
3. Revise course curriculum of the Aviation Minor program.
4. Prepare transportation case studies and course materials in collaboration with the NHI.
5. Prepare scholarly articles.
6. Develop information brochure for minor in Aviation, concentration in Transportation Management, and transportation scholarships.
7. Evaluate the Fall 2012 interns.
8. Submit Quarterly Report to NCITEC Director.

Personnel Responsible: Freeman will be responsible for tasks 1, 3, and 6. Maheshwari will be responsible for tasks 2, 4, and 7. D'Souza and Maheshwari will be responsible for task 5. D'Souza will be responsible for task 8.

Month of January 2013

1. Revise course curriculum of the Aviation Minor program.
2. Prepare scholarly articles.
3. Sponsor SOY for CUTC/TRB award ceremony.
4. Attend TRB meeting.
5. Prepare transportation case studies and course materials in collaboration with the NHI.
6. Recruit and place student interns in transportation organizations.
7. Award transportation scholarships and academic credit to students enrolled in transportation curriculum.

Personnel Responsible: Freeman will be responsible for tasks 1, 3, and 7. D'Souza and Maheshwari will be responsible for tasks 2, 5, and 6. D'Souza will be responsible for task 4.

Month of February 2013

1. Revise course curriculum of the Aviation Minor program.
2. Prepare transportation case studies in collaboration with the NHI.
3. Supervise student interns in transportation organizations.
4. Organize Eisenhower Fellowship Program.
5. Organize field trips to transit, state, and city transportation organizations.

Personnel Responsible: Freeman will be responsible for tasks 1 and 4. Maheshwari will be responsible for tasks 2, 3, and 5.

Month of March 2013

1. Revise course curriculum of the Transportation Concentration.
2. Organize meetings to brief students on transportation curriculum and scholarships.
3. Supervise student interns in transportation organizations.
4. Select candidates for Dwight D. Eisenhower Transportation Fellowship Program
5. Submit Quarterly Report to NCITEC Director.

Personnel Responsible: Freeman will be responsible for tasks 1,2, and 4. Maheshwari will be responsible for task 3. D'Souza will be responsible for task 5.

Month of April 2013

1. Revise course curriculum of the Transportation Concentration.
2. Supervise student interns in transportation organizations.
3. Select candidate for Dwight D. Eisenhower Transportation Fellowship Program.
4. Organize guest lecture on transportation-related topic.

Personnel Responsible: Freeman will be responsible for tasks 1, 3, and 4. Maheshwari will be responsible for task 2.

Month of May 2013

1. Conclude student interns in transportation organizations.
2. Evaluate the Spring 2013 interns.
3. Prepare scholarly articles.
4. Revise the MBA program to include specialization in logistics with emphasis in intermodal transportation.
5. Partner with NHI and other UTCs to develop advanced course materials and case studies.
6. Participate in case competitions.

Personnel Responsible: Maheshwari will be responsible for tasks 1 to 6.

Month of June 2013

1. Recruit and place student interns in transportation organizations.
2. Prepare scholarly articles.
3. Submit Quarterly Report to NCITEC Director.

Personnel Responsible: Maheshwari will be responsible for task 1. D'Souza and Maheshwari will be responsible for task 2. D'Souza will be responsible for task 3.

Month of July 2013

1. Supervise student interns in transportation organization
2. Participate in the STI Program and organize transportation essay competition..

Personnel Responsible: Maheshwari will be responsible for task 1. Freeman will be responsible for task 2.

Month of August 2013

1. Conclude summer student internships in transportation organizations.
2. Follow up with STI participants.
3. Evaluate the Summer 2013 intern.

Personnel Responsible: Maheshwari will be responsible for tasks 1 and 3. Freeman will be responsible for task 2.

Month of September 2013

1. Recruit and place student interns in transportation organizations.
2. Prepare scholarly articles.

Personnel Responsible: Maheshwari will be responsible for tasks 1 and 2.

Month of October 2013

1. Supervise student interns in transportation organizations.
2. Organize field trips to transit, state, and city transportation organizations.
3. Organize Workforce Development Workshop.
4. Submit Quarterly Report to NCITEC Director.

Personnel Responsible: Maheshwari will be responsible for tasks 1, 2, and 3. D'Souza will be responsible for task 4.

Month of November 2013

1. Supervise student interns in transportation organizations.
2. Organize guest lecture on transportation-related topic.
3. Conduct Workforce Development Workshop.

Personnel Responsible: Maheshwari will be responsible for tasks 1 and 3. Freeman will be responsible for task 2.

Month of December 2013

1. Conclude student interns in transportation organizations.
2. Evaluate the Fall 2013 intern.
3. Prepare Final Report.

Personnel Responsible: Maheshwari will be responsible for tasks 1 and 2. D'Souza will be responsible for task 3.

APPENDIX 2. DATABASE OF EXISTING TRANSPORTATION MANAGEMENT COURSES

	AVN 304 Air Transportation	AVN 305 Aviation Management	AVN 325 Tower Operations
Intermodal Transportation Included	Some aspects roads, railroads, buses, short range trains at airports, “subway-like” system below airport, terminal transport, shuttles, rental cars, cargo venues distribution systems. Intermodal transportation is definitely relevant at airports because all of these forms of transportation are interdependent.	Some aspects roads, railroads, buses, short range trains at airports, “subway-like” system below airport, terminal transport, shuttles, rental cars, cargo venues distribution systems. Intermodal transportation is definitely relevant at airports because all of these forms of transportation are interdependent.	Some aspects roads, railroads, buses, short range trains at airports, “subway-like” system below airport, terminal transport, shuttles, rental cars, cargo venues distribution systems. Intermodal transportation is definitely relevant at airports because all of these forms of transportation are interdependent.
Course includes on cases/problems dealing with intermodal transportation	No	No	No
Method of course delivery.	Lecture/Classroom (Out of class reading assignments, Blackboard).	Speakers (experts) from the industry come and talk about various other types of transportation that take place in	Classroom & Lab, site visits (eg. tower, radar facility, airports)
Emphasis areas	Air transportation management	Various types of transportation related to aviation.	Air traffic control-- tower, radar facility, airports visits
Intermodal transportation-Suggestions	Be more aware of the need of intermodal transportation and discuss it more often in class settings. When discussing military elements, include Navy & Air traffic.	Be more aware of the need of intermodal transportation and discuss it more often in class settings. When discussing military elements, include Navy & Air traffic.	Be more aware of the need of intermodal transportation and discuss it more often in class settings. When discussing military elements, include Navy & Air traffic.
Transportation management included in the course	Air transportation management.	Air transportation management.	Air transportation management.
Specific changes	Add surface transportation and warehousing Material	Add shipping ground and ports etc. Through guest lectures	
Method of delivery	Course material/lectures	Guest Lectures	

APPENDIX 2. DATABASE OF EXISTING TRANSPORTATION MANAGEMENT COURSES (Cont.)

	MBA 313 Management Engineering II	MBA 600 Logistics Management	MBA 601 Supply Chain Mgt
Intermodal Transportation Included	Quantitative modeling of transportation, and transshipment problems	Transportation modes for business operations are discussed	Transportation modes for business operations are discussed
Course includes on cases/problems dealing with intermodal transportation	No	No	Some cases are discussed involving transportation
Method of course delivery.	Lecture/Classroom (Out of class reading assignments, Blackboard).	Lecture/Cases/Problems Solving/Blackboard support. Team work/case work.	Lecture/Cases/Problems Solving/Blackboard support. Team work/case work.
Emphasis areas	Mathematical modeling and applications	Operation modeling and applications. Cases in business	Supply Chain Issues related to management including transportation
Intermodal transportation— Suggestions	Create problems dealing with intermodal transportation modeling	Develop cases related to intermodal transportation as well as logistics	Use more cases related to intermodal transportation.
Transportation management included in the course	Modeling only	No	Business aspects of transportation selection
Specific changes	Transshipment model		
Method of delivery	Problem	Cases	Cases

APPENDIX 2. DATABASE OF EXISTING TRANSPORTATION MANAGEMENT COURSES (Cont.)

	MGT 216 Quantitative Analysis	MGT 402	MGT 370
Intermodal Transportation Included	Quantitative modeling of transportation, and transshipment problems	Basic Supply chain management, which include some discussion of intermodal transportation	Introduction of Transportation Management
Course includes on cases/problems dealing with intermodal transportation	No	Some cases are discussed involving transportation	Yes
Method of course delivery.	Lecture/Classroom (Out of class reading assignments, Blackboard).	Lecture/Classroom (Out of class reading assignments, Blackboard).	Lecture/cases
Emphasis areas	Mathematical modeling and applications	Mathematical modeling and applications	General Transportation
Intermodal transportation—Suggestions	Create problems dealing with intermodal transportation modeling	Problems related intermodal	More cases on intermodal can be included.
Transportation management included in the course	Modeling only	Business aspects of transportation selection	Yes
Specific changes	Transshipment	Special emphasis on intermodal in some aspects of supply chain	More cases
Method of delivery	Problems	Lecture/Problems	Cases

APPENDIX 3

Transportation Scholarships

OFFERED BY

HAMPTON UNIVERSITY

Scholarship

\$4,000

Scholarship

\$4,000

\$4,000 Scholarship

- Up to \$1,500 towards tuition for courses for Minor in Aviation Management.
- \$500 upon completion of courses.
- Paid internship up to \$2,000 during Fall/Spring/Summer.

EMPLOYMENT PROSPECTS

STUDENTS COMPLETING THE ELECTIVE COURSES WILL EARN MINOR IN AVIATION WHICH IS AN ADDED ADVANTAGE FOR EXPANDING JOB OPPORTUNITIES.

Eligibility

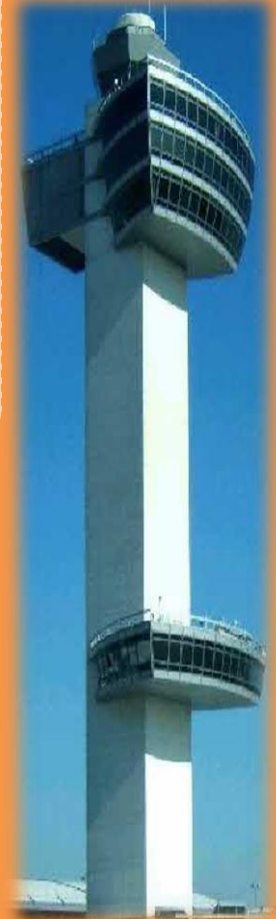
1. Open to all majors.
2. Cumulative GPA 2.75 and above
3. Junior, Rising Junior status

For Details Contact

Prof. Carey Freeman
Department of Aviation
Hampton University

carey.freeman@hamptonu.edu

757-727-5519





Transportation Scholarships!

OFFERED BY

HAMPTON UNIVERSITY



\$4,000 Scholarship Details

- Up to \$1,500 towards tuition for courses in Transportation Concentration.
- \$500 upon completion of courses.
- Paid internship up to \$2,000 during Fall/Spring/Summer.

Eligibility

5. Business Management and Aviation Majors.
6. Cumulative GPA 2.75 and above
7. Junior, Rising Junior status
8. U.S. citizens



EMPLOYMENT PROSPECT

STUDENTS COMPLETING THE ELECTIVE COURSES WILL EARN A CONCENTRATION IN TRANSPORTATION MANAGEMENT WHICH IS AN ADDED ADVANTAGE FOR EXPANDING JOB OPPORTUNITIES.



\$4,000!

For Details Contact
Prof. Carey Freeman
Department of Aviation
Hampton University
carey.freeman@hamptonu.edu
757-727-5519

APPENDIX 5

Evaluation of Internship Experience¹

Hampton University Transportation Internship Survey

Greetings fellow Hamptonians!! You are getting this survey as during your tenure at Hampton University you had an opportunity to work on the transportation internship at a local company or agency. This survey is intended to grasp the effectiveness of your experience in the transportation internship program at Hampton University that you. We know that your time is valuable, so this survey is designed to take no longer than 5-10 min of your time. We appreciate your time in providing these responses.

Your participation is voluntary. You will not be identified in any form or fashion in our analysis and publications. By answering this survey, you have also given your consent to participate in this study. We sincerely hope that you will provide your valuable feedback. If you would like to know the survey results please feel free to contact Dr. Sharad Maheshwari at sharad.maheshwari@hamptonu.edu.

Please answer the following questions on a scale of 1-5 reflecting your experience internship:

1 represents the lowest score and 5 represent the highest score

1. This internship experience has helped in building my critical thinking skills

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

2. This internship experience has helped in building my interpersonal skills

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

3. This internship experience helped me to build my sense of responsibility

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

4. This internship experience gave me a sense of achievement

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

5. The work I did during this internship was challenging

¹ Adapted from Communications Internship Office, 335 Park Hall, Ithaca College, 953 Danby Rd., Ithaca NY 14850

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

6. The workplace environment always encouraged me to participate

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

7. This internship experience has helped me in my career planning

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

8. This internship experience has helped me getting my first job or a major assignment at a job

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

9. Overall this internship was a very positive experience for me

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

10. I would recommend this internship to other students

	1	2	3	4	5	
Strongly disagree						Strongly agree
Select a value from a range of 1,Strongly disagree, to 5,Strongly agree,.	☐	☐	☐	☐	☐	

11. Prior to your transportation internship experience at Hampton University, did you ever work in any other transportation related organization?

- ☐ Yes
- ☐ No

12. Prior to your transportation internship experience at Hampton University, had you ever worked on any transportation related projects?

- ☐ Yes
- ☐ No

13. Do you currently work in any transportation related areas?

- ☐ Yes

- ☐ No

14. Have you ever worked with any transportation related organizations?

- ☐ Yes
- ☐ No

15. After your internship experience, did you consider working in the transportation field?

- ☐ Yes
- ☐ No

16. Where did you complete your Internship (name of the organization/company)?

17. Number of semesters you are employed as the intern (Please count summer as one semester)
(give a choice of 1, 2, 3, 4, 5, 6 or more)

18. Please provide share your thoughts to improve the Transportation Internship program

(PROVIDE A TEXT BOX)

Demographics

19. Year of graduation (expected graduation)

20. Gender

- ☐ Male
- ☐ Female

21. Age

22. Major

Thank you for your time. You have been extremely helpful.

If you would like to know the survey results please feel free to contact Dr. Sharad Maheshwari at sharad.maheshwari@hamptonu.edu.

Submit

APPENDIX 6

Hampton University Summer Transportation Institute Participants Survey Spring2013

- 1) Did you find this program helpful in preparing you for college?
Yes No

Please rate the Hampton University's STI program on the following attributes:

- 2) Do you feel the program improved your practical skills as it relates to basic technology?
Strongly Agree Agree Neutral Disagree Strongly Disagree
- 3) Do you feel the program improved your technical skills as it relates to basic computer knowledge?
Strongly Agree Agree Neutral Disagree Strongly Disagree
- 4) Do you feel the program improved your technical skills as it relates to mathematics?
Strongly Agree Agree Neutral Disagree Strongly Disagree
- 5) Do you feel the program improved your interpersonal skills as it relates to working with others?
Strongly Agree Agree Neutral Disagree Strongly Disagree
- 6) Did the program give you a better understanding of the importance of transportation in business?
Strongly Agree Agree Neutral Disagree Strongly Disagree

Please provide your opinion on the following questions:

- 7) Do feel the program was well structured?
Yes No
- 8) Would you recommend this program to high school students? Yes or No
Yes No
- 9) Did you consider transportation as a collegiate major after completing the program?
Yes No
- 10) What is/was your colligate major?
Biochemistry Pharmacy Transportation Liberal Arts
Computer Science Business Biology Engineering Other
- 11) Did your experience influence your decision to attend a HBCU?
Yes No
- 12) Did your experience influence your decision to attend Hampton University?
Yes No
- 13) What is your age group?
13under 15-20 21-25 26 and over
- 14) What ethnicity do you most closely identify with?
African American Asian Caucasian Hispanic Other
- 15) What was your cumulative G.P.A on a 4.0 scale?
Under 2.0 2.01-2.50 2.51-3.0 3.01-3.50 Over 3.51