

14-78a
AP-9/30/14
Senate Info 11/4/14

Undergraduate Distance Education Review Form

(Required for all courses taught by distance education for more than one-third of teaching contact hours.)

Existing and Special Topics Course

Course: BIOL 119 Emerging Diseases

Instructor(s) of Record: Carl S. Luciano & David H. Pistole

Phone: 357-4462

Email: luciano@iup.edu

Step Two: Departmental/Dean Approval

Recommendation: Positive (The objectives of this course can be met via distance education)

Negative

[Signature]
Signature of Department Designee

9/22/14
Date

Endorsed:

[Signature]
Signature of College Dean

9/25/14
Date

Forward form and supporting materials to Liberal Studies Office for consideration by the University-wide Undergraduate Curriculum Committee. Dual-level courses also require review by the University-wide Graduate Committee for graduate-level section.

Step Three: University-wide Undergraduate Curriculum Committee Approval

Recommendation: Positive (The objectives of this course can be met via distance education)

Negative

[Signature]
Signature of Committee Co-Chair

10/14/14
Date

Forward form and supporting materials to the Provost within 30 calendar days after received by committee.

Step Four: Provost Approval

Approved as distance education course

Rejected as distance education course

[Signature]
Signature of Provost

10/21/14
Date

Forward form and supporting materials to Associate Provost.

Received

OCT 14 2014

Liberal Studies

Received

SEP 25 2014

Liberal Studies



A. Provide a brief narrative rationale for each of the items, A1- A5.

A1. How is/are the instructor(s) qualified in the distance education delivery method as well as the discipline?

I have attended IUP workshops on LMS technology for both Moodle and D2L including the 2-day D2L boot camp workshop and also a follow-up in the summer.

During the time frame from 1996-2006 I was co-author of three successful national-level grant projects (two NSF and one NCAT) that used web-based technology to deliver course content for both lecture and laboratory components for two Biology majors' courses.

I have consulted with personnel from the IT Services Center and discussed best practices in distance education as well as specific issues related to the current proposal.

In terms of disciplinary qualifications I have a Ph.D. in biochemistry with a specialty in virology. I have been teaching cell biology, genetics and virology at IUP since 1986. I developed the original Emerging Diseases course in 2001 and the revised course in 2013 to meet the new Liberal Studies non-lab science course requirements..

Course co-developer Dr. Pistole has attended IUP workshops on LMS instructional technology for both WebCT and D2L. He has also been teaching an online course in the Winter Session and Summer School for the past three years. Prior to teaching that course Dr. Pistole met with the university Online Learning Specialist (David Porter) to discuss the course. In the late 1990's he received a NSF ILI grant for a server to use on-line resources in his Principles of Biology course. He developed his own delivery system with quizzes and lecture and laboratory resources such as Cells Alive and the lab manual. About four years after IUP began using WebCT it caught up to what he had done on his own server and he switched over to it at that time.

A2. How will each objective in the course be met using distance education technologies?

Overview

The distance education course will be organized in a set of modules. Course content material will be presented or delivered within the framework of this modular organization scheme and the individual course modules may align with more than one individual EUSLO learning objectives. For example, some activities such as case studies that illustrate and model the use of the scientific method in epidemiological investigations (EUSLO Objective 2) will be used in several of the content modules.

Objective 1

Define the general characteristics of the major groups of agents that cause infectious disease

Students must gain a basic understanding of the important types of biological agents that cause infectious disease, state the differences among the groups and recognize characteristics or give

examples of each group. This fundamental understanding is necessary as a basis for the rest of the course. This body of content information involves introductory-level microbiology and cell biology and is best delivered through mini-lectures, animations and assigned readings available in the textbook and on the internet.

I will use online exam questions to assess student progress toward Objective #1. Prior to each exam students will have an opportunity to review content material using self-quizzes, review questions, study guides. Students will have an opportunity to interact with the instructor for questions and/or discussion using chat rooms on the LMS.

Objective 2

Explain the use of the scientific method as it is used to investigate infectious disease and improve public health.

To understand the historical development of public health and clinical medicine as branches of the natural sciences, students must have a general understanding of the methods and procedures used in relevant investigations.

I will use writing assignments, discussion topic assignments and exam questions to assess student progress toward Objective #2. Students will read about case studies, epidemiological investigations or model cases of historical significance or will view videos that illustrate methodology. I will expect students to be able to recognize, explain and discuss the steps of the scientific method as used in these examples. Students will discuss and explore these methods on the course discussion forum.

Objective 3

Appraise the risk of infectious disease in modern society.

To understand the likelihood of the emergence of infectious diseases in a population or their spread within and among populations, students need a basic understanding of routes of transmission, portals of entry and immunity.

I will use discussion topic assignments, writing assignments and exam questions to assess student progress toward Objective #3. Assignments and exams will require students to define, describe, discuss and explain the routes of transmission, portals of entry and risk factors for infectious diseases. Assignments and exams will also require students to criticize and examine the effectiveness of the common strategies for disease prevention. Students will also discuss prevention strategies and their efficacy on the course discussion forum.

Objective 4

Define, classify and analyze the natural processes that influence disease ecology and shape the evolution of infectious disease agents.

To understand how disease agents evolve new and potentially more dangerous properties students need a basic understanding of the agents' relationship to their environment and their repertoire of responses to environmental changes.

Writing assignments, discussion assignments and exam questions will require students to recognize and define the impacts of factors such as climate change, habitat disruption, economic forces, technological improvements and human behavioral changes on the patterns of infectious disease. Assignments and exams will also require students to examine, compare and contrast the events of real-life outbreaks to emphasize the impacts of these forces. Assignments and exams will require students to define and explain evolutionary phenomena such as mutation, selection and drug resistance. Students will also discuss disease evolution on the course discussion forum.

Objective 5

Appraise and evaluate the components of a society's response to challenges posed by emerging infectious disease.

To understand how the interaction between science and society shapes public health decisions students must appreciate that these health decisions have cultural as well as scientific components. Writing assignments, discussion assignments and exam questions will require students to evaluate the impacts and influences of political and economic factors on public health practice, priorities and responses to disease outbreaks. Assignments and exams will require students to assess and evaluate risks and benefits associated with personal and public health decisions. Students will examine and discuss public health measures on the course discussion forum.

A3. How will instructor-student and student-student, if applicable, interaction take place?

There will be specific times, posted on D2L, for chat with instructor. Set times will vary to ensure that all students have a chance to participate. Appointment times will also be made available. The instructor will set up and monitor a class discussion forum for asynchronous interactions with students as they post their comments and responses. Telephone, email and LMS INTERACTIVE TOOL interaction will also be available.

A4. How will student achievement be evaluated?

Student Evaluation Summary

1. Exams (30% total)
 - 20% Module exams #1-4 at 5% each – multiple choice questions and essay questions
 - 10% Final Exam-essay questions
2. Writing Assignments (20% total)
 - 4 assignments at 5% each-500 word summary of video viewing assignment
3. Emerging Disease Profile (20% total)

- 15% Emerging disease profile-students will write a 1000-word profile or case study of one emerging disease based on current literature and current disease status
- 5% Peer review of disease profile written by another student

4. Non-textbook Reading (15% total)

- 15% Summary and critique of the non-textbook reading.

5. Forum Discussion (15% total)

- 15% Total for all Forum Discussion-all class assignments will be discussed

A5. How will academic honesty for tests and assignments be addressed?

The instructor will use Turnitin to check for plagiarism. Exams and assignments will include an academic integrity clause. Tests will be timed.

B. Place the Undergraduate Distance Education Review Form on top of the Proposal and then submit to the department or its curriculum committee the responses to items A1-A5, the current official syllabus of record, along with the instructor developed online version of the syllabus, and the sample lesson. This lesson should clearly demonstrate how the distance education instructional format adequately assists students to meet a course objective(s) using online or distance technology. It should relate to one concrete topic area indicated on the syllabus.

B1. Distance Education Syllabus

BIOL 119 Emerging Diseases

3c-0l-3cr

Instructor

Dr. Carl S. Luciano
Room 19 Weyandt
724-357-4462
luciano@iup.edu

Online Office Hours: TBA

Catalog Description

Pre-requisites: Non-Biology Department majors and minors only

Introduces infectious diseases and their biological basis as well as the social, historical and ethical consequences of these types of afflictions. Covers background material such as the germ theory of disease, the cell theory, disease transmission and the structure of scientific knowledge at a fundamental level. Emphasizes ecology, epidemiology, evolution and control of infectious agents as well as prevention and treatment of infectious disease. Includes specific cases of emerging or re-emerging diseases with an emphasis on current events related to disease outbreaks. (Does not count toward Biology Electives, Controlled Electives, or Ancillary Sciences for Biology majors and minors.)

Course Outcomes:

Upon completion of the course students will be able to:

1. Define the general characteristics of the major groups of agents that cause infectious disease
2. Explain the use of the scientific method as it is used to investigate infectious disease and improve public health.
3. Appraise the risk of infectious disease in modern society.
4. Define, classify and analyze the natural processes that influence disease ecology and shape the evolution of infectious disease agents.
5. Appraise and evaluate the components of a society's response to challenges posed by emerging infectious disease.

Required Textbook

The Coming Plague by Laurie Garrett, 1995, Penguin Books, New York, ISBN # 0 14 02.5091 3.

Supplemental/Non-textbook Reading (Choose one)

Kolata, Gina. 1999. Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It. Farrar, Straus, and Giroux, New York, ISBN # 0-374-15706- 5.

Nagami, Pamela. 2002. The Woman with a Worm in Her Head: And Other True Stories of Infectious Disease. St. Martin's Griffin, New York, ISBN #0-312-30601-6

Quammen, David. 2012. Spillover: Animal Infections and the Next Human Pandemic. W. W. Norton, New York, ISBN #978-0-393-06680-7.

Sachs, Jessica S. 2007. Good Germs, Bad Germs: Health and Survival in a Bacterial World. Hill and Wang (Farrar, Straus and Giroux), New York, ISBN-13: 978-0-8090-5063-5.

Required Technology Skills and Software Technology Skills

Students enrolled in this course should possess the following technology skills:

The ability to access information via the Web

The ability to use the learning management system and associated tools, including discussion/chat, quizzing, and assignment submission features

The ability to use word processing software and to save in Rich Text Format

The ability to use Internet communication tools, specifically e-mail

If using LMS INTERACTIVE TOOL (free software) student will need a web cam or video camera.

The ability to demonstrate netiquette (appropriate online conduct)

Required Software

You will need the following software to participate in all course activities. You can download these software packages for free if you do not currently have them.

Adobe Reader (<http://get.adobe.com/reader/>)

Flash Player (<http://get.adobe.com/flashplayer/>)

Technical Support

To obtain technical support for computer issues related to this course, please contact Indiana University of Pennsylvania's through the IUP IT Support Center online at: <http://www.iup.edu/itsupportcenter/help/default.aspx>. Depending on the nature of your problem, you may be able to report it directly on this page or you may need to move to the IUP ihelp system by clicking on the ihelp service link. In either case a technician will get back to you to help with your problem.

Participation Requirements

Course modules will be assigned according to the Course Schedule and include objectives, lesson outline and expectations for completing writing and other assignments. The lesson outline document for each module will contain most of the information that you need for that module. You are expected to actively participate in all aspects of the course. This includes completion of assigned readings, writing assignments, and tests or self-quizzes and participation in online discussions. Each course module runs for three days for a total of five modules. All work assigned for the module must be turned in by the deadline date and time specified in the lesson outline for the module. Late work will not be accepted. I suggest that you read through all course content in the assigned module to get a feel for what is expected and to help you plan your time use wisely.

You must have one original post and two responses to other student's posts for each of the writing, viewing or discussion assignments, as specified in the lesson outline and assignment sheets. You are also expected to read all postings for the module's discussions. The instructor will be assigning groups to serve as the weekly discussion leaders. This means

prior to your group's assigned module, you will want to prepare your discussion items so that you are ready and can post to the discussion boards as close to the beginning of the module as possible.

Online Etiquette

This section includes my expectation of how students will conduct themselves during this course.

Discussion, chat, and e-mail spaces within this course are for class purposes only, unless otherwise stated. Please remember to conduct yourselves professionally. Unlike in the classroom setting, what you say in the online environment is documented and not easily erased or forgotten.

Avoid using ALL CAPS, sarcasm, and language that could be offensive.

Read all posting before posting your response so as to not repeat information.

Keep posting brief and to the point.

Focus on one topic at a time when posting or replying to posts.

Student with Disabilities

If you are a student who has a documented disability and need special accommodations, the instructor will work with you to provide reasonable accommodation to ensure you a fair opportunity to perform in the class. Please advise the instructor in the first week of the semester regarding the disability and the desired accommodations. Assistance for individuals with disabilities is available through IUP Disability Support Services at <http://www.iup.edu/disabilitysupport> or at 724-357-4067.

Academic Integrity Policy

Indiana University of Pennsylvania expects a full commitment to academic integrity from each student. This syllabus represents a contract between you and the instructor of this course and that you agree to follow the rules and expectations set up therein.

Violations of academic integrity include but are not limited to the following:

Providing or receiving unauthorized assistance in any part of this coursework, including papers, writing assignments, exams or any other course assignment
Using unauthorized materials and resources during quizzes and tests.
Possessing course examination materials without the prior knowledge of the instructor.
Plagiarizing: using papers, dissertations, essays, reports, speeches, and oral presentations, take-home examinations, computer projects, and other academic exercises or representing of ideas or facts beyond common knowledge, without attribution to their originators.
Representing someone else's work as your own

Engaging in behaviors that are disruptive, threatening, intimidating or bullying to others
Using computer technology in any way other than for the purposes intended for the course.

Please note that the IUP faculty use a variety of technologies to check the authenticity of student work. Violations of academic integrity will be handled per IUP's Academic Integrity Policy and Procedures.

Failure to comply with the policies and procedures may result in a decrease in grade, involuntary withdrawal from an academic program, suspension, expulsion, or rescission of a conferred degree. IUP's full policy on academic integrity is available in the Undergraduate Catalog under Academic Policies at <http://www.iup.edu/registrar>.

Student Evaluation

1. Exams (30% total)

20% Module exams #1-4 at 5% each—multiple choice questions and essay questions
10% Final Exam-essay questions

The terminating activity for the first four modules will be an exam that will include essay questions as well as multiple-choice questions. Essay questions will be derived from lecture material, forum discussions, videos and readings and the exams will also test knowledge of science content. The fifth exam (Aka Final Exam) will be available on the last day of the session and will consist entirely of essay questions. The Final Exam will be comprehensive in the sense that in their answers to essay questions students will be expected to synthesize material, concepts and ideas from all five modules.

2. Writing Assignments (20% total)

20% Writing Assignments—4 at 5% each-500 word summary of video viewing assignment

Students will view one assigned documentary video in each of Modules 1-4 and write a 500 word summary/reaction to the video. In addition to a summary of the main points of the video, students will be expected to respond to discussion questions provided by the instructor and to supply their own opinions and reflections on the material presented in the video.

3. Emerging Disease Profile (20% total)

15% Emerging disease profile
5% Peer review of disease profile

Students will select one emerging infectious disease and develop a “disease profile” or “case study” of the disease. The profile will be based on factual and current information assembled from articles and other sources such as current newspapers, newsmagazines, popular science and medical magazines (e.g. Discover Magazine, Science, Nature), USG public health outlets such as CDC publications and medically-oriented web sites. The profile will be approximately 1000 words in length. Each student will also critique or peer-review a second profile written by one of the other students in the class.

4. Non-textbook Reading (15% total)

15% Summary and critique of the non-textbook reading.

Students will read one of the four non-textbook readings and write a summary and critique of at least 500 words and no more than 1000 words. In addition to a summary of the main points of the book, students will address larger questions and issues. For example, they will be expected to explain how the content of the non-textbook reading fits in with other course materials such as articles, videos and textbook readings. They will be expected to explain how the material described in the non-textbook reading is likely to impact clinical and public health practices and methods. They will be expected to describe any impact on society in general and also to contribute their own original thoughts/ideas/comments/opinions and reflections.

5. Forum Discussion (15% total)

15% Total for all Forum Discussions

Every assignment including the disease profiles will be discussed on the class forums. The discussions will involve both small group and the entire class.

Grading Scale

Grading scale: A 90-100, B 80-89, C 70-79, D 60-69, F 59 and below

Online Course Schedule framed for a 3 week winter or summer session

Module 1: The Diseases of Filth (Days 1-3)

Lectures 1 and 2 on the types of disease agents and the development of the Germ Theory

Textbook Readings: Introduction, Ch. 1 Machupo, Ch. 9 Microbe Magnets

Other Reading Assignments: article on a current disease outbreak

Video Assignment: Typhoid Mary-the Most Dangerous Woman in America

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Choose topic for disease profile assignment

Exam 1-must pass to move on to next module

Module 2: The Age of Optimism (Days 4-6)

Lectures 3 and 4 on the fundamentals of the immune system, vaccines and disease transmission

Textbook Readings: Ch. 2 Health Transitions, Ch. 3 Monkey Kidneys and the Ebbing Tide

Other Reading Assignments: article on a current disease outbreak

Video Assignment: The Shot Felt Round the World

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Exam 2

Module 3: Disease Cowboys (Days 7-9)

Lectures 5 and 6 on Ebola and other filoviruses, Lassa Fever, cultural context of disease outbreaks in the Third World

Textbook Readings: Ch. 5 Yambuku, Ch. 7 N'zara

Other Reading Assignments: article on a current disease outbreak

Video Assignment: The Plague Fighters

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Exam 3

Module 4: 1976 and the End of Optimism (Days 10-12)

Lectures 7, 8 and 9 on Legionnaire's Disease, Influenza and the Origin of AIDS

Textbook Readings: Ch. 6 The American Bicentennial, Ch. 10 Distant Thunder

Other Reading Assignments: article on a current disease outbreak

Video Assignment: The Killer Flu

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Disease Profile due on Day 12

Exam 4

Module 5: Wrap-up/Emerging Diseases in the Future (Days 13-15)

Lectures: none

Textbook Readings: none

Other Reading Assignments: article on a current disease outbreak

Video Assignment: none

Forum assignments: Discussion of non-textbook readings, journal article reading assignment, disease profiles

Writing assignments: Critique of non-textbook reading due on day 13, Peer review of one disease profile due on Day 14

Final Exam Day 15

B2. Current Syllabus of Record

I. Catalog Description

BIOL 119 Emerging Diseases

3c-0l-3cr

Pre-requisites: Non-Biology Department majors and minors only

Introduces infectious diseases and their biological basis as well as the social, historical and ethical consequences of these types of afflictions. Covers background material such as the germ theory of disease, the cell theory, disease transmission and the structure of scientific knowledge at a fundamental level. Emphasizes ecology, epidemiology, evolution and control of infectious agents as well as prevention and treatment of infectious disease. Includes specific cases of emerging or re-emerging diseases with an emphasis on current events related to disease outbreaks. (Does not count toward Biology Electives, Controlled Electives, or Ancillary Sciences for Biology majors and minors.)

II. Course Outcomes and Assessment (Expected Undergraduate Student Learning Outcomes-EUSLO)

The student will be able to:

Objective 1

Define the general characteristics of the major groups of agents that cause infectious disease

Expected Student Learning Outcomes 1

Informed Learners

Rationale

Assignments and exams will require students to name the major groups of biological agents that cause infectious disease, state the differences among the groups and to recognize illustrations or give examples of each group.

Objective 2

Explain the use of the scientific method as it is used to investigate infectious disease and improve public health.

Expected Student Learning Outcome 2

Empowered Learners

Rationale

Assignments and exams will require students to recognize, explain and discuss the steps of the scientific method as used in case studies of infectious disease investigations.

Objective 3

Appraise the risk of infectious disease in modern society.

Expected Student Learning Outcomes 1 and 2

Informed Learners and Empowered Learners

Rationale

Assignments and exams will require students to describe, discuss and explain the routes of transmission, portals of entry and risk factors for infectious diseases. Assignments and exams will also require students to criticize and examine the effectiveness of the common strategies for disease prevention.

Objective 4

Define, classify and analyze the natural processes that influence disease ecology and shape the evolution of infectious disease agents.

Expected Student Learning Outcomes 1 and 2

Informed Learners and Empowered Learners

Rationale

Assignments and exams will require students to recognize and define the impacts of factors such as climate change, habitat disruption, economic forces, technological improvements and human behavioral changes on the patterns of infectious disease. Assignments and exams will also require students to examine, compare and contrast the events of real-life outbreaks.

Objective 5

Appraise and evaluate the components of a society’s response to challenges posed by emerging infectious disease.

Expected Student Learning Outcome 3

Responsible Learners

Rationale

Assignments and exams will require students to evaluate the impacts and influences of political and economic variables on public health practices and priorities. Assignments and exams will require students to assess and evaluate risks and benefits associated with personal and public health decisions.

III. Course Outline

Unit One: Introduction

(14 hrs.)

- Hypotheses, Experiments, Theories (1 hr.)
 - Structure of science and its empirical basis
 - Types of data involved in biomedical and epidemiological research

- The Cell Theory (2 hrs.)
Evidence for the Cell Theory
Types of cells and their characteristics
- The Germ Theory of Disease (2 hrs.)
Early ideas about disease
Sanitarians, progressives and urban reform
The work of Pasteur, Koch and others establishes the modern Germ Theory
- Disease Transmission (2 hrs.)
Nomenclature
Routes of transmission and portals of entry
Examples
- Body Defenses Against Infectious Disease (1 hr.)
Physical and chemical defenses
Innate immunity
Adaptive immunity and vaccination
- The Eradication of Smallpox (1 hr.)
Brief history of smallpox disease
Why smallpox was a good candidate for eradication
Eradication campaign of the 1970s, including social and political factors
- Health Transitions (2 hrs.)
Technological advances of the 20th Century (antibiotics, vaccination, and sanitation) lead to the “Age of Optimism”
- The Rise of the “Disease Cowboy” culture (3 hrs.)
Typhoid and the incarceration of Typhoid Mary
Brazilian outbreak of bacterial meningitis and more recent outbreaks
US intervention in Lassa Fever, Machupo and other outbreaks

Exam One (1 hr.)

Unit Two: Microbe Magnets (13 hrs.)

- Urban Centers of Disease (1 hr.)
Diseases of dirt and overcrowding: tuberculosis, cholera, syphilis
- Legionnaire’s Disease (1 hr.)
Philadelphia outbreak of 1976 and the federal response
Problematic identification of causative agent
An old disease gets a new name
- Feminine Hygiene and Toxic Shock Syndrome (1 hr.)
Women join the workforce and alter vaginal ecology
- Ebola and related filoviruses (3 hrs.)
Outbreaks in Marburg, Yambuku, Kikwit and Reston
- Parasitic Diseases (2 hrs.)
Malaria, Toxoplasmosis, macroscopic parasites
- Emerging Tick-borne Diseases (1 hr.)
Lyme Disease
Ehrlichiosis

- Viral Diseases
 - Polio in the 20th Century (3 hrs.)
 - An emerging disease associated with clean water
 - Polio hysteria
 - The Sabin/Salk Vaccine War
 - Eradication campaign
 - Discussion of Supplemental Reading (1 hr.)
- Exam Two** (1 hr.)
- Unit Three: Emerging Viruses** (13 hrs.)
- The Original “Swine Flu” of 1976 (2 hrs.)
 - Outbreak among US Army troops
 - Vaccine controversy and fiasco
 - Influenza Pandemics in 1918 and 2009 (2 hrs.)
 - Possible sources of 1918 virus and Spanish Flu pandemic
 - Multiple genetic reassortments and the new H1N1 2009 strain
 - Reconstruction of the 1918 Flu Virus (2 hrs.)
 - Taubenberg and the Armed Forces Institute of Pathology specimens
 - Hultin’s work with frozen samples from Alaska
 - What can we learn from the reconstructed Spanish Flu virus and is it worth it?
 - Hantaviruses and the “Navajo Flu” (1 hr.)
 - Hypotheses About the Origins of HIV/AIDS (2 hrs.)
 - Natural history of HIV and related viruses
 - Competing hypotheses (Cut Hunter, Heart of Darkness, OPV, Used Syringes) and the evidence for/against each
 - Political and Societal Reaction to HIV/AIDS (3 hrs.)
 - The conservative establishment’s attitude toward a disease of “Homosexuals, Haitians and Heroin addicts”
 - Competing priorities within the gay community
 - Discovery of the AIDS virus-who gets the credit?
 - The “Age of Optimism” ends
 - Discussion of Supplemental Reading (1 hr.)

Culminating Experience: Exam Three (2 hrs. during Final Exam Week)

IV. Evaluation Methods

60% Exams

10% Writing Assignments

20% Supplemental Reading

10% Class Participation: There will be a number of assigned in-class discussion questions during the semester. Students will receive a set of discussion questions for each chapter in the textbook. They will form groups in class to discuss and answer the questions, and they will turn in a written copy of their answers for credit.

V. Grading Scale

Grading Scale: A= 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 59% and below

VI. Undergraduate Course Attendance Policy

The course attendance policy will follow the IUP University-wide undergraduate catalog attendance policy.

VII. Required Textbook

Garrett, Laurie. 1995 The Coming Plague. Penguin Books, New York, ISBN # 0 14 02.5091 3.

This is an older book but it is not out of date because it uses a narrative and highly personal approach to its topics rather than an expository or pedantic approach. The author consistently presents material from the perspective of participants in historical events (often via interviews) or of individuals who have actually suffered from the diseases being discussed. In 2012 Garrett's book was listed on Slate.com 2012 as one of the "best books" on pandemics available for non-scientists and was also the consensus choice as a non-majors textbook by the educators' listserv of the American Society for Microbiology.

Supplemental Non-textbook Reading: (Choose Two)

Kolata, Gina. 1999. Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It. Farrar, Straus, and Giroux, New York, ISBN # 0-374-15706-5.

Nagami, Pamela. 2002. The Woman with a Worm in Her Head: And Other True Stories of Infectious Disease. St. Martin's Griffin, New York, ISBN #0-312-30601-6

Quammen, David. 2012. Spillover: Animal Infections and the Next Human Pandemic. W. W. Norton, New York, ISBN #978-0-393-06680-7.

Sachs, Jessica S. 2007. Good Germs, Bad Germs: Health and Survival in a Bacterial World. Hill and Wang (Farrar, Straus and Giroux), New York, ISBN-13: 978-0-8090-5063-5.

Suggested Readings

Barry, John M. 2004. The Great Influenza. Viking Press, New York.

- Bourdain, Anthony 2001. Typhoid Mary-an Urban Historical. Bloomsbury Press, New York.
- Crosby, Molly Caldwell 2006. The American Plague. Berkeley Publishing Group, New York.
- Fenn, Elizabeth A. 2001. Pox Americana: the Great Smallpox Epidemic of 1775-1782. Hill and Wang (Farrar, Straus and Giroux), New York.
- Garrett, Laurie 2000. Betrayal of Trust: The Collapse of Global Public Health. Hyperion, New York.
- Hochschild, Adam 1998. King Leopold's Ghost. Houghton Mifflin, Boston.
- McNeill, W. H. 1976. Plagues and Peoples. Anchor Books, New York.
- Oshinsky, David M. 2006. Polio: An American Story. Oxford University Press, Oxford

VIII. Special Resource Requirements

None

IX. Bibliography

- Baron, Ellen Jo, Robert S. Chang, Dexter H. Howard, James N. Miller and Jerrold A. Turner. 1994. Medical Microbiology A Short Course. John Wiley and Sons, New York.
- Bauman, Robert W. and Elizabeth Machunis-Masuoka. 2010. Microbiology with Diseases by Taxonomy (3rd ed.) Prentice-Hall. New York.
- Bazin, Herve. 2000. The Eradication of Smallpox. Academic Press, San Diego.
- Bookchin, Amy and Jim Schumacher. 2004. The Virus and the Vaccine. St, Martin's Griffin, New York.
- Brown, Kevin. 2006. The Pox: the Life and Near Death of a Very Social Disease. Sutton Publishing, Phoenix Mill.
- Bud, Robert. 2007. Penicillin: Triumph and Tragedy. Oxford University Press, Oxford.
- Collier, Richard. 1974. The Plague of the Spanish Lady. Atheneum, New York.
- Crosby, Alfred W. 1989. America's Forgotten Pandemic: The Influenza of 1918. Cambridge University Press, Cambridge.
- Cartwright, F. F., and M. D. Biddis. 1972. Disease and History. Dorset Press, New York.

- Crawford, Dorothy H. 2007. Deadly Companions: How Microbes Shaped Our History. Oxford University Press, Oxford.
- Curtin, Philip D. 1998. Disease and Empire. Cambridge University Press, Cambridge.
- Despomier, D., Robert W. Gradz, Peter J. Hotez and Charles A. Knirsch 2005. Parasitic Diseases (5th ed.). Apple Trees Productions LLC, New York.
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B3. Sample Distance Education Assignment

Writing Assignment: The Shot Felt Round the World

I. Introduction

Polio (aka poliomyelitis or infantile paralysis) is one of the most notorious emerging diseases in human history. This assignment will help you to understand how the disease emerged in the 20th Century, how it was fought and-hopefully how it is now on the brink of complete eradication. The assignment will also help you to understand why the 1950's and 1960's are considered the "Age of Optimism" in the struggle against infectious disease.

II. Instructions

- 1) Log on to the Internet Archive video web site <https://archive.org/>
- 2) Locate the video entitled The Shot Felt Round the World (the only version available may have subtitles-don't worry-the people actually are speaking English.
- 3) View the video. It is about an hour long. The video is a documentary about the development of the first polio vaccine in the 1950s.
- 4) Use the discussion questions and discussion points given below to guide your viewing and be prepared to discuss the questions and points in the course forum and in the writing assignment on this video.
- 5) To receive credit for this assignment you must complete both the writing assignment and forum discussion assignment as explained in Section V below...

III. Discussion Questions and Points

- 1) What was American society's attitude toward polio in the early 1950's?
- 2) Polio is described as a "disease of cleanliness"-not the way we usually think of disease. Explain the idea of a "disease of cleanliness"? Do you know of any other such diseases?
- 3) Why was the March of Dimes very interested in developing a polio vaccine as quickly as possible?
- 4) What kind of pathogen causes polio? How is it transmitted from person to person?
- 5) What is a vaccine and how does it work?
- 6) Explain the difference between a "killed" vaccine and a "live" vaccine. The Salk vaccine was which type?
- 7) Among virologists of the early 1950's what was the conventional wisdom about a "killed" vaccine for polio?
- 8) What was the "risk/reward" tradeoff associated with Salk's vaccine?

- 9) What was the significance of the Watson Home for Crippled Children?
- 10) What were the “Pittsburgh vaccine trials”?
- 11) The documentary comments that on April 12 1955 it felt like a war had ended. Explain this comment in the context of the time.
- 12) The widespread Phase III clinical trials of Salk’s vaccine used a “placebo control” design. Explain this experimental design. Why is it considered the “gold standard”? What is the ethical drawback to the placebo control approach?
- 13) What was Salk’s magnanimous gesture regarding the patenting of his vaccine? What does this gesture suggest about his motivation?
- 14) Look up the so-called “Cutter Incident” on the internet and explain what happened.
- 15) Based on your viewing of the video and any other information that you might have, what characteristics of the polio virus and its vaccines make this disease agent a good candidate for eradication?
- 15) Important names, places, dates that you should recognize:

Jonas Salk, Albert Sabin, Basil O’Connor, Franklin Delano Roosevelt, Elsie Ward, April 12, 1955.

IV. Other interesting and helpful sites and resources.

A brief timeline of polio history:

<http://www.polio.pitt.edu/>

A homemade overview that will help you to understand the terrifying nature of polio

<https://www.youtube.com/watch?v=70vKmdWmqQ8>

March of Dimes fundraiser-illustrative but repetitive:

https://www.youtube.com/watch?v=oS_JleTxK-k

Link to main CDC website, which has several topic pages on polio-but most of the information centers on the worldwide eradication campaign because the disease no longer exists in the US

<http://www.cdc.gov/>

In addition, a companion documentary to The Shot Felt Round the World is available on YouTube in 4 parts. The companion documentary is entitled The Polio Crusade and goes into the historical background of the vaccine campaign, with more emphasis on Salk/Sabin/O’Connor as personalities.

V. On Line and Writing Assignments

On Line: You are required to contribute at least one original comment and two follow-up comments to the polio discussion on the course forum. This is a part of your Class Participation requirements as outlined in the semester syllabus. The deadline for these comments is XX/XX/XX by X:XX PM.

Writing: After you have viewed the assignment and thought about your answers to discussion questions, write a brief summary of the video. Approximately one-half of a standard page is sufficient (approx. 250 words). Write your brief summary as though it is intended for a group of IUP students at about your own level of education. Use complete sentences organized in paragraph format for your summary. In order to receive full credit your summary must be scientifically accurate and backed up by specific examples from the video. There is no right or wrong way to write or organize the summary. Use your own words. Your grade for this part of the assignment will depend on your accuracy and how well you use examples.

In addition to your brief summary, address the following question in your writing assignment. An additional 250 words should be sufficient for the answer to the following question, bringing the overall writing assignment including both parts to a total of approximately 500 words.

Question: The US government and private charities poured tremendous financial and cultural resources into the campaign to produce a polio vaccine in the early 1950's, even funding both "killed" and a "live" vaccine programs. In a sense there was a race to produce a vaccine and perhaps some cutting of corners to win the race. In your opinion-were all these resources, efforts and strategies worthwhile? In other words did the benefits of the vaccine outweigh its costs? There is no right or wrong answer to this question. Your grade will depend on how well you use facts and examples to back up your answer.

Write your answer as though it is intended for a group of IUP students at about your own level of education. Use complete sentences organized in paragraph format for your answer.

Grade: The written part of the assignment will count toward the "Writing" component of your grade as outlined in your semester syllabus with the summary and the answer to the question weighted equally in the grade.

The assignment is due on XX/XX/XX by X:XX PM via D2L.

V. On Line and Writing Assignments

On Line: You are required to contribute at least one original comment and two follow-up comments to the polio discussion on the course forum. This is a part of your Class Participation requirements as outlined in the semester syllabus. The deadline for these comments is XX/XX/XX by X:XX PM.

Writing: After you have viewed the assignment and thought about your answers to discussion questions, write a brief summary of the video. Approximately one-half of a standard page is sufficient (approx. 250 words). Write your brief summary as though it is intended for a group of IUP students at about your own level of education. Use complete sentences organized in paragraph format for your summary. In order to receive full credit your summary must be scientifically accurate and backed up by specific examples from the video. There is no right or wrong way to write or organize the summary. Use your own words. Your grade for this part of the assignment will depend on your accuracy and how well you use examples.

In addition to your brief summary, address the following question in your writing assignment. An additional 250 words should be sufficient for the answer to the following question, bringing the overall writing assignment including both parts to a total of approximately 500 words.

Question: The US government and private charities poured tremendous financial and cultural resources into the campaign to produce a polio vaccine in the early 1950's, even funding both "killed" and a "live" vaccine programs. In a sense there was a race to produce a vaccine and perhaps some cutting of corners to win the race. In your opinion-were all these resources, efforts and strategies worthwhile? In other words did the benefits of the vaccine outweigh its costs? There is no right or wrong answer to this question. Your grade will depend on how well you use facts and examples to back up your answer.

Write your answer as though it is intended for a group of IUP students at about your own level of education. Use complete sentences organized in paragraph format for your answer.

Grade: The written part of the assignment will count toward the "Writing" component of your grade as outlined in your semester syllabus with the summary and the answer to the question weighted equally in the grade.

The assignment is due on XX/XX/XX by X:XX PM via D2L.

A. Provide a brief narrative rationale for each of the items, A1- A5.

A1. How is/are the instructor(s) qualified in the distance education delivery method as well as the discipline?

I have attended IUP workshops on LMS technology for both Moodle and D2L including the 2-day D2L boot camp workshop and also a follow-up in the summer.

During the time frame from 1996-2006 I was co-author of three successful national-level grant projects (two NSF and one NCAT) that used web-based technology to deliver course content for both lecture and laboratory components for two Biology majors' courses.

I have consulted with personnel from the IT Services Center and discussed best practices in distance education as well as specific issues related to the current proposal.

In terms of disciplinary qualifications I have a Ph.D. in biochemistry with a specialty in virology. I have been teaching cell biology, genetics and virology at IUP since 1986. I developed the original Emerging Diseases course in 2001 and the revised course in 2013.

A2. How will each objective in the course be met using distance education technologies?

Overview

The distance education course will be organized in a set of modules. Course content material will be presented or delivered within the framework of this modular organization scheme but the individual course modules will not correspond to individual EUSLO learning objectives. For example, some activities such as case studies that illustrate and model the use of the scientific method in epidemiological investigations (EUSLO Objective 2) will be used in several of the content modules.

Objective 1

Define the general characteristics of the major groups of agents that cause infectious disease

Students must gain a basic understanding of the important types of biological agents that cause infectious disease, state the differences among the groups and recognize characteristics or give examples of each group. This fundamental understanding is necessary as a basis for the rest of the course. This body of content information involves introductory-level microbiology and cell biology and is best delivered through mini-lectures, animations and assigned readings available in the textbook and on the internet.

I will use online exam questions to assess student progress toward Objective #1. Prior to each exam students will have an opportunity to review content material using self-quizzes, review questions, study guides. Students will have an opportunity to interact with the instructor for questions and/or discussion using chat rooms on the LMS.

Objective 2

Explain the use of the scientific method as it is used to investigate infectious disease and improve public health.

To understand the historical development of public health and clinical medicine as branches of the natural sciences, students must have a general understanding of the methods and procedures used in relevant investigations.

I will use writing assignments, discussion topic assignments and exam questions to assess student progress toward Objective #2. Students will read about case studies, epidemiological investigations or model cases of historical significance or will view videos that illustrate methodology. I will expect students to be able to recognize, explain and discuss the steps of the scientific method as used in these examples. Students will discuss and explore these methods on the course discussion forum.

Objective 3

Appraise the risk of infectious disease in modern society.

To understand the likelihood of the emergence of infectious diseases in a population or their spread within and among populations, students need a basic understanding of routes of transmission, portals of entry and immunity.

I will use discussion topic assignments, writing assignments and exam questions to assess student progress toward Objective #3. Assignments and exams will require students to define, describe, discuss and explain the routes of transmission, portals of entry and risk factors for infectious diseases. Assignments and exams will also require students to criticize and examine the effectiveness of the common strategies for disease prevention. Students will also discuss prevention strategies and their efficacy on the course discussion forum.

Objective 4

Define, classify and analyze the natural processes that influence disease ecology and shape the evolution of infectious disease agents.

To understand how disease agents evolve new and potentially more dangerous properties students need a basic understanding of the agents' relationship to their environment and their repertoire of responses to environmental changes.

Writing assignments, discussion assignments and exam questions will require students to recognize and define the impacts of factors such as climate change, habitat disruption, economic forces, technological improvements and human behavioral changes on the patterns of infectious disease. Assignments and exams will also require students to examine, compare and contrast the events of real-life outbreaks to emphasize the impacts of these forces. Assignments and exams will require students to define and explain evolutionary phenomena such as mutation, selection

and drug resistance. Students will also discuss disease evolution on the course discussion forum.

Objective 5

Appraise and evaluate the components of a society's response to challenges posed by emerging infectious disease.

Expected Student Learning Outcome 3

Responsible Learners

To understand how the interaction between science and society shapes public health decisions students must appreciate that these health decisions have cultural as well as scientific components. Writing assignments, discussion assignments and exam questions will require students to evaluate the impacts and influences of political and economic factors on public health practice, priorities and responses to disease outbreaks. Assignments and exams will require students to assess and evaluate risks and benefits associated with personal and public health decisions. Students will examine and discuss public health measures on the course discussion forum.

A3. How will instructor-student and student-student, if applicable, interaction take place?

There will be specific times, posted on D2L, for chat with instructor. Set times will vary to ensure that all students have a chance to participate. Appointment times will also be made available. The instructor will set up and monitor a class discussion forum for asynchronous interactions with students as they post their comments and responses. Telephone, email and SKYPE interaction will also be available.

A4. How will student achievement be evaluated?

Student Evaluation Summary

1. Exams (30% total)
 - 20% Module exams #1-4 at 5% each – multiple choice questions and essay questions
 - 10% Final Exam-essay questions
2. Writing Assignments (20% total)
 - 4 assignments at 5% each-500 word summary of video viewing assignment
3. Emerging Disease Profile (20% total)
 - 15% Emerging disease profile-students will write a 1000-word profile or case study of one emerging disease based on current literature and current disease status
 - 5% Peer review of disease profile written by another student
4. Non-textbook Reading (15% total)
 - 15% Summary and critique of the non-textbook reading.

5. Forum Discussion (15% total)

15% Total for all Forum Discussion-all class assignments will be discussed

A5. How will academic honesty for tests and assignments be addressed?

The instructor will use Turnitin to check for plagiarism. Exams and assignments will include an academic integrity clause. Tests will be timed.

B. Place the Undergraduate Distance Education Review Form on top of the Proposal and then submit to the department or its curriculum committee the responses to items A1-A5, the current official syllabus of record, along with the instructor developed online version of the syllabus, and the sample lesson. This lesson should clearly demonstrate how the distance education instructional format adequately assists students to meet a course objective(s) using online or distance technology. It should relate to one concrete topic area indicated on the syllabus.

B1. Distance Education Syllabus

BIOL 119 Emerging Diseases

3c-01-3cr

Instructor

Dr. Carl S. Luciano
Room 19 Weyandt
724-357-4462
luciano@iup.edu

Online Office Hours: TBA

Catalog Description

Pre-requisites: Non-Biology Department majors and minors only

Introduces infectious diseases and their biological basis as well as the social, historical and ethical consequences of these types of afflictions. Covers background material such as the germ theory of disease, the cell theory, disease transmission and the structure of scientific knowledge at a fundamental level. Emphasizes ecology, epidemiology, evolution and control of infectious agents as well as prevention and treatment of infectious disease. Includes specific cases of emerging or re-emerging diseases with an emphasis on current events related to disease

outbreaks. (Does not count toward Biology Electives, Controlled Electives, or Ancillary Sciences for Biology majors and minors.)

Course Outcomes:

Upon completion of the course students will be able to:

1. Define the general characteristics of the major groups of agents that cause infectious disease
2. Explain the use of the scientific method as it is used to investigate infectious disease and improve public health.
3. Appraise the risk of infectious disease in modern society.
4. Define, classify and analyze the natural processes that influence disease ecology and shape the evolution of infectious disease agents.
5. Appraise and evaluate the components of a society's response to challenges posed by emerging infectious disease.

Required Textbook

The Coming Plague by Laurie Garrett, 1995, Penguin Books, New York, ISBN # 0 14 02.5091 3.

Supplemental/Non-textbook Reading (Choose one)

Kolata, Gina. 1999. Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It. Farrar, Straus, and Giroux, New York, ISBN # 0-374-15706- 5.

Nagami, Pamela. 2002. The Woman with a Worm in Her Head: And Other True Stories of Infectious Disease. St. Martin's Griffin, New York, ISBN #0-312-30601-6

Quammen, David. 2012. Spillover: Animal Infections and the Next Human Pandemic. W. W. Norton, New York, ISBN #978-0-393-06680-7.

Sachs, Jessica S. 2007. Good Germs, Bad Germs: Health and Survival in a Bacterial World. Hill and Wang (Farrar, Straus and Giroux), New York, ISBN-13: 978-0-8090-5063-5.

Required Technology Skills and Software Technology Skills

Students enrolled in this course should possess the following technology skills:

The ability to access information via the Web

The ability to use the learning management system and associated tools, including discussion/chat, quizzing, and assignment submission features

The ability to use word processing software and to save in Rich Text Format

The ability to use Internet communication tools, specifically e-mail
If using SKYPE (free software) student will need a web cam or video camera.
The ability to demonstrate netiquette (appropriate online conduct)

Required Software

You will need the following software to participate in all course activities. You can download these software packages for free if you do not currently have them.

Adobe Reader (<http://get.adobe.com/reader/>)
Flash Player (<http://get.adobe.com/flashplayer/>)

Technical Support

To obtain technical support for computer issues related to this course, please contact Indiana University of Pennsylvania's student helpdesk at 724-357-4000 between 7 a.m. and 5:30 p.m. Eastern Time. You should be prepared to give specific details regarding your technical issue(s), including what you were doing before the error occurred and the exact text of any error messages received.

If you experience issues outside of the normal helpdesk hours, you can also submit your error via e-mail at it-support-center@iup.edu or via electronic form available online at <http://www.iup.edu/page.aspx?ekfrm=36009>.

Participation Requirements

Course modules will be assigned according to the Course Schedule and include objectives, lesson outline and expectations for completing writing and other assignments. The lesson outline document for each module will contain most of the information that you need for that module. You are expected to actively participate in all aspects of the course. This includes completion of assigned readings, writing assignments, and tests or self-quizzes and participation in online discussions. Each course module runs for three days for a total of five modules. All work assigned for the module must be turned in by the deadline date and time specified in the lesson outline for the module. Late work will not be accepted. I suggest that you read through all course content in the assigned module to get a feel for what is expected and to help you plan your time use wisely.

You must have one original post and two responses to other student's posts for each of the writing, viewing or discussion assignments, as specified in the lesson outline and assignment sheets. You are also expected to read all postings for the module's discussions. The instructor will be assigning groups to serve as the weekly discussion leaders. This means prior to your group's assigned module, you will want to prepare your discussion items so that you are ready and can post to the discussion boards as close to the beginning of the module as possible.

Online Etiquette

This section includes my expectation of how students will conduct themselves during this course.

Discussion, chat, and e-mail spaces within this course are for class purposes only, unless otherwise stated. Please remember to conduct yourselves professionally. Unlike in the classroom setting, what you say in the online environment is documented and not easily erased or forgotten.

Avoid using ALL CAPS, sarcasm, and language that could be offensive.

Read all posting before posting your response so as to not repeat information.

Keep posting brief and to the point.

Focus on one topic at a time when posting or replying to posts.

Student with Disabilities

If you are a student who has a documented disability and need special accommodations, the instructor will work with you to provide reasonable accommodation to ensure you a fair opportunity to perform in the class. Please advise the instructor in the first week of the semester regarding the disability and the desired accommodations. Assistance for individuals with disabilities is available through IUP Disability Support Services at <http://www.iup.edu/disabilitysupport> or at 724-357-4067.

Academic Integrity Policy

Indiana University of Pennsylvania expects a full commitment to academic integrity from each student. This syllabus represents a contract between you and the instructor of this course and that you agree to follow the rules and expectations set up therein.

Violations of academic integrity include but are not limited to the following:

Providing or receiving unauthorized assistance in any part of this coursework, including papers, writing assignments, exams or any other course assignment

Using unauthorized materials and resources during quizzes and tests.

Possessing course examination materials without the prior knowledge of the instructor.

Plagiarizing: using papers, dissertations, essays, reports, speeches, and oral presentations, take-home examinations, computer projects, and other academic exercises or representing of ideas or facts beyond common knowledge, without attribution to their originators.

Representing someone else's work as your own

Engaging in behaviors that are disruptive, threatening, intimidating or bullying to others

Using computer technology in any way other than for the purposes intended for the course.

Please note that the IUP faculty use a variety of technologies to check the authenticity of student work. Violations of academic integrity will be handled per IUP's Academic Integrity Policy and Procedures.

Failure to comply with the policies and procedures may result in a decrease in grade, involuntary withdrawal from an academic program, suspension, expulsion, or rescission of a conferred degree. IUP's full policy on academic integrity is available in the Undergraduate Catalog under Academic Policies at <http://www.iup.edu/registrar>.

Student Evaluation

1. Exams (30% total)

20% Module exams #1-4 at 5% each—multiple choice questions and essay questions

10% Final Exam-essay questions

The terminating activity for the first four modules will be an exam that will include essay questions as well as multiple-choice questions. Essay questions will be derived from lecture material, forum discussions, videos and readings and the exams will also test knowledge of science content. The fifth exam (Aka Final Exam) will be available on the last day of the session and will consist entirely of essay questions. The Final Exam will be comprehensive in the sense that in their answers to essay questions students will be expected to synthesize material, concepts and ideas from all five modules.

2. Writing Assignments (20% total)

20% Writing Assignments—4 at 5% each-500 word summary of video viewing assignment

Students will view one assigned documentary video in each of Modules 1-4 and write a 500 word summary/reaction to the video. In addition to a summary of the main points of the video, students will be expected to respond to discussion questions provided by the instructor and to supply their own opinions and reflections on the material presented in the video.

3. Emerging Disease Profile (20% total)

15% Emerging disease profile

5% Peer review of disease profile

Students will select one emerging infectious disease and develop a “disease profile” or “case study” of the disease. The profile will be based on factual and current information assembled from articles and other sources such as current newspapers, newsmagazines, popular science and medical magazines (e.g. Discover Magazine, Science, Nature), USG public health outlets such as CDC publications and medically-oriented web sites. The profile will be approximately 1000 words in length. Each student will also critique or peer-review a second profile written by one of the other students in the class.

4. Non-textbook Reading (15% total)

15% Summary and critique of the non-textbook reading.

Students will read one of the four non-textbook readings and write a summary and critique of at least 500 words and no more than 1000 words. In addition to a summary of the main points of the book, students will address larger questions and issues. For example, they will be expected to explain how the content of the non-textbook reading fits in with other course materials such as articles, videos and textbook readings. They will be expected to explain how the material described in the non-textbook reading is likely to impact clinical and public health practices and methods. They will be expected to describe any impact on society in general and also to contribute their own original thoughts/ideas/comments/opinions and reflections.

5. Forum Discussion (15% total)

15% Total for all Forum Discussions

Every assignment including the disease profiles will be discussed on the class forums. The discussions will involve both small group and the entire class.

Grading Scale

Grading scale: A 90-100, B 80-89, C 70-79, D 60-69, F 59 and below

Online Course Schedule-framed for a 3 week winter or summer session

Module 1: The Diseases of Filth (Days 1-3)

Lectures 1 and 2 on the types of disease agents and the development of the Germ Theory

Textbook Readings: Introduction, Ch. 1 Machupo, Ch. 9 Microbe Magnets

Other Reading Assignments: article on a current disease outbreak

Video Assignment: Typhoid Mary-the Most Dangerous Woman in America

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Choose topic for disease profile assignment

Exam 1-must pass to move on to next module

Module 2: The Age of Optimism (Days 4-6)

Lectures 3 and 4 on the fundamentals of the immune system, vaccines and disease transmission

Textbook Readings: Ch. 2 Health Transitions, Ch. 3 Monkey Kidneys and the Ebbing Tide

Other Reading Assignments: article on a current disease outbreak

Video Assignment: The Shot Felt Round the World

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Exam 2

Module 3: Disease Cowboys (Days 7-9)

Lectures 5 and 6 on Ebola and other filoviruses, Lassa Fever, cultural context of disease outbreaks in the Third World

Textbook Readings: Ch. 5 Yambuku, Ch. 7 N'zara

Other Reading Assignments: article on a current disease outbreak

Video Assignment: The Plague Fighters

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Exam 3

Module 4: 1976 and the End of Optimism (Days 10-12)

Lectures 7, 8 and 9 on Legionnaire's Disease, Influenza and the Origin of AIDS

Textbook Readings: Ch. 6 The American Bicentennial, Ch. 10 Distant Thunder

Other Reading Assignments: article on a current disease outbreak

Video Assignment: The Killer Flu

Forum assignments: Discussion of textbook readings, video assignment, journal article reading assignment

Writing assignments: Video assignment summary and reaction

Disease Profile due on Day 12

Exam 4

Module 5: Wrap-up/Emerging Diseases in the Future (Days 13-15)

Lectures: none

Textbook Readings: none

Other Reading Assignments: article on a current disease outbreak

Video Assignment: none

Forum assignments: Discussion of non-textbook readings, journal article reading assignment, disease profiles

Writing assignments: Critique of non-textbook reading due on day 13, Peer review of one disease profile due on Day 14

Final Exam Day 15

B2. Current Syllabus of Record

I. Catalog Description

BIOL 119 Emerging Diseases

3c-0l-3cr

Pre-requisites: Non-Biology Department majors and minors only

Introduces infectious diseases and their biological basis as well as the social, historical and ethical consequences of these types of afflictions. Covers background material such as the germ theory of disease, the cell theory, disease transmission and the structure of scientific knowledge at a fundamental level. Emphasizes ecology, epidemiology, evolution and control of infectious agents as well as prevention and treatment of infectious disease. Includes specific cases of emerging or re-emerging diseases with an emphasis on current events related to disease outbreaks. (Does not count toward Biology Electives, Controlled Electives, or Ancillary Sciences for Biology majors and minors.)

II. Course Outcomes and Assessment (Expected Undergraduate Student Learning Outcomes-EUSLO)

The student will be able to:

Objective 1

Define the general characteristics of the major groups of agents that cause infectious disease

Expected Student Learning Outcomes 1

Informed Learners

Rationale

Assignments and exams will require students to name the major groups of biological agents that cause infectious disease, state the differences among the groups and to recognize illustrations or give examples of each group.

Objective 2

Explain the use of the scientific method as it is used to investigate infectious disease and improve public health.

Expected Student Learning Outcome 2

Empowered Learners

Rationale

Assignments and exams will require students to recognize, explain and discuss the steps of the scientific method as used in case studies of infectious disease investigations.

Objective 3

Appraise the risk of infectious disease in modern society.

Expected Student Learning Outcomes 1 and 2

Informed Learners and Empowered Learners

Rationale

Assignments and exams will require students to describe, discuss and explain the routes of transmission, portals of entry and risk factors for infectious diseases. Assignments and exams will also require students to criticize and examine the effectiveness of the common strategies for disease prevention.

Objective 4

Define, classify and analyze the natural processes that influence disease ecology and shape the evolution of infectious disease agents.

Expected Student Learning Outcomes 1 and 2

Informed Learners and Empowered Learners

Rationale

Assignments and exams will require students to recognize and define the impacts of factors such as climate change, habitat disruption, economic forces, technological improvements and human behavioral changes on the patterns of infectious disease. Assignments and exams will also require students to examine, compare and contrast the events of real-life outbreaks.

Objective 5

Appraise and evaluate the components of a society's response to challenges posed by emerging infectious disease.

Expected Student Learning Outcome 3

Responsible Learners

Rationale

Assignments and exams will require students to evaluate the impacts and influences of political and economic variables on public health practices and priorities. Assignments and exams will require students to assess and evaluate risks and benefits associated with personal and public health decisions.

III. Course Outline

Unit One: Introduction

(14 hrs.)

- Hypotheses, Experiments, Theories (1 hr.)
 - Structure of science and its empirical basis
 - Types of data involved in biomedical and epidemiological research

- The Cell Theory (2 hrs.)
Evidence for the Cell Theory
Types of cells and their characteristics
- The Germ Theory of Disease (2 hrs.)
Early ideas about disease
Sanitarians, progressives and urban reform
The work of Pasteur, Koch and others establishes the modern Germ Theory
- Disease Transmission (2 hrs.)
Nomenclature
Routes of transmission and portals of entry
Examples
- Body Defenses Against Infectious Disease (1 hr.)
Physical and chemical defenses
Innate immunity
Adaptive immunity and vaccination
- The Eradication of Smallpox (1 hr.)
Brief history of smallpox disease
Why smallpox was a good candidate for eradication
Eradication campaign of the 1970s, including social and political factors
- Health Transitions (2 hrs.)
Technological advances of the 20th Century (antibiotics, vaccination, and sanitation) lead to the “Age of Optimism”
- The Rise of the “Disease Cowboy” culture (3 hrs.)
Typhoid and the incarceration of Typhoid Mary
Brazilian outbreak of bacterial meningitis and more recent outbreaks
US intervention in Lassa Fever, Machupo and other outbreaks

Exam One (1 hr.)

Unit Two: Microbe Magnets (13 hrs.)

- Urban Centers of Disease (1 hr.)
Diseases of dirt and overcrowding: tuberculosis, cholera, syphilis
- Legionnaire’s Disease (1 hr.)
Philadelphia outbreak of 1976 and the federal response
Problematic identification of causative agent
An old disease gets a new name
- Feminine Hygiene and Toxic Shock Syndrome (1 hr.)
Women join the workforce and alter vaginal ecology
- Ebola and related filoviruses (3 hrs.)
Outbreaks in Marburg, Yambuku, Kikwit and Reston
- Parasitic Diseases (2 hrs.)
Malaria, Toxoplasmosis, macroscopic parasites
- Emerging Tick-borne Diseases (1 hr.)
Lyme Disease
Ehrlichiosis

- Viral Diseases
- Polio in the 20th Century (3 hrs.)
 - An emerging disease associated with clean water
 - Polio hysteria
 - The Sabin/Salk Vaccine War
 - Eradication campaign
 - Discussion of Supplemental Reading (1 hr.)
- Exam Two** (1 hr.)
- Unit Three: Emerging Viruses** (13 hrs.)
 - The Original “Swine Flu” of 1976 (2 hrs.)
 - Outbreak among US Army troops
 - Vaccine controversy and fiasco
 - Influenza Pandemics in 1918 and 2009 (2 hrs.)
 - Possible sources of 1918 virus and Spanish Flu pandemic
 - Multiple genetic reassortments and the new H1N1 2009 strain
 - Reconstruction of the 1918 Flu Virus (2 hrs.)
 - Taubenberg and the Armed Forces Institute of Pathology specimens
 - Hultin’s work with frozen samples from Alaska
 - What can we learn from the reconstructed Spanish Flu virus and is it worth it?
 - Hantaviruses and the “Navajo Flu” (1 hr.)
 - Hypotheses About the Origins of HIV/AIDS (2 hrs.)
 - Natural history of HIV and related viruses
 - Competing hypotheses (Cut Hunter, Heart of Darkness, OPV, Used Syringes) and the evidence for/against each
 - Political and Societal Reaction to HIV/AIDS (3 hrs.)
 - The conservative establishment’s attitude toward a disease of “Homosexuals, Haitians and Heroin addicts”
 - Competing priorities within the gay community
 - Discovery of the AIDS virus-who gets the credit?
 - The “Age of Optimism” ends
 - Discussion of Supplemental Reading (1 hr.)

Culminating Experience: Exam Three (2 hrs. during Final Exam Week)

IV. Evaluation Methods

60% Exams

10% Writing Assignments

20% Supplemental Reading

10% Class Participation: There will be a number of assigned in-class discussion questions during the semester. Students will receive a set of discussion questions for each chapter in the textbook. They will form groups in class to discuss and answer the questions, and they will turn in a written copy of their answers for credit.

V. Grading Scale

Grading Scale: A= 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 59% and below

VI. Undergraduate Course Attendance Policy

The course attendance policy will follow the IUP University-wide undergraduate catalog attendance policy.

VII. Required Textbook

Garrett, Laurie. 1995 The Coming Plague. Penguin Books, New York, ISBN # 0 14 02.5091 3.

This is an older book but it is not out of date because it uses a narrative and highly personal approach to its topics rather than an expository or pedantic approach. The author consistently presents material from the perspective of participants in historical events (often via interviews) or of individuals who have actually suffered from the diseases being discussed. In 2012 Garrett's book was listed on Slate.com 2012 as one of the "best books" on pandemics available for non-scientists and was also the consensus choice as a non-majors textbook by the educators' listserv of the American Society for Microbiology.

Supplemental Non-textbook Reading: (Choose Two)

Kolata, Gina. 1999. Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus That Caused It. Farrar, Straus, and Giroux, New York, ISBN # 0-374-15706-5.

Nagami, Pamela. 2002. The Woman with a Worm in Her Head: And Other True Stories of Infectious Disease. St. Martin's Griffin, New York, ISBN #0-312-30601-6

Quammen, David. 2012. Spillover: Animal Infections and the Next Human Pandemic. W. W. Norton, New York, ISBN #978-0-393-06680-7.

Sachs, Jessica S. 2007. Good Germs, Bad Germs: Health and Survival in a Bacterial World. Hill and Wang (Farrar, Straus and Giroux), New York, ISBN-13: 978-0-8090-5063-5.

Suggested Readings

Barry, John M. 2004. The Great Influenza. Viking Press, New York.

- Bourdain, Anthony 2001. Typhoid Mary-an Urban Historical. Bloomsbury Press, New York.
- Crosby, Molly Caldwell 2006. The American Plague. Berkeley Publishing Group, New York.
- Fenn, Elizabeth A. 2001. Pox Americana: the Great Smallpox Epidemic of 1775-1782. Hill and Wang (Farrar, Straus and Giroux), New York.
- Garrett, Laurie 2000. Betrayal of Trust: The Collapse of Global Public Health. Hyperion, New York.
- Hochschild, Adam 1998. King Leopold's Ghost. Houghton Mifflin, Boston.
- McNeill, W. H. 1976. Plagues and Peoples. Anchor Books, New York.
- Oshinsky, David M. 2006. Polio: An American Story. Oxford University Press, Oxford

VIII. Special Resource Requirements

None

IX. Bibliography

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- Bauman, Robert W. and Elizabeth Machunis-Masuoka. 2010. Microbiology with Diseases by Taxonomy (3rd ed.) Prentice-Hall. New York.
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- Hopkins, Donald R. 2002. The Greatest Killer: Smallpox in History. University of Chicago Press, Chicago.
- Johnson, Steven. 2006. The Ghost Map: The Story of London's Most Terrifying Epidemic--and How It Changed Science, Cities, and the Modern World. Riverhead Books, New York.
- Jones, James H. 1981. Bad Blood. The Free Press (MacMillan), New York.
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- Knipe, D. M. and Peter M. Hawley (eds.). 2007. Fields Virology (5th ed.). Lippincott Williams and Wilkins, Philadelphia.
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- Pierce, John R. and Jim Writer. 2005. Yellow Jack: How Yellow Fever Ravaged America and Walter Reed Discovered its Deadly Secrets. John Wiley and Sons, New York.
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- Tucker, Jonathan B. 2001. Scourge-The Once and Future Threat of Smallpox. Grove Press, New York.
- Watts, Sheldon. 1997. Epidemics and History: Disease, Power and Imperialism. Yale University Press, New Haven.
- Wills, Christopher. 1996. Yellow Fever Black Goddess: The Coevolution of Peoples and Plagues. Perseus Publishing. Cambridge.
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- Zimmer, Carl. 2011. A Planet of Viruses. University of Chicago Press, Chicago.
- Zimmerman, Barry. 2002. Killer Germs. McGraw-Hill New York.
- Zinsser, H. 1963. Rats, Lice and History. Black Dog and Leventhal, New York.

B3. Sample Distance Education Assignment

Writing Assignment: The Shot Felt Round the World

I. Introduction

Polio (aka poliomyelitis or infantile paralysis) is one of the most notorious emerging diseases in human history. This assignment will help you to understand how the disease emerged in the 20th Century, how it was fought and-hopefully how it is now on the brink of complete eradication. The assignment will also help you to understand why the 1950's and 1960's are considered the "Age of Optimism" in the struggle against infectious disease.

II. Instructions

- 1) Log on to the Internet Archive video web site <https://archive.org/>
- 2) Locate the video entitled The Shot Felt Round the World (the only version available may have subtitles-don't worry-the people actually are speaking English.
- 3) View the video. It is about an hour long. The video is a documentary about the development of the first polio vaccine in the 1950s.
- 4) Use the discussion questions and discussion points given below to guide your viewing and be prepared to discuss the questions and points in the course forum and in the writing assignment on this video.
- 5) To receive credit for this assignment you must complete both the writing assignment and forum discussion assignment as explained in Section V below...

III. Discussion Questions and Points

- 1) What was American society's attitude toward polio in the early 1950's?
- 2) Polio is described as a "disease of cleanliness"-not the way we usually think of disease. Explain the idea of a "disease of cleanliness"? Do you know of any other such diseases?
- 3) Why was the March of Dimes very interested in developing a polio vaccine as quickly as possible?
- 4) What kind of pathogen causes polio? How is it transmitted from person to person?
- 5) What is a vaccine and how does it work?
- 6) Explain the difference between a "killed" vaccine and a "live" vaccine. The Salk vaccine was which type?
- 7) Among virologists of the early 1950's what was the conventional wisdom about a "killed" vaccine for polio?
- 8) What was the "risk/reward" tradeoff associated with Salk's vaccine?

- 9) What was the significance of the Watson Home for Crippled Children?
- 10) What were the “Pittsburgh vaccine trials”?
- 11) The documentary comments that on April 12 1955 it felt like a war had ended. Explain this comment in the context of the time.
- 12) The widespread Phase III clinical trials of Salk’s vaccine used a “placebo control” design. Explain this experimental design. Why is it considered the “gold standard”? What is the ethical drawback to the placebo control approach?
- 13) What was Salk’s magnanimous gesture regarding the patenting of his vaccine? What does this gesture suggest about his motivation?
- 14) Look up the so-called “Cutter Incident” on the internet and explain what happened.
- 15) Based on your viewing of the video and any other information that you might have, what characteristics of the polio virus and its vaccines make this disease agent a good candidate for eradication?
- 15) Important names, places, dates that you should recognize:

Jonas Salk, Albert Sabin, Basil O’Connor, Franklin Delano Roosevelt, Elsie Ward, April 12, 1955.

IV. Other interesting and helpful sites and resources.

A brief timeline of polio history:

<http://www.polio.pitt.edu/>

A homemade overview that will help you to understand the terrifying nature of polio

<https://www.youtube.com/watch?v=70vKmDWmqQ8>

March of Dimes fundraiser-illustrative but repetitive:

https://www.youtube.com/watch?v=oS_JleTxxK-k

Link to main CDC website, which has several topic pages on polio-but most of the information centers on the worldwide eradication campaign because the disease no longer exists in the US

<http://www.cdc.gov/>

In addition, a companion documentary to The Shot Felt Round the World is available on YouTube in 4 parts. The companion documentary is entitled The Polio Crusade and goes into the historical background of the vaccine campaign, with more emphasis on Salk/Sabin/O’Connor as personalities.

V. On Line and Writing Assignments

On Line: You are required to contribute at least one original comment and two follow-up comments to the polio discussion on the course forum. This is a part of your Class Participation requirements as outlined in the semester syllabus. The deadline for these comments is XX/XX/XX by X:XX PM.

Writing: After you have viewed the assignment and thought about your answers to discussion questions, write a brief summary of the video. Approximately one-half of a standard page is sufficient (approx. 250 words). Write your brief summary as though it is intended for a group of IUP students at about your own level of education. Use complete sentences organized in paragraph format for your summary. In order to receive full credit your summary must be scientifically accurate and backed up by specific examples from the video. There is no right or wrong way to write or organize the summary. Use your own words. Your grade for this part of the assignment will depend on your accuracy and how well you use examples.

In addition to your brief summary, address the following question in your writing assignment. An additional 250 words should be sufficient for the answer to the following question, bringing the overall writing assignment including both parts to a total of approximately 500 words.

Question: The US government and private charities poured tremendous financial and cultural resources into the campaign to produce a polio vaccine in the early 1950's, even funding both "killed" and a "live" vaccine programs. In a sense there was a race to produce a vaccine and perhaps some cutting of corners to win the race. In your opinion-were all these resources, efforts and strategies worthwhile? In other words did the benefits of the vaccine outweigh its costs? There is no right or wrong answer to this question. Your grade will depend on how well you use facts and examples to back up your answer.

Write your answer as though it is intended for a group of IUP students at about your own level of education. Use complete sentences organized in paragraph format for your answer.

Grade: The written part of the assignment will count toward the "Writing" component of your grade as outlined in your semester syllabus with the summary and the answer to the question weighted equally in the grade.

The assignment is due on XX/XX/XX by X:XX PM via D2L.