

PH7345: Introduction to Risk Assessment

Instructor's Name: Lisa Casanova, Ph.D

Division: Environmental Health

Semester: Fall

Year: 2014

Course Basics	Class Day/Time:	Thursdays, 1:00-3:30 pm
	Class Location:	Classroom South 507
	Prerequisite(s):	None (Intro to Environmental Health strongly recommended)
	Required Course Materials	Required course readings will be posted on Desire to Learn

Faculty Accessibility	Instructor(s) of Record:	Lisa Casanova
	Office Location:	Urban Life 859
	Phone Number(s):	404-413-1136
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	Office Hours/Availability:	By appointment

I. Course Description:

This course will introduce the fundamentals of the risk assessment process for evaluating human health risks, with a focus on environmental health and quantitative microbial risk assessment. Topics include the risk assessment framework, exposure assessment, probability, risk modeling, evaluating chemical and microbial risks, and use of risk assessment as a policy tool. The course includes writing assignments. In addition, there will be readings to be done prior to each class, in-class activities, and a final project. These required readings will be available through D2L. The reading assignments are designed to foster critical thinking, provoke multidisciplinary, analytical discussions during class time.

II. Course Objectives / Competency / Assessment of Student Learning:
This course is designed to support students in acquiring competence in the following five areas, as indicated in the GSU School of Public Health MPH Core Competencies document.

Core competencies:

7. Describe major environmental and occupational contaminants including biological, chemical and physical agents and discuss effects of exposure to these contaminants on human health.
8. Identify important susceptible human sub-populations with respect to environmental exposures and the sources of variability.
9. Analyze approaches to assessing, preventing and controlling environmental hazards that pose risks to human health.

Concentration competencies:

1. EVHT 1: Demonstrate knowledge of the implications of regulations, laws, standards, and various types of policy on activities aimed at protecting environmental health.
2. EVHT 2: Describe approaches to risk assessment for a wide variety of environmental hazards.
3. EVHT 3: Articulate how biological, chemical and physical agents interact with the environment and affect human health.

Course Objectives	Program Competency	Assessment Method(s)
Identify and describe important public health risks that can be understood using a risk assessment methodology	Describe approaches to risk assessment for a wide variety of environmental hazards. (EVHT 2) Articulate how biological, chemical and physical agents interact with the environment and affect human health. (EVHT 3)	Poster component #1, final poster
Explain the steps of the risk assessment framework	Describe major environmental and occupational contaminants including biological, chemical and physical agents and discuss effects of exposure to these contaminants on human health. (Core 7)	Final poster
Identify data sources for use in risk assessment	Describe major environmental and occupational contaminants including biological, chemical and physical agents and discuss effects of exposure to these contaminants on human health. (Core 7)	Poster components 2, 3, 4
Critically evaluate data sources for use in risk assessment	Identify and analyze approaches to assessing, preventing and controlling environmental hazards that pose risks to human health (Core 9).	Poster components 1, 2, 3, 4
Demonstrate the ability to construct mathematical models of specific risks	Identify important susceptible human sub-populations with respect to environmental exposures and the sources of variability (Core 8).	Poster Component #4
Explain results of risk assessment in terms understandable to the lay public	Demonstrate knowledge of the implications of regulations, laws, standards, and various types of policy on activities aimed at protecting environmental health. (EVHT 1) Articulate how biological, chemical and physical agents interact with the environment and affect human health. (EVHT 3)	Oral poster presentation

III. Course Assignments and Requirements

<u>Course Requirements</u>	<u>% of Final Grade</u>
Components of poster -You will turn in answers to questions that will help you shape your final poster project. You must complete these to receive full credit for the final project.	40%
Final Poster Session (12/4/14) You will perform a risk assessment of a public health risk of your choice. You will present a poster describing your risk assessment and its results. The last day of class will consist of a poster session where students will present their posters to the instructor and other students. You MUST be present on this day to receive credit.	60%

IV. Grading Policy

- 90 -100% = A
- 80 – 89% = B
- 70 – 79 % = C
- 60 – 69.% = D
- Below 59.4% = F

V. Attendance and Class Participation Policy

The nature of the course requirements makes attendance highly critical. While attendance will not be recorded, each student will be responsible for the material covered in class. In class activities can only be completed for credit if you are present in class that day.

VI. Late Assignments and Make-up Examination Policy

All assignments will be uploaded electronically via D2L. Upload assignments as a word processing document; do not paste into D2L. Include your last name in the name of the file. Please do not wait until the last minute to submit assignments in case you run into technical problems. Assignments will NOT be accepted via email. Five percentage points will be deducted from an assignment's grade for each day any assignment is late. Assignments must be submitted by 11:59 pm on the due date.

VII. Syllabus Deviation Policy

The course syllabus provides a general plan for the course; deviations may be necessary.

VIII. Student Code of Conduct and Policy on Academic Honesty

All students at this University are expected to engage in academic pursuits on their own with complete honesty and integrity. Any student found guilty of dishonesty in any phase

of academic work will be subject to disciplinary action. The complete Academic Honesty policy is located in the GSU Graduate Catalog, Section 1350: <http://enrollment.gsu.edu/catalogs/>. Students and faculty are expected to review and conform to the university's policy on academic honesty. Information on the Student Code of Conduct and related policies and procedures are available at: <http://codeofconduct.gsu.edu/>. Special attention should be paid to the sections on plagiarism and multiple submissions:

Plagiarism. Plagiarism is defined as, “*appropriating and putting forth as one’s own the ideas, language, or designs of another*” (The Living Webster, 1975) – and it is strictly forbidden. Written and oral presentations must be a student’s own work. Students plagiarizing or cheating in any form will face disciplinary action which could result in an “F” in this course and suspension or expulsion from the University. Copying from written materials, presentations, websites, etc. without source acknowledgement and referencing is plagiarism. *Read it, appreciate it, learn from it, and make sure you source it – and then reflect it with your own thoughts and words!* If you are uncertain about what constitutes plagiarism, please contact the instructor.

Multiple Submissions. It is a violation of academic honesty to submit substantial portions of the same work for credit more than once without the explicit consent of the faculty member(s) to whom the material is submitted for additional credit. In cases in which there is a natural development of research or knowledge in a sequence of courses, use of prior work may be desirable, even required; however, the student is responsible for indicating in writing, as a part of such use, that the current work submitted for credit is cumulative in nature.

IX. Disability Accommodations Policy

Students who wish to request accommodation for a disability may do so by registering with the GSU Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which an accommodation is sought. The Office of Disability Services is located in the GSU Student Center, Suite 230 and online here: <http://disability.gsu.edu/>.

X. Course Evaluations Statement

Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing this course, please take time to fill out the online course evaluation.

XI. Career Services

The School of Public Health provides career services & student leadership opportunities (student clubs & organizations) to all current SPH students and alumni. SPH Career Services can help students with resume writing, interviewing, job searching, internship development, and professional networking. Students are invited to attend our career events and workshops, and individualized career counseling appointments can be arranged. To see what career panels, career fairs, and events are available this semester, please visit: <http://publichealth.gsu.edu/students/career-resources/>. The SPH Career Services office is co-located with the Office of Academic Assistance in room 640 at One Park Place.

XII. Tentative course schedule, topics, and readings

See below:

Date	Class Topic	Reading
8/28/14	The risk assessment framework	Gerba, C. "Risk Assessment"
9/4/14	Hazard Identification	Fox KR, Rose JB. 1994. A massive outbreak in Milwaukee of Cryptosporidium infection transmitted through the public water supply. <i>New England Journal of Medicine</i> 331 :161-167.
9/11/14	Exposure assessment I	King WD, Dodds L, Armson BA, Allen AC, Fell DB, Nimrod C. 2004. Exposure assessment in epidemiologic studies of adverse pregnancy outcomes and disinfection byproducts. <i>Journal of Exposure Science and Environmental Epidemiology</i> 14 :466-472. Villanueva CM, Cantor KP, Grimalt JO, Malats N, Silverman D, Tardon A, Garcia-Closas R, Serra C, Carrato A, Castano-Vinyals G. 2007. Bladder cancer and exposure to water disinfection by-products through ingestion, bathing, showering, and swimming in pools. <i>American journal of epidemiology</i> 165 :148-156.
9/18/14	Exposure assessment II Hazard Identification DUE	Lammerding AM, Fazil A. 2000. Hazard identification and exposure assessment for microbial food safety risk assessment. <i>International journal of food microbiology</i> 58 :147-157.
9/25/14	Exposure assessment III	Jones RM, Masago Y, Bartrand T, Haas CN, Nicas M, Rose JB. 2009. Characterizing the risk of infection from Mycobacterium tuberculosis in commercial passenger aircraft using quantitative microbial risk assessment. <i>Risk Analysis</i> 29 :355-365.
10/2/14	Dose-response modeling I	Melnick RL, Nyska A, Foster PM, Roycroft JH, Kissling GE. 2007. Toxicity and carcinogenicity of the water disinfection byproduct, dibromoacetic acid, in rats and mice. <i>Toxicology</i> 230 :126-136.
10/9/14	Applications of assessment Exposure Assessment DUE	Guest lecturer Tim Frederick, US Environmental Protection Agency
10/16/14	Risk assessment project	Guest Tracy Ayers, an SPH PhD student, will present her project from a past semester of Risk Assessment. You will have the opportunity to see and ask questions about a completed project

Date	Class Topic	Reading
10/23/14	Dose-response modeling II	DuPont HL, Chappell CL, Sterling CR, Okhuysen PC, Rose JB, Jakubowski W. 1995. The infectivity of <i>Cryptosporidium parvum</i> in healthy volunteers. <i>New England Journal of Medicine</i> 332 :855-859. Teunis PF, Moe CL, Liu P, E Miller S, Lindesmith I, Baric RS, Le Pendu J, Calderon RL. 2008. Norwalk virus: how infectious is it? <i>Journal of medical virology</i> 80 :1468-1476.
10/30/14	Risk characterization I	Haas CN, Crockett CS, Rose JB, Gerba CP, Fazil AM. 1996. Assessing the risk posed by oocysts in drinking water. <i>Journal-American Water Works Association</i> 88 :131-136. Hunter PR, Fewtrell L. 2001. Acceptable risk. <i>World Health Organization Water Quality Guidelines, Standards and Health.</i> Gerba CP, Rose JB, Haas CN. 1996. Sensitive populations: who is at the greatest risk? <i>International journal of food microbiology</i> 30 :113-123.
11/6/14	Risk characterization II: using Monte Carlo simulation Dose-response DUE	Havelaar AH, De Hollander A, Teunis P, Evers EG, Van Kranen HJ, Versteegh J, Van Koten J, Slob W. 2000. Balancing the risks and benefits of drinking water disinfection: disability adjusted life-years on the scale. <i>Environmental health perspectives</i> 108 :315. Karavarsamis N, Hamilton A. 2010. Estimators of annual probability of infection for quantitative microbial risk assessment. <i>Journal of Water and Health</i> 8 :365-373. EPA. 1995. <i>Guidance for Risk Characterization</i>
11/13/14	Risk communication: Guest lecturer Dr. Christine Prue, CDC	
11/20/14	Variability and uncertainty in risk modeling Risk characterization DUE	Kelly EJ, Campbell K. 2000. Separating variability and uncertainty in environmental risk assessment—Making choices. <i>Human and ecological risk assessment</i> 6 :1-13. Thompson KM, Graham JD. 1996. Going beyond the single number: using probabilistic risk assessment to improve risk management. <i>Human and Ecological Risk Assessment</i> 2 :1008-1034.
11/27/14	THANKSGIVING BREAK	NO CLASS
12/4/14	Poster presentations	Class meets at Visualization Wall, 4th floor of Petit Science Center