George Mason University
Graduate Course Approval/Inventory Form

Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate: ___X__ NEW  ___ MODIFY  ___ DELETE

Local Unit: CEIE  Graduate Council Approval Date: 

Course Abbreviation: CEIE  Course Number: 686

Full Course Title: Transportation System Security and Safety

Abbreviated Course Title (24 characters max.): Tran. Sys. Security and Safety

Credit hours: 3  Program of Record: CEIE

Repeatable for Credit? ___ D=Yes, not within same term  Up to hours
___ T=Yes, within the same term  Up to hours
___ N=Cannot be repeated for credit

Activity Code (please indicate): ___X__ Lecture (LEC) ___ Lab (LAB) ___ Recitation (RCT)
___ Studio (STU) ___ Internship (INT) ___ Independent Study (IND) ___ Seminar (SEM)

Catalog Credit Format  3: 3 :0  Course Level: GF(500-600) __600 GA(700+) ____

Maximum Enrollment: 20  For NEW courses, first term to be offered: Taught as CEIE 690 special topics in Fall 2003; First offering as CEIE 686 will be in AY 2004-05
Prerequisites or corequisites: BS in Engineering or permission of instructor

Catalog Description (35 words or less) Please use catalog format and attach a copy of the syllabus for new courses. The course focuses on critical transportation systems infrastructure and operations (aviation, highway, mass transit, rail systems, ports and container freight transportation), and the technologies for prediction and management for minimizing damage and disruptions caused by potential threats to security and safety, including natural and technological disasters and terrorist threats.

For MODIFIED or DELETED courses as appropriate:
Last term offered: Previous Course Abbreviation: Previous number:

Description of modification:

APPROVAL SIGNATURES:
Submitted by: email: 

Department/Program: Date: 

College Committee: Date: 

Graduate Council Representative: Date: 

GEORGE MASON UNIVERSITY  
Course Coordination Form

**Approval from other units:**

Please list those units outside of your own who may be affected by this new, modified, or deleted course. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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<thead>
<tr>
<th>Unit: None</th>
<th>Head of Unit’s Signature:</th>
<th>Date:</th>
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Graduate Council approval: ______________________________ Date: ____________

Graduate Council representative: __________________________ Date: ____________

Provost Office representative: _____________________________ Date: ____________
I. CATALOG DESCRIPTION

A. CEIE 686  Transportation System Security and Safety (3:3:0)

B. Prerequisite: BS in Engineering or permission of instructor

C. Catalog Description:

The course focuses on critical transportation systems infrastructure and operations (aviation, highway, mass transit, rail systems, ports and container freight transportation), and the technologies for prediction and management for minimizing damage and disruptions caused by potential threats to security and safety, including natural and technological disasters and terrorist threats. Includes asset management, methodologies for assessing safety and security vulnerabilities, potential impact of damage and disruption, application of state-of-the-art technologies and R&D processes for harnessing best analysis methods, and technologies for hardening transportation infrastructure systems. The technology application components include sensing and surveillance using satellite and aerial remote sensing imagery, application of GIS and spatial information technologies, information and communication, intelligent transportation systems, hardening systems and the process of making intelligent choices for implementing technology advances to transportation security and safety.

II. JUSTIFICATION

Course necessity: This course is a new course in the CEIE M.S. degree program. The course supports both the Graduate Certificate in Civil Infrastructure and Security Engineering, and the transportation engineering specialization of the CEIE M.S. degree. It provides fundamental knowledge related to the security and safety of transportation systems in the context of a life-cycle approach, including design, construction, operation, and maintenance.

Relationship to other courses: This course is directly related to the remaining courses in the CEIE Graduate Certificate Program “Civil Infrastructure and Security Engineering.” It provides unique knowledge relevant both for planners and designers of transportation systems, as well as engineers in charge of their operation, maintenance and security.

III. APPROVAL HISTORY

A. Approved by the Civil, Environmental & Infrastructure Engineering Department on October 29, 2003.
B. Approved by the IT&E Graduate Studies Committee on.
C. Approved by the IT&E Dean on

IV. SCHEDULING

Time of Initial Offering: The course is being taught in Fall 2003 as CEIE 690, Special Topics. First offering as CEIE 686 will be in AY 2004-05.

Existing Faculty With Expertise in Subject Area
V. COURSE OUTLINE

1. Multimodal transportation system safety and security
2. Critical transportation infrastructure system security and protection
3. Risk management in developing and operating transport assets
4. Transportation systems safety
5. Accident inspection, investigation and analysis
6. Human factor issues for transportation safety and security
7. Container freight and HAZMAT transportation
8. R&D issues for transportation system safety and security
9. GIS and remote sensing technology application
10. Urban mass transit security issues
11. Understanding and preparing for transportation disasters
12. Student team presentations

Texts

Reading list drawn from current literature, including government documents, research reports, and transportation and civil engineering journals.

Course Requirements and Grading

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<tr>
<th>Component</th>
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<tr>
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<tr>
<td>Term Project</td>
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