

## Research Project 2

### Modeling Traffic Accidents at Signalized Intersections

Purpose: Develop statistical predictive models for vehicular traffic accidents at signalized intersections in the City of Norfolk, VA

Description: The objective of the proposed research is to develop statistical predictive models for vehicular traffic accidents at signalized intersections in the City of Norfolk, VA. Many independent factors are considered for possible contribution to the traffic accidents. These factors include traffic volume, driver actions, intersection topography/design factors, and traffic management rules. An earlier pilot study conducted by ESITAC in 2005-2006 showed a correlation between the accident rate and some of these factors. This study is being expanded to include a wide range of intersections within the City to investigate controllable factors that cause traffic accidents.

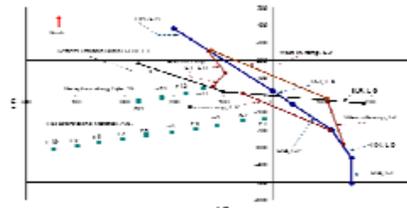


## Research Project 3

### Investigation of Nitrogen Oxides Emissions from a Major Roadway

Purpose: Predict pollutant concentrations near major roadways using a computer model and validate the model using real-time data.

Description: Despite recent advances in the automobile industry in reducing emissions from individual vehicles, because of the regional increases in the traffic volumes, air pollution in those localities still persist at problematic levels. Measurements done at the air pollution monitoring stations provide regional data with some temporal resolution but their numbers are too few to provide a detailed spatial resolution. Air pollutant concentrations can be significantly higher close to major roadways. This makes the local pollutant concentration measurements and finding ways to predict concentrations with a much higher spatial resolution essential in making decisions about locating buildings that will house sensitive populations, such as hospitals, day care centers, elementary schools, and retirement homes.



## Hampton University

### Eastern Seaboard Intermodal Transportation Applications Center—(ESITAC)



### Transportation Education & Research at Hampton University

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## About ESITAC

Hampton University has been awarded funding from the Research and Innovative Technology Administration (RITA), U. S. Department of Transportation (DOT) to implement and operate a University Transportation Centers Program (Tier II UTC). The Eastern Seaboard Intermodal Transportation Applications Center (ESITAC) located in Hampton Roads, will utilize resources of the University in partnership with state and city governments, private industries, regional universities, and local transit organizations to conduct research on current transportation problems facing this Region, and provide students with special emphasis on minorities and women, the opportunities to pursue transportation careers. This Region is at the crossroad of air, rail, road, and water modes providing intermodal transportation systems for passengers and freight. The recent growth in all these modes of transportation has added pressure on our highways and environment, resulting in traffic congestion and air pollution. The Center will address these challenges through a combination of research, education, and technology transfer programs. The goal is to advance U. S. technology and expertise in transportation that will provide safe, secure, efficient, and interconnected transportation systems.

The Center's main research and technology focus is on safety, infrastructure renewal, and environmental stewardship transportation education.

## Transportation Courses Offered

### **AVN 304 : Air Transportation**

Survey of historical developments of and current issues within the air transportation system covering facilities, impact of regulations, problems encountered in commercial air transportation, future requirements, airline operations, economics, and social implications.

### **AVN 305: Aviation Management**

A holistic view of management requirements and techniques applicable to the aviation industry; problems, current issues and future trends related to aviation operations. Includes management and organizational styles as applied to the industry, changes in the National Airspace System, managerial problems unique to the industry, and proposed acquisition of equipment under the Capital Investment Plan.

### **AVN 402: Airport Management**

A comprehensive study of airport operations and management includes analysis of the role of the airport manager in planning, finance and administration, public relations, social, political, and environmental considerations, operational requirements and facility maintenance.

### **AVN 302: Aviation Legislation**

Legal concepts concerning aviation as related to operation, contracts, insurance and liability, regulating statutes, and case law.

### **MGT 370: Transportation Management**

Acquaints the student with the major, current, and emerging issues in transportation. Emphasis is on urban transportation problems, national policies and legislation, physical distribution systems, inventory management, and Intelligent Transportation Systems.

### **MBA 600: Logistics and Transportation Management**

Pipeline/network/system management focusing on the integration of function areas to move products in a globally competitive environment. The application of the concept learned integrated with real-time technology.

## Research Project 1

### **Monitor Structural Health of Highway Bridges**

Purpose: Utilize Acoustic Emission (AE) technology to study and monitor highway bridges to prevent spread of structural failures

Description: Utilization of non-destructive test and monitoring technologies for bridge safety is one of the research focus areas at ESITAC. The objective of the proposed research is to utilize non-destructive testing technology for accurate, reliable and durable methods of structural health monitoring of highway bridges and to help prevent spread of structural failures caused due to factors such as material defects, corrosion, yield, deformation, etc. Acoustic Emission (AE), a technique based upon the principles of sudden release of strain energy within a material, is well suited for detecting deformations and associated failures. AE sensors, capable of near real time monitoring are being used non-destructively for evaluation of the material degradation and the structural integrity under complex loading and environmental conditions.

