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: 683

Full Course Title: Water and Wastewater Systems Security

Abbreviated Course Title (24 characters max.): Water and Wastewater Security

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
____X_ 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: Spring 2005
Prerequisites or corequisites: BS in Civil Engineering or CEIE 440 and CEIE 455

Catalog Description (35 words or less)  Please use catalog format and attach a copy of the syllabus for new courses.: Examines the overall security of water and wastewater systems. Covers theory and methods to: define water and wastewater infrastructure as physical and organizational systems; explore historical and future concepts of security of infrastructure systems; identify actors and their interactions in the organizational infrastructure, and threats—biological, chemical, physical, human—to water and wastewater infrastructure.

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 683 Water and Wastewater Systems Security (3:3:0)

B. Prerequisite: BS in Civil Engineering, or CEIE 440 and CEIE 455

C. Catalog Description:

Examines the overall security of water and wastewater systems. Covers theory and methods to: define water and wastewater infrastructure as physical and organizational systems; explore historical and future concepts of security of infrastructure systems; identify actors and their interactions in the organizational infrastructure, and threats—biological, chemical, physical, human—to water and wastewater infrastructure; describe the behavior of the physical infrastructure under stress (threat, attack, recovery), and the behavior of the organizational infrastructure under stress; examine the history of threats/attacks against water and wastewater systems, and the evolution of the design/operations/maintenance paradigms in response to changes in threats; design and implement proactive responses to security threats through the use of vulnerability assessments, and models of the organizational and physical infrastructure system.

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 water and environmental systems specialization of the CEIE M.S. degree. It provides fundamental knowledge related to the security of water and wastewater 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 water and wastewater 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


Existing Faculty With Expertise in Subject Area
Mark H. Houck and Sharon deMonsabert
V. COURSE OUTLINE

1. Water and wastewater systems—physical and organizational infrastructure;
2. Concepts of security of infrastructure systems—historical and future;
3. Organizational infrastructure—actors and relationships;
4. Threats to water and wastewater infrastructure—biological, chemical, physical, human;
5. Behavior of the physical infrastructure under stress (threat or attack);
6. Behavior of the organizational infrastructure under stress (threat or attack);
7. History of threats/attacks against water and wastewater systems;
8. Evolution of the design/operations/maintenance paradigms in response to changes in threats;
9. Proactive response to threats: vulnerability assessment and other tools
10. Proactive response to threats: use of models of the organizational and physical infrastructure system.

Course Requirements and Grading

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