



**SENATE COMMITTEE ON CURRICULAR AFFAIRS**  
**COURSE SUBMISSION AND CONSULTATION FORM**

---

**Principal Faculty Member(s) Proposing Course**

---

Name	User ID	College	Department
MARTHA FEW	mzf52	Liberal Arts (LA)	Not Available
MICHAEL TROYAN	mbt102	Science (SC)	Not Available

Academic Home: Liberal Arts (LA)

Type of Proposal:  Add  Change  Drop

Message for Reviewers:

**Course Designation**

(HIST 125N) History of Infectious Disease and Epidemiology

**Course Information**

**Cross-Listed Courses:**

SC 125N(SC)

**Prerequisites:**

**Corequisites:**

**Concurrents:**

**Recommended Preparations:**

Abbreviated Title: History of Disease  
Discipline: General Education  
Course Listing: Inter-Domain

**Special categories for Undergraduate (001-499) courses**

---

**Foundations**

- Writing/Speaking (GWS)
- Quantification (GQ)

**Knowledge Domains**

- Health & Wellness (GHW)
- Natural Sciences (GN)
- Arts (GA)
- Humanities (GH)
- Social and Behavioral Sciences (GS)

**Additional Designations**

- Bachelor of Arts
- International Cultures (IL)
- United States Cultures (US)
- Honors Course
- Common course number - x94, x95, x96, x97, x99
- Writing Across the Curriculum

First-Year Engagement Program

First-Year Seminar

#### Miscellaneous

Common Course

#### GE Learning Objectives

GenEd Learning Objective: Effective Communication

GenEd Learning Objective: Creative Thinking

GenEd Learning Objective: Crit & Analytical Think

GenEd Learning Objective: Global Learning

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Key Literacies

GenEd Learning Objective: Soc Resp & Ethic Reason

#### Bulletin Listing

---

**Minimum Credits:** 3  
**Maximum Credits:** 3  
**Repeatable:** NO  
**Department with Curricular Responsibility:** History (UPLA\_HIST)  
**Effective Semester:** FA 2018  
**Travel Component:** NO

#### Course Outline

---

##### A brief outline or overview of the course content:

This course charts the history of infectious disease both as a subject of scientific inquiry and a cultural and religious phenomenon.

##### A listing of the major topics to be covered with an approximate length of time allotted for their discussion:

The Scientific Revolution and Scientific Thinking and Medieval and Early Modern Disease (4 weeks)  
New World, New Diseases and the Clash of Cultures (4 weeks)  
Epidemiology, Gene Theory and Searching for Cures (4 weeks)  
DNA revolution and Emerging Diseases (3 weeks)

##### Course Description:

Infectious diseases once thought to be nearly eradicated have seen a resurgence in recent years. The majority of the cases arose from people who deliberately chose not to vaccinate their children against these disease. Even in the twenty-first century the nature of disease and how to prevent it is not merely a matter of science, but an issue laden with cultural, political, and religious concerns.

This course charts the history of disease both as a subject of scientific inquiry and a cultural and religious phenomenon. We will begin with early Greek and Egyptian attempts to understand disease as a foreign entity attacking the body and end in the twenty-first century with current ideas surrounding the use of antibiotics, vaccines, and emerging threats throughout the world. Along the way we will discuss the impact of significant epidemics—for example, Bubonic Plague, Syphilis, and Influenza—as well as changing scientific thinking of both how to deal with disease and how to understand the natural world. In tandem with the historical background key scientific ideas necessary for studying disease—including current understanding of the microbial world, microscopy techniques, and modern gene theory—will be presented to the students through classroom instruction and virtual laboratories.

##### The name(s) of the faculty member(s) responsible for the development of the course:

| Name: MICHAEL TROYAN (mbt102)

Title:

Phone:

Address:

Campus: UP

City:

Fax:

| Name: MARTHA FEW (mzf52)

Title:

Phone:

Address:

Campus: UP

City:

Fax:

## Course Justification

---

### Instructional, Educational, and Course Objectives:

**This section should define what the student is expected to learn and what skills the student will develop.**

Educational Goals for the Course

- Perform experiments and gain experience with basic laboratory techniques used in the study of disease.
- Recognize and become familiar with a variety of current opinions about the causes for disease, their prevention, and their significance more generally for world history.
- Develop the skills needed to understand, interpret, and critique the analysis presented in historical and modern sources of evidence.
- Create and deliver a sustained argument supported by appropriate evidence, orally, in collaboration with other students, or individually, in writing.
- Develop an understanding of the current means by which scientific arguments are constructed.
- Acquire a detailed understanding of at least one aspect of the history of disease and its prevention.
- Explain some of the moral and ethical issues which are currently involved with the practice of public health and medicine.

### Evaluation Methods:

**Include a statement that explains how the achievement of the educational objective identified above will be assessed.**

**The procedures for determining students' grades should be specifically identified.**

A combination of in class quizzes (4) 20%, short writing assignments (4) 20%, textbook readings and laboratory work 30%, independent project 30%.

### Relationship/Linkage of Course to Other Courses:

**This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.**

This course does not link to any existing course, but will be cross listed in the departments of History and Biochemistry and Molecular Biology (BMB) as part of the new General Education interdomain initiative.

### Relationship of Course to Major, Option, Minor, or General Education:

**This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.**

For each of the represented majors, this course will satisfy an elective requirement.

### A description of any special facilities:

When taught in person, we will need a lecture hall that has a digital projector and an "in house" computer. The course will also be taught in other formats including online.

### Frequency of Offering and Enrollment:

Every Fall and Spring semester and the projected enrollment is 40 students of the departments of History and BMB.

## Alignment with General Education Objectives

---

**EFFECTIVE COMMUNICATION** – the ability to exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish.

**KEY LITERACIES** – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.

**CRITICAL AND ANALYTICAL THINKING** – the habit of mind characterized by comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating a conclusion. It is the intellectually disciplined process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

**INTEGRATIVE THINKING** – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.

**CREATIVE THINKING** – the capacity to synthesize existing ideas, images, or expertise in original ways and the experience of performing, making, thinking, or acting in an imaginative way that may be characterized by innovation, divergent thinking, and intellectual risk taking.

**GLOBAL LEARNING** – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people's lives.

**SOCIAL RESPONSIBILITY AND ETHICAL REASONING** – the ability to assess one's own values within the social context

of problems, recognize ethical issues in a variety of settings, describe how different perspectives might be applied to ethical dilemmas, and consider the ramifications of alternative actions. Individuals should acquire the self- knowledge and leadership skills needed to play a role in creating and maintaining healthy, civil, safe, and thriving communities.

**What component(s) of the course will help students achieve the General Education Learning Objectives covered in the course? Provide evidence that students in the course have adequate opportunities to achieve the identified learning objectives.**

This course is being designed in line with the new General Education requirements. It is intended as an interdomain course, as it utilizes the disciplinary methods taken from the natural sciences (Microbiology and Molecular Biology) and the humanities (History). By the end of this course, students will have amassed a wide knowledge of the multiple ways science, medicine and disease intersect with human history and experience. They will have developed a knowledge of the historical, scientific, and medical context of the history of disease, medicine, and medical innovation on a global scale. Specific attention will be paid discussing the impact of significant epidemics—for example, the Black Plague, Syphilis, and Influenza—as well as changing scientific thinking of both how to deal with disease and how to understand the natural world. Enrolled students will hone a variety of analytical skills, including gaining experience comparing and contrasting these multiple disciplinary approaches. Their assignments will have students engage with primary source material (through documents and in the required laboratories) and they will learn to critically construct a persuasive argument using convincing evidence from class lectures, readings, laboratories, and their own independent research.

**Effective Communication:** Students will hone this skill by reading academic articles and critically analyzing the authors' arguments in class discussion. They will also be responsible for integrating these articles into their writing assignments.

**Integrative Thinking:** Students will hone this skill by having to approach the history of medicine and disease through multiple academic and disciplinary lenses. They will also have to connect related health and disease issues to diverse human societies across time and place, and consider some of the moral and ethical issues which are currently involved with the practice of public health and medicine.

**Critical and Analytical Thinking:** Students will, over the length of the course, become familiar with a variety of historical and current opinions about the causes for disease, their prevention, and their significance more generally for world history. Additionally they will develop the skills needed to understand, interpret, and critique the analysis presented in historical and modern sources of evidence related to medicine and disease. This will be best witnessed towards the end of the course when the students work to complete their independent project.

---

**How will students be assessed to determine their attainment of the Learning Objective(s) of General Education covered in this course? This assessment must be included as a portion of the student's overall performance in this course.**

Assessments are being designed to reflect the new General Education Requirements. These will consist of a number of quizzes designed to evaluate basic knowledge and concepts presented within the course from various reading assignments. Science content will be assessed using an adaptive learning platform to reinforce concepts from readings. Students will also complete an equal number of short written assignments, 2-3 pages in length where they will effectively communicate scientific perspectives in a historical context. Digital laboratory exercises will allow students to engage in the scientific process, analyze data and come to accurate conclusions. A significant semester long independent project where students choose a topic area to study and then place themselves in the historical context of that event by producing a fictionalized historical narrative. Students will then complete a critical analysis of another's work in the guise of a modern scientist reading the work as historical source material.

---

## General Education Domain Criteria

General Education Designation: Inter-Domain

### GH Criteria

---

- Explain the methods of inquiry in humanities fields and describe how the contributions of these fields complement inquiry in other areas
- Demonstrate competence in critical thinking about topics and texts in the humanities through clear and well-reasoned responses
- Critically evaluate texts in the humanities— whether verbal, visual, or digital— and identify and explain moral or ethical dimensions within the disciplines of the humanities
- Demonstrate knowledge of major cultural currents, issues, and developments through time, including evidence of exposure to unfamiliar material that challenges their curiosity and stretches their intellectual range
- Become familiar with groups, individuals, ideas, or events that have influenced the experiences and values of different communities

**What components of the course will help students achieve the domain criteria selected above?**

To explain the methods of inquiry in humanities fields and describe how the contributions of these fields complement inquiry in other areas, students will develop the skills needed to understand, interpret, and critique the analysis presented in historical and modern sources of evidence. For each of the history primary sources (sources from the event and time period under study), an in-class discussion will be held in which we evaluate the source(s) that we read, how they can be understood, used, and placed in context.

Demonstrate competence in critical thinking about topics and texts in the humanities through clear and well-reasoned responses, each class period we will ask students to present arguments about the reading, either through group work, general class discussion, or short writing assignments.

In addition to four writing assignments spread across the term, there is a final assignment and assessment which requires the students to create a longer, more sustained argument.

To demonstrate knowledge of major cultural currents, issues, and developments through time, including evidence of exposure to unfamiliar material that challenges their curiosity and stretches their intellectual range, students will be assigned multiple readings related to the outbreak of disease and subsequent treatment of it. These readings will all be discussed in class.

---

## GN Criteria

---

- Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas
- Construct evidence-based explanations of natural phenomena
- Demonstrate informed understandings of scientific claims and their applications
- Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge
- Identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems

### What components of the course will help students achieve the domain criteria selected above?

To construct evidence based explanations of natural phenomena students will compare and contrast understandings of scientific principles using examples from the past compared to explanations based on current understandings due to the development of more precise scientific tools and methods. Textbook readings using an adaptive platform. will provide current scientific terminology and principles and readings of historical sources will provide past understanding. Class discussion will allow for comparison of both. Digital laboratory exercises will help students understand how the scientific process works including use of common laboratory tools and hypothesis testing.

To demonstrate informed understandings of scientific claims and their applications students will complete readings and engage in class discussion and written assignments. Students will engage with adaptive learning technology to build a scientific vocabulary that will allow for a deeper understanding of microbiological concepts. Lab activities will develop methods of scientific thinking and data analysis.

To identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems students will engage in a final assignment requiring them to develop arguments that convince someone of another time that the current scientific methodologies are superior to past practices. In this way students will also be able to craft arguments to convince contemporaries of the value of modern methods of disease control. Students will then have the opportunity to write explanations of scientific phenomena as seen through the historical lens of the past compared to current understandings.

---

## Integrative Studies

---

### Explain how the intellectual frameworks And methodologies of the two Knowledge Domains will be explicitly addressed in the course and practiced by the students.

The aim of the integrative approach is to help students understand that disease and treatment are informed both by science and culture. To further that end the students are expected to write a number of short papers and complete labs throughout the term. A larger final project, though, will ask students to study one disease or treatment in depth. They will follow this up with a creative assignment in which they are asked to imagine what it would be like to have lived during a period when this disease struck. This will, we hope, force students to both imagine the past experience of a disease and understand current thinking about it. . In short, science bases its conclusions on empirical observations and testing made about the natural world. Students will explore this both through laboratories and through reading about other discoveries made in the past (i.e. through a biology textbook). History works in a similar way by attempting to understand the past by looking at documents produced in that period and comparing what is known about them with other accounts and general knowledge of the period. Therefore, it is also a sort of empiricism used to understand human experience in history. Both of these approaches will be brought together on the subject of disease in the past.

---

### Demonstrate that each Of the two domains will receive approximately equal attention, providing evidence from course topics, assignments, or other course components, and that students will integrate material from both domains.

Both microbiology and history are represented equally in this course. The students will receive a thorough grounding in elementary microbiology through labs, readings, and quizzes. The historical content will be conveyed through readings, lecture, and discussion. These two separate fields will then have to be brought together on all of the writing assignments as well as the longer, final project.

The science component will draw topics from an existing general education course in introductory microbiology. Topics will be chosen with an eye to historically significant developments. These include views of medicine by ancient civilizations, scientific thought in the middle ages and the eventual rise of the scientific method. How humans use microbes to produce food and control spoilage will be featured as well as major technological breakthroughs in optics and microscopy and the development of germ theory and epidemiology. The science of immunology will lay the foundation for control of microorganisms including the discovery of vaccines and antibiotics. An understanding of modern genetics will come near the end as well as exploration of emerging diseases.

The science component will be largely addressed using extensive readings using an adaptive learning platform. Students will read selections from a microbiology textbook and then be quizzed on their reading in an adaptive way as the system learns about which topics provide more of a challenge so extra time is spent learning those topics specifically.

There is no available adaptive learning analog for the history component so traditional readings will be used as well as in class discussions about the historical impact of the advances made in science. Topics include early thinkers who contributed to our understanding of the natural world starting with ancient philosophers, through the middle ages, the renaissance and up to modern discoveries. Particular attention is paid to societal implications of these developments.

---

### Briefly explain the staffing plan. Given that each Inter-Domain course is approved for two Knowledge Domains, it will be taught by an instructor (or instructional team) with appropriate expertise in both domains.

This course will be taught by professors from two departments History and Biochemistry and Molecular Biology. As stated above, this course is organized thematically with even distribution between the participating faculties' areas of expertise. Dr. Few will oversee the cultural and historical aspects of the course and Dr. Troyan will oversee the scientific components.

---

Describe the assessments that will be used to determine students' ability to apply integrative thinking.

The main assessment used to measure integrative thinking will be an independent project that allows students to place themselves into a historical context that contrasts with more modern understandings.

---

### Campuses That Have Offered ( ) Over The Past 4 Years

---

semester	AB	AL	BK	BR	BW	CR	DS	ER	FE	GA	GV	HB	HN	HY	LV	MA	NK	PC	SH	SL	UP	WB	WC	WS	XC	XP	XS	YK
----------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

### Potential Impact

---

#### Pre-Requisites

is *listed as a pre-requisite or concurrent course* for the following courses:

Note: Not all courses may be listed here, due to lionpath requirement incomplection.

No pre-requisites or concurrent courses found

---

## Educational Goals for the Course

- Perform experiments and gain experience with basic laboratory techniques used in the study of disease.
- Recognize and become familiar with a variety of current opinions about the causes for disease, their prevention, and their significance more generally for world history.
- Develop the skills needed to understand, interpret, and critique the analysis presented in historical and modern sources of evidence.
- Create and deliver a sustained argument supported by appropriate evidence, orally, in collaboration with other students, or individually, in writing.
- Develop an understanding of the current means by which scientific arguments are constructed.
- Acquire a detailed understanding of at least one aspect of the history of disease and its prevention.
- Explain some of the moral and ethical issues which are currently involved with the practice of public health and medicine.

## A note on Course Readings

This course involves a substantial number of readings taken from historical sources, academic papers, select sections of various books as well as a traditional science textbook. Much of this material will be available online or given as handouts. There is one textbook requirement for the course.

Textbook: *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn 3rd edition. McGraw Hill.

This microbiology textbook will be instrumental in assisting you to begin to understand the scientific concepts and terminology needed to fully understand microbes and disease. To help facilitate learning this particular online textbook uses an adaptive technology platform that allows students to quickly learn concepts through practice answering questions until a high level of mastery is demonstrated. This system also includes access to online laboratory exercises that will be part of the course grade. More information on how to access this textbook and the other reading material can be found in the appropriate section of the syllabus.

## Assignments

The grade break-down will be as follows:

- |  |          |     |
|--|----------|-----|
| ● Four in-class quizzes                            | 4 x 5% = | 20% |
| ● Four short writing assignments (2 pages each)    | 4 x 5% = | 20% |
| ● Adaptive reading assignments and lab simulations |          | 30% |
| ● Independent project                              |          | 30% |

For the independent project each student must choose a topic related to the history or study of disease, which must be approved by the instructor(s). The assignment will then consist of three parts plus a peer evaluation component:

- 1) Proposal. Write a one paragraph explanation of why the student has chosen this topic including why they feel it is important and why personally it might be significant to them. Along with this paragraph they must propose what they are going to do for sections 2 and 3 below. (5% of grade)  
Due third week of term.

- 2) Book-length study. Each student must choose a book (>100 pages) to read which treats the topic that they are interested in. Appropriate books include scholarly or popular studies of a certain disease or invention, works of historical fiction, memoirs, letter collections, or a series of scientific studies related to the topic. The student must read this book over the course of term at a rate of no less than 30 pages per week starting in week three. Each week's reading must be accompanied by a blog post to the course's website in which the student summarizes what he or she has read and reacts to it. Reactions do not need to be academic in nature, but should reflect some further thinking about the material. The reading project must be completed by the twelfth week of term. (10% of grade)
- 3) Creative project. Each student must create a character who is related to the topic that they are studying. The student must then narrate a period of this character's life in which he or she experiences the issue that the student is studying. For example, if the student is studying a certain disease, the character could be someone who is living through an outbreak of the disease. If the student is studying a scientific discovery, he or she may focus on a researcher and the various ways he or she has approached scientific problems in the past. Fictionalized versions of real historical people are appropriate for this project. The project must be at least 5 pages and can take the form of a series of journal entries, letters, or a fictional narrative told in either the third or first person (10% of project grade) Due during last week of classes.
- 4) Clinical analysis. Each student must evaluate another student's creative project as if he or she were a twenty-first century epidemiologist reading a primary source about a disease outbreak or a scientific discovery. How would you identify the disease discussed in this source or the utility of the discovery? What sort of remedies or applications might you recommend given the resources of the time? How would you attempt to convince contemporaries that your arguments are correct? This response should be 2-3 pages. (5% of grade) Due during finals week.

## Proposed Course Schedule

### Week 1: Foundations

Meeting #1: Historical content: Concepts of disease in the premodern world. Ancient Egypt, Galen, Hippocrates, Religion and Diseases

Reading: We will explore in class together the Edwin Smith Papyrus  
<http://archive.nlm.nih.gov/proj/ttp/flash/smith/smith.html>

Lester Kin, "What is Disease?" in *Concepts of Health and Disease: Interdisciplinary Perspective*, ed. Arthur Caplan et al., 107-118.

Meeting #2: Scientific content: The chemistry of life.

Reading: Chapter 1 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn. Sections 1.2 Microbes in History and 1.3 Macromolecules

### Week 2: The Scientific Revolution and Scientific Thinking

Meeting #1: Historical content: The Scientific Revolution, the evolution of experiment, change in systems of thought.

Reading: **First short writing assignment due:** Please read **one** of the following interactive books and prepare a 2 page response in which you discuss the sorts of assumptions about the natural world, the human body, and how knowledge is made that are presented in the following works:

Andreas Vesalius, *On the Fabric of the Human Body*  
<https://ceb.nlm.nih.gov/proj/ttp/flash/vesalius/vesalius.html>

Ambroise Paré, *Oeuvres*  
<https://ceb.nlm.nih.gov/proj/ttp/flash/pare/pare.html>

Meeting #2: Scientific content: Cell structure, Scientific thinking

Reading: Chapter 4 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn. Section 4.2 Structures of the Eukaryotic Cell

**Lab #1: LearnSmart Labs: Scientific Method**

### Week 3 The Black Plague and Early Epidemics

Meeting #1 Historical content: the progress of the disease in the 1340s, continuing outbreaks in the seventeenth century, cultural responses to the disease, medical ideas about Plague, the growth of public health.

Reading: Andrew Cunningham, "Identifying Diseases in the Past: Cutting through the Gordian Knot," *Asclepio*, 2002, 54(1): 13-34.

Boccaccio, *The Decameron*, introduction  
<https://sourcebooks.fordham.edu/source/decameronintro.asp>

Meeting #2: Scientific content: Bacterial structures

Reading: Chapter 3 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Section 3.1, 3.2, 3.4 Form and Function, External structures, Internal structures

**Part 1 of independent project due.**

### Week 4 The Birth of the Microscope

Meeting #1: Historical content: earlier ideas about microscopy. Robert Hooke, van Leewenhoek, publishing the microscopic.

Reading: Gest, Howard. "The Discovery of Microorganisms by Robert Hooke and Antoni Van Leeuwenhoek, Fellows of the Royal Society." *Notes and Records of the Royal Society of London* 58, no. 2 (2004): 187-201.

Robert Hooke, *Micrographia*  
<https://ceb.nlm.nih.gov/proj/ttp/flash/hooke/hooke.html>

**Quiz #1 in class**

Meeting #2: Scientific content: The science of microscopy

Reading: Chapter 2 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Section 2.1 The microscope, Section 3.3 Cell envelope (staining)

**Lab #2: LearnSmart Labs: Microscopy Microbiology**

.  
. .  
. .  
. .

## Week 5 New Worlds and New Diseases

Meeting #1: Historical content: The Colombian Exchange, colonialism, and Small Pox.

Reading: Fray Bernardino de Sahagún, General History of the Things New Spain, Book 12, Section on Smallpox

Hernan Cortes, Letters, (selections)

Robert McCaa, "Spanish and Nahuatl Views on Smallpox and Demographic Catastrophe in Mexico." *The Journal of Interdisciplinary History* 25, no. 3 (1995): 397-431

Meeting #2: Scientific content: Intro to viruses

Reading: Chapter 5 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 5.1 - 5.5 Properties of viruses, Structure, Multiplication, Cultivating & Identifying, Other agents, Human health

## Week 6 The Joys of Fermentation

Meeting #1: Historical content: Alchemy, traditions of brewing and distilling, origins of chemistry and biology

Reading Hieronymus Brunschwig's *Liber de Arte Distilland*  
<https://ceb.nlm.nih.gov/proj/ntp/flash/brunschwig/brunschwig.html>

**Quiz #2 in class**

Meeting #2: Scientific content: Metabolic growth and fermentation

Reading: Chapter 6 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 6.1 - 6.3 Microbial Nutrition, Growth, Measuring Growth

Chapter 7 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 7.1 - 7.3 Enzymes, Using energy, Catabolism

## Week 7 Vaccination and Blood Transfusion

Meeting #1: Historical content: the first transfusions, from variolation to vaccination, Edward Jenner

Reading: Elizabeth Fenn, *Pox Americana: The Great Smallpox Epidemic of 1775-82*, 1-80

**Second short writing assignment due:** Pretend you are a public health official either now or in the early nineteenth century. How do you convince and then ensure that a majority of the population where you live is inoculated against deadly diseases?

Meeting #2: Scientific content: Immunology

Reading: Chapter 12 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 12.1 - 12.3 Defense Mechanisms, Non specific Immunity

Chapter 13 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 13.1 - 13.6 Specific Immunity, Vaccinations

## Week 8 Germs

Meeting #1: Historical content: Lister, Cholera, and the discovery of germs.

Reading: Steven Johnson, *The Ghost Map: The Story of London's Most Terrifying Epidemic and How It Changed Science, Cities, and the Modern World*, 1-80

Meeting #2 Scientific content: Germ theory

Reading: Chapter 15 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 15.1 - 15.6 Specimen Collection, Phenotypic methods, Genotypic Methods, Immunologic Methods, New Methodologies

## Week 9 Epidemiology

Meeting #1: Historical content: Nineteenth century discoveries

Reading: Steven Johnson, *The Ghost Map*, 81-190

**Quiz #3 in class**

Meeting #2: Scientific content: Epidemiology

Reading: Chapter 11 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn, Sections 11.1 - 11.3 Human Host, Infection Process, Epidemiology

## Week 10 Evolution and early gene theory

Meeting #1: Historical content: Darwin, Mendel and the cultural reaction to evolution.

Reading: Darwin, *On the Origin of Species* (selections)  
Richard Owen's response to Darwin

Meeting #2 Scientific content: Bacterial and viral evolution

Reading: Chapter 8 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn. Section 8.5 Genetic Mutation

## Week 11 Searching for cures

Meeting #1: Historical content: Fighting Yellow Fever and Influenza in the Americas.

Reading: Please watch the following PBS documentary on the influenza outbreak of 1918  
<https://www.youtube.com/watch?v=l0juBE-ra3A>

**Quiz #4 in class**

Meeting #2: Scientific content: Control methods for disease.

Reading: Chapter 9 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn. Sections 9.1 - 9.3 Chemical and Physical Control methods

**Lab #3 LearnSmart Labs: Control of Microbial Growth UV light, Antiseptics/Disinfectants**

## Week 12: The Birth of Antibiotics

Meeting #1: Historical content: Disease, World War, and postwar America

Reading: Susan Reverby, *Examining Tuskegee: The Infamous Syphilis Study and Its Legacy*, 1-85

**Third short writing assignment due:** Why was the Tuskegee study unethical? What should researchers do with the results of such unethical studies?

Meeting #2: Scientific content: antibiotics.

Reading: Chapter 10 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn. Sections 10.1 - 10.3 Principles, Antibiotic Effects, Antimicrobial Resistance

**Part 2 of independent project must be completed by this date.**

## Week 13: DNA

Meeting #1: Historical content: from Mendel to Watson and Crick. Brief intro to Eugenics

Reading: Patrick Parrinder, "Eugenics and Utopia: Sexual Selection from Galton to Morris," *Utopian Studies*, Vol. 8, No. 2 (1997): 1-12

Please also watch the movie, *Gattaca*, which will be available on reserve in the library

Meeting #2: Scientific content: DNA and Genetics.

Reading:

Chapter 8 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn Sections 8.1, 8.2, 8.4, 8.6 Replication, TXN & TLN, Recombination, Genetic Engineering

**Lab #4: LearnSmart Labs: DNA Biology and Technology**

## Week 14 Emerging Diseases

Meeting #1: Historical content: Modern public health and social control case studies.

Reading: Please bring in an article about a recent disease outbreak and be prepared to discuss it in light of the historical content of this course

Meeting #2: Scientific content: Mapping the Genome and the Future of Disease

Reading: Chapter 22 of *Microbiology Fundamentals: a Clinical Approach*, Cowan and Bunn. Sections 22.1-22.3 Zoonoses and Environment

## Week 15 Discussion of Projects

Students will make short presentations/will discuss their independent projects.

**Part 3 of independent project due on last day of classes.**

**For finals week please complete Part 4 of independent project and the following, final short response paper:**

**Response paper #4: Suppose you have been awarded a scholarship to study both history and biology at Penn State. Write a letter explaining to the organization providing you with this money explaining why this course should count both for biology and history credit. Be sure to cite specific things that you learned from each discipline in your response.**