DEPARTMENT: Global Health

COURSE NUMBER: GH580/EH546   SECTION NUMBER 000   SEMESTER: Spring 2013

CREDIT HOURS: 2 academic credit hours for matriculating graduate students at Emory University. Surveillance public health physicians, veterinarians and nurses may take the course for Continuing Medical Education (30 contact hours), and Continuing Education (3.0 units) respectively. Veterinarians may also take the course for credit for the AAVSB requirements. Other surveillance practitioners may take the course for Continuing Education or professional development*

MEETING TIMES: January 7, 8, 9, 10, 11, and 12, 2013; 8:30 am – 5:30 pm
Lecture Room: CNR Auditorium

INSTRUCTOR NAMES/CONTACT INFORMATION:

**Michael J. Beach, PhD**
Associate Director for Healthy Water
National Center for Emerging and Zoonotic Diseases
Centers for Disease Control and Prevention
mbeach@cdc.gov

**Andi L. Shane, MD, MPH, MSC**
Assistant Professor of Pediatrics and Global Health
Division of Infectious Disease
Emory University School of Medicine
Emory Children’s Center
ashane@emory.edu

**Patricia M. Griffin, MD**
Chief, Enteric Diseases Epidemiology Branch
Division of Foodborne, Waterborne, and Environmental Diseases
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention
pgriffin@cdc.gov

**Benjamin Silk, PhD, MPH**
Enteric Diseases Epidemiology Branch
Centers for Disease Control and Prevention
404-639-0536
ekj8@cdc.gov

**Aron Hall, DVM, MSPH, DACVPM**
Division of Viral Diseases
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention
ajhall@cdc.gov
404-639-1869

Coordinator for non-matriculating students:

**Pia Valeriano**
Associate Director for Continuing Education Program
Department of Global Health
pvaleri@emory.edu
404-727-3485

**Eric Mintz, MD, MPH**
Division of Foodborne, Waterborne, and Environmental Diseases
Centers for Disease Control and Prevention
edm1@cdc.gov
404-639-3461

**Eugene J. Gangarosa MD, MS**
Professor Emeritus, Department of Global Health
EJG1926@aol.com
770-491-0688

**John Painter, DVM, MS**
Lead, Epidemiology Team
Immigrant, Refugee, and Migrant Health Branch
Division of Global Migration and Quarantine
National Center for Emerging Zoonotic Infectious Diseases
Centers for Disease Control and Prevention
jpainter@cdc.gov
404-639-4448

**Robert V. Tauxe, MD, MPH**
Deputy Director, Division of Foodborne, Waterborne, and Environmental Diseases
National Center for Emerging and Zoonotic Infectious Diseases
rltauxe@cdc.gov
404-639-1603

**Jan Vinjé, PhD**
Division of Viral Diseases
National Center for Immunization and Respiratory Diseases
Centers for Disease Control and Prevention
jvinje@cdc.gov
404-639-3721

**Christine L. Moe, PhD**
Departments of Global Health, Environmental Health, and Epidemiology
Director, Center for Global Safe Water
cmoe@emory.edu, 404-727-9257
Claudia Nance Rollins, Room 6041
BRIEF COURSE DESCRIPTION
This is a course on the microbiology and surveillance of foodborne and waterborne diseases designed for public health practitioners and other students interested in the safety of food and water. It provides a broad overview of the major foodborne and waterborne diseases. The course describes how information from surveillance is used to improve public health policy and practice in ways that contribute to the safety of our food and water. We focus on the pathogens responsible for food- and water-transmitted diseases. We discuss the diseases they cause, the pathogenesis, clinical manifestations, reservoirs, modes of transmission, and epidemiology. We cover the transport, survival, and fate of pathogens in the environment, the concept of indicator organisms as surrogates for pathogens, the removal and inactivation of pathogens and indicators by water and wastewater treatment processes.

SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES
At the conclusion of this course students will be able to:

- Identify leading host and environmental factors in food and waterborne diseases (F&WBD)
- Identify leading etiological agents and their biological properties affecting their transmission, and the diseases they cause
- Understand how foodborne and waterborne disease surveillance systems operate and how the data from these systems are used; and how public policies have evolved from surveillance and outbreak investigations.
- Identify strategies and health infrastructures for the control of F&WBD
- Recognize the role of the hazardous analysis and critical control points (HACCP) strategy to identify risks in the production of food and water
- Understand the economic consequences of contaminated food products and outbreaks
- Facilitate networking among surveillance practitioners and CDC surveillance coordinators

LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES

Infectious Disease Concentration:
Basic microbiology of pathogens, major transmission routes of infectious diseases, pathogen virulence factors, relative burden of morbidity and mortality, and appropriate prevention and control strategies for infectious diseases.

ACADEMIC HONOR CODE
The RSPH requires that all material submitted by a student in fulfilling his or her academic course of study must be the original work of the student.
**EVALUATION**

1. This course is offered for two academic credit hours for matriculating graduate students at Emory University.

2. Surveillance public health physicians, veterinarians and nurses may take the course for Continuing Medical Education (30 contact hours), and Continuing Education (3.0 units) respectively. Veterinarians may also take the course for credit for the AAVSB requirements. Other surveillance practitioners may take the course for Continuing Education or professional development*

**Pre-course Exam.** Students enrolled for Continuing Education Credit are required to take a pre-course examination to provide a quantitative measure of pre-course knowledge. This will be compared to the results of the final exam, to assess whether a knowledge gap has been eliminated or narrowed. Continuing Education students will be asked to take this examination on January 7th at 7:30am before the first class meets. Further details will be sent by email. **Students enrolled for degree credit DO NOT need to be present for the pre-course exam.**

**Final Exam for Emory students** will be a take-home, open-book comprehensive exam that will focus on problem solving and will consist of true/false, matching and multiple choice questions. The exam will be posted on Blackboard on Monday January 7, 2013.

**Emory students must turn in their final exams by noon on Saturday Jan 19 via Blackboard.**

**All other students must turn in their final exams by email to Pia Valeriano by noon on Saturday Jan 19.**

*Only Emory degree candidates are required to go on the field trip and must take the final exam. Others must take the pre-test and post-test.

**Two reading responses.** There will be 10 discussion threads available pertaining to different articles in the recommended reading section. Students are asked to contribute 2 posts to any of the 10 discussions. Posts should consist of a thoughtful response (at least 3-5 sentences), suggest additional resources (webpages, articles, news stories, etc.) or respond to another student’s post. All posts are due the last day of class. (**JAN 13 AT 12:00PM**) 

ALL OF THESE ARE INDIVIDUAL ASSIGNMENTS AND SHOULD BE COMPLETED WITHOUT THE ASSISTANCE OF OTHERS.

**Grade Breakdown:**
20% "The Ghost Map" Quiz (take home – **DUE JAN 12 AT 5:30 PM**)  
20% Enteric Virus, Bacteria and Protozoa Table Assignment (take home – **DUE JAN 19 BY BLACKBOARD OR EMAIL**)  
10% Two reading responses on blackboard – **DUE JAN 12 AT 5:30 PM**  
50% Final Exam (take home - **DUE JAN 19 BY BLACKBOARD OR EMAIL**)  

**TEACHING ASSISTANTS:**

**Stephanie Gretsch**  
**Office Hours:** 8:00 AM-8:30 AM and 5:30 PM-6:00 PM  
**Location:** Claudia Nance Rollins (CNR) Auditorium  
**Email:** sgrets2@emory.edu **Tel:** (630) 699-4273

**Katherine Roguski**  
**Office Hours:** 8:00 AM-8:30 AM and 5:30 PM-6:00 PM  
**Location:** Claudia Nance Rollins (CNR) Auditorium  
**Email:** katherine.roguski@emory.edu **Tel:** (732) 939-6962
FIELD TRIP (required of all degree-seeking students; optional for continuing education students)
Friday January 11, 12:00 – 5:30 pm “Water and Wastewater Treatment” Hemphill water treatment plant and the Crooked Creek water reclamation plant.

REQUIRED TEXTBOOK AND READINGS
The Ghost Map: The Story of London’s Most Terrifying Epidemic and How it Changed Science, Cities, and the Modern World, by Steven Johnson (New and used copies available at Amazon. Please read BEFORE the first day of class.)

Control of Communicable Diseases Manual, edited by David L. Heymann, American Public Health Association, Washington DC 19th edition. Previous editions are also acceptable. Students will be expected to read, prior to each lecture, the sections of the required text corresponding to each lecture topic. Students are also asked to bring to class course handouts, readings, and this syllabus.

Diagnosis and Management of Foodborne Diseases: Primer for PH Practitioners. Revised by E.J. Gangarosa for Public Health Practitioners (Available on Blackboard. Please read BEFORE the first day of class.)

MMWR Surveillance Summaries/September 23, 2011 / Vol. 60 / No. SS--12 / Pg. 1 – 78 (Available on Blackboard)

- Surveillance for Waterborne Disease Outbreaks and Other Health Events Associated with Recreational Water — United States, 2007–2008

AND

MMWR Surveillance for Foodborne Disease Outbreaks - United States, 2008 in MMWR / September 9, 2011 /Vol, 60 / No. 35 (Available on Blackboard)

RECOMMENDED PUBLICATIONS, READINGS, AND MOVIES:
All readings are available on Blackboard unless marked otherwise.

- USEPA. Water on Tap: What you need to know. EPA 816-K-09-002, December 2009

Additional selected readings may be announced; those will be available to students on the Blackboard site or in print.

**OPTIONAL TEXTBOOKS**


**LAPTOP/CELL PHONE POLICY**

No open laptops during class. Please keep your cell phones off or on vibrate.
COURSE SCHEDULE

The class will meet from 8:30 – 12:00 and 1:30 – 5:30 daily, with a 10 minute break in each morning and afternoon session. Faculty will be available to meet with students in the classroom from 5:30 – 6:00 each day.

Program for DAY 1 – Monday, January 7

9:00 – 9:20 Course overview and discussion of syllabus – Dr. Christine Moe

9:20 – 10:50 Cholera as a Prototype for Diarrheal Diseases: a perspective of its “legacy”, its impact on public health, and research it stimulated culminating in a new paradigm for the treatment of life-threatening diarrheal diseases. Includes a video segment entitled ‘Cholera Today,’ – Dr. Gangarosa and Dr. Shane

10:50 – 11:00 Break

11:00 – 12:00 Cholera in Africa and Haiti – Dr. Eric Mintz

12:00 – 1:30 Lunch Break

1:30 – 2:30 Cholera in the Environment – Dr. Moe

2:30 – 3:30 Introduction to Surveillance – Dr. Ben Silk

3:30 – 3:40 Break

3:40 – 5:30 Introduction to Foodborne and Waterborne Pathogens and Infectious Diseases Principles – Dr. Christine Moe

Program for DAY 2 – Tuesday, January 8

8:30 – 10:00 Diarrhea pathogenesis – Dr. Gangarosa and Dr. Shane

10:00 – 10:10 Break

10:10 – 11:30 Overview of emerging foodborne pathogens and trends – Dr. Rob Tauxe

11:30 – 12:00 Video “Modern Meat”

12:00 – 1:30 Lunch Break

1:30 – 3:00 Foodborne and Waterborne Zoonoses – Dr. John Painter

3:00 – 3:10 Break

3:10– 4:30 Campylobacter and Salmonellosis: Epidemiology and Control – Dr. Rob Tauxe

SYLLABUS VERSION FROM DECEMBER 11, 2012
4:30 – 5:30  Sharing Shigella – Dr. Shane

Program for DAY 3 – Wednesday, January 9

8:30 – 9:40  Surveillance systems for foodborne and other acute enteric illnesses in the United States – Dr. Patricia Griffin

9:40 – 10:50  Estimates of foodborne illness acquired in the United States – Dr. Patricia Griffin

10:50-11:00  Break

11:00 – 12:00  Using outbreak data to estimate how many US illnesses can be attributed to various food commodities – Dr. Patricia Griffin

12:00 – 1:30  Lunch Break

1:30 – 3:00  Investigation of 2011 Listeriosis Outbreak – Dr. Ben Silk

3:00 – 3:10  Break

3:10 – 4:40  Waterborne Diseases Surveillance History and Overview – Dr. Michael Beach

4:40 – 5:30  Waterborne Protozoan Diseases – Dr. Michael Beach

Program for DAY 4 – Thursday, January 10

8:30 – 9:50  Interactive discussion about The Ghost Map and receive take home quiz – Dr. Gangarosa and Dr. Moe

9:50 – 10:00  Break

10:00 – 12:00  Enteric Viruses and Prions (Acute Viral Gastroenteritis, Hepatitis) and Current Research (Human challenge studies, hand sanitizers, etc.) – Dr. Moe

12:00 – 1:30  Lunch

1:30 – 2:50  Norovirus epidemiology (i.e., disease burden and attribution), outbreak surveillance via NORS, and some interesting outbreak examples – Dr. Aron Hall

2:50 – 4:00  CaliciNet surveillance system and targeted interventions against enteric viruses (antiviral, vaccine) – Dr. Jan Vinje

4:00 – 4:10  Break

4:10 – 5:30  Rotavirus – Dr. Shane
Program for DAY 5 – Friday, January 11

8:30 – 10:00  Environmental transmission routes and microbial indicator organisms – Dr. Moe

10:00 – 10:10  Break

10:10 – 12:00  Water and Wastewater Treatment – Dr. Moe

12:00 – 1:00  Lunch break – on the bus. Bus leaves at 12:30 PM. Bring your own bag lunch.

1:00 – 5:30  Field Trip: Water and Wastewater Treatment - Dr. Moe

Program for DAY 6 – Saturday, January 12

9:00 – 10:00  HAACP principles and practice – Dr. Gangarosa and Dr. Moe

10:00 – 10:50  Remembering the Global Burden of Food and Waterborne Diseases – UNICEF’s Children’s Summit video – Dr. Gangarosa

10:50 – 11:00  Break

11:00 – 12:00  Final exam review. Time for on-line course evaluation and to provide comments about course to instructors.
   Turn in a completed hard copy of “The Ghost Map” take home quiz.