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: 681

Full Course Title: Security of Structural Systems

Abbreviated Course Title (24 characters max.): Security of Struct. Sys.

Credit hours: 3

Program of Record:

Repeatable for Credit?  
D=Yes, not within same term  
T=Yes, within the same term  
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: Fall 2004

Prerequisites or corequisites:  
BS in Civil Engineering or CEIE 367

Catalog Description (35 words or less):  
Please use catalog format and attach a copy of the syllabus for new courses.: Basic concepts of security of structural systems; analytical models of behavior of structural systems under various security threats; computer simulation of security threats including blasts and fire; design for security including evolutionary and co-evolutionary approaches..

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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Graduate Council approval: ____________________________ Date: ___________

Graduate Council representative: ______________________ Date: ___________

Provost Office representative: _________________________ Date: ___________
I. CATALOG DESCRIPTION

A. CEIE 681 Security of Structural Systems (3:3:0)

B. Prerequisite: BS in Civil Engineering or CEIE 367

C. Catalog Description:

Basic concepts of security of structural systems; analytical models of behavior of structural systems under various security threats; computer simulation of security threats including blasts and fire; generation of terrorist scenarios and of preventive structural measures; design for security including evolutionary and co-evolutionary approaches; out-of-the-box approaches to development of preventive structural measures; lessons learned; intelligent structural security systems.

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 infrastructure management and information technology specializations of the CEIE M.S. degree. It provides fundamental knowledge related to the security of structural 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 designers of structural systems and engineers in charge of their 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


Existing Faculty With Expertise in Subject Area
Tomasz Arciszewski

V. COURSE OUTLINE
1. Basic concept of structural systems security
2. Analysis of the behavior of structural systems under various threats (blasts, fire) and undergoing elastic or plastic collapse
3. Computer simulation of security threats, including blasts and fires
4. Generation of terrorists scenarios and preventive structural measures, including both heuristic and evolutionary approaches
5. Design for security: evolutionary and co-evolutionary approaches
6. Out-of-the-box approaches to the development of preventive structural measures
7. Lessons learned: World Trade Center, Pentagon, etc.
8. Intelligent structural security systems including knowledge-based systems and intelligent agents

Course Requirements and Grading

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