

University Studies 7 Course Structure

Chemistry of Counterterrorism, Spring 2012

Instructor: Shaun I Galvan
Email: galvans@uci.edu

Mentor: Prof. Rachel Martin
Email: rachel.martin@uci.edu

Seminar

Thursdays, 2:00 – 2:50 PM, Donald Bren Hall (DBH) 1420.

Office Hours

Thursdays, 3:00 – 3:50 PM or by appointment,
Location TBA.

Course Description

The battle against terrorism is far from over, especially in the United States of America. New technologies in counterterrorism and defense have been able to successfully thwart several terrorist plots in the last decade. However, the methodologies of initiating and executing terrorist plots have shifted to a more chemical approach. Due to the high potential of these terrorist plots to be carried out against the U.S., chemical research in terrorism prevention and detection has been greatly funded by the government in order to ensure the safety and security of American citizens. In this course, students will have the opportunity to learn and understand current chemical research, techniques, and equipment being utilized in satisfying the goals necessary to establish viable national security. This will be accomplished through active engagement and discussion of:

- 1) Different types of toxic chemicals and chemical weaponry
- 2) Utilization of chemical techniques to help detect these threats
- 3) Effective countermeasures that can be employed in the event a terrorist attack of a chemical nature should ever occur.

Prerequisites

This course has no prerequisite knowledge that is required, however, in an attempt to enhance the seminar experience to its fullest potential, I ask that you read the recommended short readings prior to each seminar. The course will not be mathematical in nature; however, a science background at the high school level will be sufficient.

Grading

I am not grading on a points scale, however, to pass this course, you must do and complete the following:

1. **Participation:** Attend and Participate in Seminar Activities and Discussions.
2. **Group Assignment:** Present for 5 minutes to the class a new hazardous chemical.
3. **Small Final Seminar Paper:** Write a 1.5 - 3 page paper based on a given prompt by Week 10.

Text

Science and Technology of Terrorism and Counterterrorism, Second Edition by Mark A. Prelas, Tushar K. Gosh, Dabir S. Viswanath, Sudarshan K. Loyalka. 2009, Taylor & Francis, Inc.

You do NOT need to buy the book. Passages will be posted on course website and is also accessible online at the UC Irvine Libraries Page.

Academic Honesty

You can review UCI's full academic honesty policy here:
<http://www.editor.uci.edu/catalogue/appx/appx.2.htm>

Course Schedule

Topics are subject to change if necessary:

Week 1: Introduction to Counterterrorism: Terrorism vs. Counterterrorism

Readings: Chapter 1: *Introduction*
Chapter 2: *A Brief Theory of Terrorism and Technology*

Week 2: Classifications and Properties of Chemical Weapons

Readings: Chapter 19: *Classification, Synthesis, and Properties*

Week 3: Personal Protective Equipment and Risk Assessment

Presenter: Dr. Ken Miller, Orange County Fire Authority
Readings: Chapter 13: *Personal Protective Equipment (PPE)*

Week 4: Threats, Chemical Weapons Proliferation, and Countermeasures

Readings: Chapter 24: *Threats and Countermeasures*

Week 5: Hazards, Toxicity, and Medical Management

Presenter: Dr. Jeffery Suchard, UCI Medical Center
Readings: Chapter 20: *Toxicity, Medical Management, and Mitigation*

Week 6: Introduction to Chemical Sensors and Detection for Science and Security

Readings: Chapter 22: *Sensors and Detection Systems*

Week 7: K9 Detection Lecture and Outdoor Demonstration

Presenter: Lt. Michael Miller and Co-workers, Orange County Sheriff's Department

Week 8: Raman Laser System Technology

Week 9: Single Particle Aerosol Mass Spectrometry (SPAMS)

Week 10: Exhaled Breath Analysis

No Final Exam