

ENGS 11: Technologies in Homeland Security

Fall 2007

Course Leads: Sue McGrath, Ph.D., 646-0743, Susan.P.McGrath@dartmouth.edu

Lecturers:

Sue McGrath, Ph.D., Dartmouth College
Dennis McGrath, MA, Dartmouth College
Joey Booth, J.D., Northrup Grumman
Vinny Doherty, FDNY, Naval Post-Graduate School
Amy Donahue, Ph.D., UCONN
Matt Devost, Terrorism Research Center
Kendall Hoyt, Ph.D., DHMC
Jay Buckey, M.D., DHMC
Richard Messner, Ph.D., UNH
Chris Lombard, Seattle Fire Department

ORC description

11. Technologies in Homeland Security
06F, 07F: 10A

This course will provide students with an introduction to the current and emerging technologies used in homeland defense and the practitioners who use them. Topics covered in class include personal protective equipment, physical and cyber security systems, communications and information technologies, information assurance, WMD detection, robotics, simulation, exercise and training technologies. Students will gain a detailed understanding of the role technology plays in protecting the homeland.

Dist: TAS

Introduction: Recent global events have encouraged the United States Department of Homeland Security to take a technological approach to all-hazards readiness and response. Leveraging and redesigning existing technologies, along with engineering new emergency response systems is critical to the nation's security. Homeland security technologies span a number of engineering disciplines from materials science to information technology, providing applied examples of multiple disciplines cooperating to protect the homeland. Knowledge and understanding of the issues related to homeland security technologies is critical to citizens interacting with emergency personnel and for engineers developing next generation response systems.

Prerequisites: NONE

Textbook Information: Reading materials to be provided by instructors.

Grading: Grades will be calculated based on the following:

30% Midterm Exam to cover course lectures 1-6

30% Final Exam to cover course lectures 7-14

30% Project

10% Class participation

Projects: Course projects will be completed in teams, with each team member having individual responsibility for one part of the project. The projects will allow you to delve into a particular aspect of homeland security related to technologies used for planning for and responding to emergencies. Project assignments will be discussed in class, and will require a written paper describing your work (length and format to be discussed in class).

Lateness Policy: Assignments are due at the **beginning** of the designated class period, so papers turned in at the end of class or later will be considered late. Assignments submitted up to 24 hours late will receive a 20-point deduction (out of 100 points). If your assignment is more than 24 hours late, you will receive a 0 for the assignment.

Disabilities: Any student with a documented disability needing academic adjustments or accommodations should speak with Sue McGrath by Friday, **October 4, 2007**. All discussions will remain confidential, although the Academic Skills Center may be consulted to verify the documentation of the disability.

Honor Principle: The faculty and students of Dartmouth College recognize the Academic Honor Principle as fundamental to the education process. Any instance of academic dishonesty is considered a violation of the Academic Honor Principle and may subject a student to disciplinary action, up to and including separation from the College.

All work on exams must be your own. For homework problems, you may discuss verbally the general solution approach with your classmates, but the work you submit must be your own. You are explicitly forbidden directly copying solutions found on the web (or anywhere else).

Course Schedule 2007

Week	Tuesday	Thursday
1		September 27 Introduction to Homeland Security Technologies (S. McGrath/Buckey). Discussion of fundamental homeland security technologies and topics.
2	October 2 Emergency Response Plans (D. McGrath). Examination of the NRP, state and local emergency response plans.	October 4 Perspective on Katrina (Mark Willow, New Orleans Police). Description of events and responses to Katrina.
3	October 9 Perspective on 9/11 (Vinny Doherty, FDNY). Description of events and responses to 9/11.	October 11 Perspective on NASA Shuttle Recovery (Amy Donahue, UNCONN). Perspective on NASA recovery and policies and procedures.
4	October 16 Discussion of topics covered in weeks 1-3, midterm review	October 18 Midterm Exam - covering information on lectures from weeks 1-4
5	October 23 Intelligence Gathering-Project 54 (Rich Messner, UNH). Automated police information systems.	October 25 Firefighting Technology (Chris Lombard, Seattle Fire Dept.) Video, audio and other new technologies for firefighting.
6	October 30 Simulation and Exercises (D. McGrath). Information technologies for emergency response tabletop and live exercises, simulation for virtual prototyping and experiential learning.	November 1 Discussion of topics covered in weeks 5-6
7	November 6 Cybersecurity (Devost, Terrorism Research Center). Secure communications, information protection.	November 8 Chemical, Biological, Radiological and Nuclear Event Detectors (K. Hoyt and J. Buckey, DHMC). Introduction to chemical, biological, nuclear and radiological detection and equipment
8	November 13 Responder and Casualty Monitoring (S. McGrath). Location and physiological monitoring through remote sensing and ad hoc networks.	November 15 Discussion of topics covered in weeks 7-8, exam review

9	November 20 Midterm Exam- covering material from lectures in weeks 5-8.	November 22 No Class- Thanksgiving Holiday
10	November 27 Project Presentations	November 29 Project Presentations
11	December 4 Project Presentations	