

College of Public Health

Date approved by the home Department: 7/12/07

Date approved by the CPH Curriculum Committee:

I. COURSE NUMBER AND TITLES

Course Number: 173:158
Official Title: Public Health Laboratory Techniques
Transcript Title: Pub Health Lab Tech

II. BRIEF COURSE DESCRIPTION

Performing common laboratory techniques used in emerging infectious respiratory disease research and epidemiological surveillance laboratories; emphasis on techniques for culturing, characterization, and serological surveillance of exposure to influenza viruses.

III. CREDIT HOURS

1 semester hour

IV. SCHEDULING

Summer, annually

V. CROSS-LISTED COURSE NUMBER AND DEPARTMENT

None

VI. COURSE DIRECTOR / INSTRUCTORS

Course director & primary instructor: Gary L. Heil MS PhD
College of Public Health

Other instructors: Guest lecturers

VII. DEGREE PROGRAMS REQUIRING THIS COURSE

None

It is a required course for students seeking a Certificate in Emerging Infectious Diseases.

VIII. COURSE PRE-REQUISITES

None.

Before reporting to class students must complete the online courses Basic Biological Safety and Bloodborne Pathogens for College of Public Health. Certification of completed courses must be brought to class. These courses can viewed at <http://www.uiowa.edu/~hpo/training/trainingpage.htm>

IX. STUDENTS FOR WHOM THE COURSE IS INTENDED

Masters

X. RELATIONSHIP OF THIS COURSE TO OTHER COURSES

None

XI. TEACHING METHODS

The course is comprised of short lectures demonstrations followed by hands on laboratory exercises to provide student with actual experience working with standard laboratory methods.

XII. EVALUATION OF STUDENT PERFORMANCE

Students will be graded on a standard letter scale of A to F. Students will be evaluated by their class participation (50%) and a final open-note, multiple-choice examination (50%). Students who fully participate and attend every session will earn at least a B for the class participation portion of the overall grade. To earn an A in class participation, students must attend each session and demonstrate that they prepared for lectures beforehand (through familiarity with assigned readings, interacting with the lecturers, and actively participating in group exercises).

XIII. COURSE OBJECTIVES

At the end of the course the student will be able to:

1. Understand the laboratory skills used in identifying, culturing and characterizing infectious agents;
2. Describe the serological procedures involved in detecting previous infection with infectious agents;
3. Apply above laboratory techniques with a special emphasis on influenza A viruses; and
4. Understand the methods described above and the analysis of data resulting from their use.

XIV. INSTRUCTIONAL MATERIALS

There is no specific textbook for this course. Students will be provided with handouts and laboratory exercises that correspond to classroom activities.

XV. TOPIC OUTLINE

Day	Title	comments
1	Good laboratory practices / laboratory skills primer Influenza viral RNA (vRNA) isolation from clinical samples Set up microneutralization (MN) Assay plate	~ 4hrs
2	Reverse Transcription (RT) to make cDNA from vRNA Setup and run subtype specific PCR from RT products Viral culture on embryonated chicken eggs and MDCK cell culture	~2.5 hrs
3	Agarose gel electrophoresis of subtype specific PCR Wash and Fix MN plate Wash and prepare 0.5% blood for HA and HI	~2.5 hrs
4	Real-time PCR for identification of human and avian Influenza Perform ELISA on MN plate	~4 hrs
5	Analysis of Real-time PCR Reed-Munch of MN ELISA data Harvest virus from Eggs and MDCK cell culture and perform HA Perform HI to type sera against prototype viruses Open-notes, multiple-choice, examination	~2.5 hrs

Last revised November 15, 2007