

Spring 2009
BMS 555
Biodefense Sciences

12:30 -1:30 Mondays
(1 Credit)

Dr. Christina Egan (BMS)
Course Director

Course Policies

Justification: With the deterioration of public health infrastructure over the previous 20 years and the bioterrorism events of 2001, preparedness for emerging infections and outbreaks, whether natural or precipitated by terrorists, was found to be severely lacking throughout the country. Additional training in rare but potentially disastrous diseases (e.g., smallpox, pandemic flu, aerosolized anthrax) and advanced diagnostic testing and surveillance is warranted to prepare future healthcare workers, first responders, and laboratorians in the basic principals of Biosafety and Biosecurity.

Purpose/Learning Objectives: The objective of this course is public health education; a comprehensive understanding of the history, impact, issues, and future directions associated with biologic threats to human, animal, and plant health. Students should gain an understanding and appreciation for issues impacting Biodefense: these include knowing which pathogens can be used as weapons, the theory behind lab and field techniques used for detection of these pathogens, working with federally regulated pathogens, public health preparedness and response to a bioterrorist event, and most importantly, how the public can be educated about and prepare for bioterrorism.

This course will provide a framework and understanding of one of the fastest growing and highly funded scientific areas since HIV. This course is not expected to be a typical academic research course. It is being offered to educate students on history, health policy, safe work practices, and public health issues related to Biodefense. This course will not be technique-driven, but will convey critical information needed to perform research or diagnostics on regulated pathogens, and also address ethical questions about research on pathogens which could be used as bioweapons. The students taking this course will be the future scientists who may develop policy, direct research, and interact with future healthcare workers, first responders and laboratorians.

Course Description: Students will be given a working knowledge of potential biological threat agents as well as an understanding of procedures and methods to safely and securely work with these agents in the laboratory. Focus on public health preparedness, surveillance systems, and federal networks will also be addressed. This course is not intended for all BMS graduate students, but mainly for those participating in the Biodefense and Emerging Infectious Diseases Training Program. Other interested participants may include BMS scientists and students with research requiring BSL3 laboratory work, Wadsworth Center

employees looking to continue their professional development, i.e., certificate in Biodefense, and healthcare professionals, for example from Albany Medical Center, who are involved in bioterrorism or outbreak investigations. This course would also be required for the Biodefense certificate (pending approval of the certificate).

Faculty:

Course Director- Dr. Christina Egan eganc@wadsworth.org

Instructors-

Dr. Christina Egan
Dr. Doug Ball
Mr. David Hill
Ms. Cassandra Kelly
Dr. Stephanie Ostrowski
Mr. Dan Rice
Dr. Steven Zink

Required Text

Biodefense: Principles and Pathogens.2005. Bronze and Greenfield, Eds. *Horizon Biosciences*, Norfolk, UK. ISBN: 1-904933-12-2.

Supplemental Texts

Biosafety in Microbiological and Biomedical Laboratories, 5th Edition. 2006. Richmond and McKinney, Eds. *US Government Printing Office*, Washington, DC.

Bioterrorism: Guidelines for Medical and Public Health Management. 2002. Henderson, Inglesby, O’Toole, Eds. *AMA Press*, Chicago, IL.

Manual of Clinical Microbiology, 8th Edition. 2002. Murray, Baron, Jorgensen, Tenover, Tenover, Eds. *ASM Press*, Washington, DC.

Websites:

<http://www.bt.cdc.gov/> This is an excellent resource for information on bioterrorism select agents and public health emergency preparedness and response.
<http://www.hopkins-biodefense.org/>. This is the website for the Center for Civilian Biodefense Strategies

Homework and Help: All course instructors will have at least 2 hours per week available for students with questions or requesting additional tutoring. Homework will be primarily reading assigned materials.

Meets: Mondays for 60 minutes

Grading: A-C, E

Prerequisites: Undergraduate biology and chemistry

Student Evaluation: Students will be evaluated using a midterm exam (40%) final exam (40%), and class participation (20%).

Course Evaluations: Following completion of course, students will be asked to evaluate course for content, presentations, materials, lecturers, and overall utility.

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Course Syllabus

Lecture	Date	Topic	Instructor
1	Jan 26	History of Bioweapons (Ch2)	Dr. Egan
2	Feb 2	Public Health Preparedness and Lab Networks (Ch3)	Dr. Ostrowski
3	Feb 9	Biosafety and Biosecurity (Ch4)	Mr. Hill
-	<i>Feb 16-21</i>	<i>Winter Break- No Class</i>	-
4	Feb 23	Hospital Preparedness and Surveillance Systems (Ch5, Ch6)	Dr. Ball
5	Mar 2	Anthrax, Plague, Tularemia (Ch8, Ch10, Ch12)	Dr. Egan
6	Mar 9	EXAM I	INSTRUCTORS
7	Mar 16	Biothreat Field Response	2 nd ANG Civil Support Team
8	Mar 23	Toxins (Ch9, Ch14)	Ms. Kelly
9	Mar 30	VHF (Ch 11)	Dr. Zink
10	Apr 6	Smallpox (Ch13)	Ms. Kelly
-	<i>Apr 8-13</i>	<i>No Class</i>	
11	Apr 20	Dissemination(Ch17, Ch18)	Dr. Zink
12	Apr 27	Agroterrorism (Ch22, Ch23)	Mr. Rice
13	May 4	Exercise	Dr. Egan
14	May 11	EXAM II	INSTRUCTORS

Each lecture Instructor will be responsible for 15-20 points of exam question for either exam I or Exam II, respectively. Exam II is not comprehensive.