

**University of Nevada, Las Vegas**  
**Executive Master of Science in Crisis and Emergency Management**  
**ECEM 712 - Science of Catastrophes**  
**Summer/Fall 2016 Syllabus**

**Course Description**

This course provides a comprehensive examination of the fundamental scientific principles and concepts which underpin preparations for, mitigation of, and responses to disasters relative to “All-Hazards” (i.e., those caused by the processes of the earth (natural hazards), those caused by processes of modern society (technological hazards), and those associated with intentional events such as acts of terrorism). Also included will be consideration of the scientific principles related to risk factors and effects on human populations including toxicology, environmental protection, and engineering of the built environment. Although the course will be presented at the managerial level and will not require solving mathematical or chemical equations, units of measure, mathematical relationships, and chemical formulas will be examined where appropriate in order to impart an understanding and appreciation of how scientific principles related to disasters are defined, measured, and communicated. Examples include for natural disasters the Fugita scale for tornados, Saffir-Simpson scale for hurricanes, and the Mercalli and Richter scales for earthquakes. The basic principles and nomenclature of chemistry, biology, and radioactivity will be examined as they relate to understanding the basis of technological hazards and those related to terrorism and weapons of mass destruction. Disaster case studies and/or after action reports will also be utilized to highlight the fundamental principles examined.

Course participants are not expected to have specific backgrounds in science or mathematics.

**Course Objectives**

- Develop an understanding of the scientific principles related to the explanation and measurement of natural hazards including earthquake, tsunami, volcanos, severe storms, climate change, and their effect upon human populations;
- Investigate and develop an understanding of the fundamental principles of chemistry, biology, and radioactivity necessary to define and explain the underlying causes and effects of technological hazards and those related to weapons of mass destruction (i.e., chemical, biological, radiological, nuclear, and explosive - CBRNE);
- Recognize and apply important aspects of major Federal regulations which apply to the manufacture, transportation, use and disposal of hazardous materials including those of the Department of Transportation (DOT), Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and others.
- Gain working knowledge of the types and classes of hazardous materials commonly used throughout modern society and elements of basic firefighting and emergency response actions.
- Analyze case studies and/or after-action reports of catastrophes such as floods, fires, hurricanes, tsunami, earthquakes, tornadoes, epidemics, chemical releases etc., and determine and describe the scientific and engineering issues associated with such events;
- Become better prepared to find, understand, relate, and report complex scientific and regulatory information associated with the four phases of emergency management (mitigation, preparedness, response, and recovery)

### **Biweekly Discussion Topics**

There are a total of ten Discussion Topic reading and writing assignments for this course. The purpose of the Discussion Topics is to foster collegial discussions amongst all course participants concerning the subject matter presented. Each Discussion Topic will be drawn from the textbook, case studies, or other materials and will be assigned at the beginning of each two-week period. A total of ten points will be available for each Discussion Topic assignment.

Students must submit an original post in answer to the initial assignment question which will be worth a total of four points. Please read all your classmates' initial and subsequent posts. Please post to reply to no less than three other students' initial posts or replies within the Discussion Board. Each of the three required replies beyond the initial four-point post will be worth two points each for a total of six points. Please don't hesitate to ask questions or make statements to each other to forward the discussion and exchange of ideas.

In summation, to receive full credit of ten (10) points per Discussion Topic, you must post at least one original response worth four points and at least three replies worth two points each to other students. Your replies to the work of another must capitalize upon the original thoughts and express agreement, polite disagreement, or other views, and must otherwise add to the stream of ideas. Simply stating "yes, I agree" will not constitute an effective reply for full credit.

### **Midterm and Final Exams**

The midterm exam will focus on material from the Abbott text, *Natural Disasters*, and/or related discussion assignments. The final exam will focus on material from the Meyer text, *Chemistry of Hazardous Materials*, and/or related discussion assignments.

### **Research Paper**

Select a narrow topic relevant to a specific natural, technological, or intentional disaster and perform an examination of research materials available. Your topic may be about any issue covered in this course to include earthquakes, hurricanes, chemical plant explosion, terrorist attack, and etc. Write a research paper which identifies the name, location, and dates of the event, and includes a fairly comprehensive description of what happened, why, and what were its effects on human populations and the environment. If the focus of your investigation and research involves natural hazards, include in your discussion any specific measures of magnitude, duration, underlying causes, warning signs, and effects. If the focus of your research involves chemical, biological, radiological, nuclear or explosive materials, whether industrial products or WMD, include description of the materials physical, chemical, biological, or radiological properties and explain its effects. Your paper need not exceed 10-15 typed pages plus bibliography. The research paper will be due no later than the end of Week 20.

### **Class Presentation**

Create a PowerPoint presentation based on your research paper for delivery during the second on-campus session. Your presentation should be 10 minutes in duration. As an Emergency Management professional, you may need to present information to politicians, government officials, the media, and the public. The class presentation gives you the opportunity practice that skill through sharing the knowledge gained from your research.

**Executive Masters in Crisis and Emergency  
Management UNLV**

**ECEM 713: EVOLUTION OF TERRORISM -- FALL 2016**

**Course Content:**

This course focuses on the historical roots of terrorism and stresses the importance of understanding the past to adequately prepare for the future. Through a historical perspective of terrorism, this course provides the basis for and discusses the aspects that make contemporary terrorism of today different from the traditional terrorism of the past. In addition, organizational structures and favored tactics of major terrorist organizations are discussed, the history of state terrorism is explored, an emphasis on the rise and growth of religious terrorism is undertaken, the power of media coverage is addressed, and the impact of the Global War on Terrorism on the future of terrorism is debated.

**Course Learning Objectives:** At the completion of the course the student will be able to:

- Define the major components of terrorism and list the reasons why we study it.
- Explain the problem of multiple terrorism definitions and the importance of having a unified terrorism definition.
- Describe examples of terrorism throughout the ages
- Produce an example of terrorism in contemporary society and the world.
- Compare and contrast historical terrorism with modern terrorism.
- Compare the differences between domestic and international terrorism.
- Compare the differences between secular and religious terrorism
- Identify examples of state terrorism throughout history
- List the characteristics of terrorist organizations.
- Describe how modern terrorism is tailored to the media.
- Discuss why terrorism will continue into the future and predict future terrorism trends.
- List the major issues of cyber terrorism.

**Course Learning Outcomes:** At the completion of the course the student will be able to:

- Understand the evolution of terrorism and the underlying social, political and economic causes of terrorism.
- Comprehend the human side of emergencies by analyzing psychological, economic and sociological impacts associated with different disasters and how they differ based on gender, functional need, age, religion, educational level, a socio-economic status that affect the public reaction and response to different terrorist disaster events.

***Reading and Writing Assignments:***

**\* 9 weekly or bi-weekly reading and written assignments worth 20 points each.**

**\* 3-part research paper worth 40 points for each part. A separate title page is required for each part of the research paper. Minimum 4 full pages.**

For this research paper, the student will address the following questions:

**Part 1: *Does the psychological, motivational and personality make-up of traditional terrorists throughout history are different from those of modern-day terrorists? Explain your position with various research sources as explained in the syllabus. You must use independent research sources. Please utilize historical examples.*** In other words, I would like you to go back in time and look at terrorist organizations like the Zealots for example in ancient times and other classical terrorist movements of the 17th, 18th and early and middle 19th centuries and compare the similarities and differences with that we see in our modern terrorists of today.

**Part 2 *"The more things change - the more things remain the same". Discuss this concept through a historical evaluation of state terrorism.*** Please utilize historical examples from Ancient times, Middle Ages, 17th-19th Centuries if possible and certainly Modern 20th Century and today.

**Part 3: *Professor Samuel P. Huntington has contended that "the fundamental source of conflict in this new world will not be primarily ideological or primarily economic. The great divisions among humankind and the dominating source of conflict will be cultural...The conflict between civilizations will be the latest phase of the evolution of conflict in the modern world,"*** rather than the ideological tensions that were the source of the Cold War. Show through a historical analysis of terrorism that you agree or disagree with the thesis of Professor Huntington.