

Plague, Famine, and Beer: The Impact of Microscopic Organisms on Human History (PLPA 2003)

Fall semester 2015
3 credits

Lectures: Tu & Th 10:15-11:30
Room: Borlaug 365

Instructor: Dr. Brett Arenz

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Office location: 105A Stakman (check in 105 Stakman)
Office hours: Wednesday 1-2 pm or by arrangement

Course prerequisites: none

Course description

This course is designed to examine the fundamental negative and positive influences that microscopic organisms have had on shaping the course of human history. The effect of infectious disease on human populations and movements will be explored through analysis of historically important human and plant disease epidemics. Both the science of microbial biology and historical evidence will be emphasized and given equal scrutiny in this class. In addition to the malevolent microbes, the many marvelous microbes will be explored through their products and processes that are key components of ancient and modern living.

Interdisciplinary Course Requirement

This course meets the requirements of an Interdisciplinary course as defined by the College of Food, Agriculture and Natural Resources. All incoming CFANs students enrolling after Summer 2013 are required to take 1 Interdisciplinary and 1 Experiential course before they graduate.

Liberal Education Requirements

This course meets the requirements of a Historical Perspectives core class as stipulated by the Council on Liberal Education and University Senate.

It is the firm belief of your instructor and the University of Minnesota that not only will you personally benefit from a liberal education but also will the society in which you continue to contribute and help shape after you graduate. Institutes which follow the liberal education model prescribe to the idea that knowledge is inherently valuable and an education should provide an individual with more than a set of technical skills. A liberal education is designed not only to give you a well-rounded education but also to teach students to think and analyze important societal issues from multiple disciplines as well as contextualize disciplinary-specific

information into the “big picture” of total human knowledge. In this course you will be integrating the science of microbiology into the larger context of human history and society.

Historical Perspectives core requirement

Microorganisms have had profound effects on the course of human civilization, however these effects themselves have shifted as human societies change. For example, hunter-gatherer societies are affected by disease in a much different way than agrarian societies. Perhaps more dramatically on a global scale has been the change in the effect of microbes as our knowledge of microbiology has increased just in the last two hundred years. The class is designed to not only teach you about the interaction of microbes and humans on a historical basis but also allow you to practice doing the work of historians yourselves by analyzing primary accounts and conducting independent research and making novel interpretations.

Required text

The required text for this class is *Deadly Companions: how microbes shaped our history* by Dorothy Crawford. The book should be available at the UMN bookstore but can also be easily ordered online or from other local bookstores. Additional readings will be made available electronically.

Date	Session	Topic	Assigned readings from text	Important Dates
9/8	1	Intro to Class/Microbes		
9/10	2	History of Microbiology	Deadly Companions Ch. 1	
9/15	3	Germ Theory of Disease	Deadly Companions Ch. 7. 161-167, “Infectious History” PDF	Reading Quiz
9/17	4	Hunter-Gatherers and Disease	Deadly Companions Ch. 2	
9/22	5	Farmers and Disease	Deadly Companions Ch. 3	Reading Quiz
9/24	6	Malaria and Human Genetics	The Fever, Ch. 2 PDF	
9/29	7	Urbanization and Disease	Deadly Companions Ch. 4	Reading Quiz
10/1	8	Black Death	TBA	
10/6	9	Bio-warfare	The History of Biological Warfare PDF	Reading Quiz
10/8	10	Accidental Bio-warfare	Deadly Companions Ch. 5	
10/13	11	Military Campaigns and Disease	Napoleonic Wars and Disease (Web Link)	Reading Quiz
10/15	12	Small Pox Eradication	Deadly Companions Ch. 7. 167-179	Primary Source Assignment Due
10/20	13	Syphilis and Insanity	The Great Pox that was... Syphilis PDF	Reading Quiz
10/22	14	Mid Term Exam		
10/27	15	Plant Disease and History	Pests and Diseases of Prehistoric Crops PDF	Reading Quiz
10/29	16	Wheat Stem Rust and Minnesota	TBA	Research Project Questions Due

11/3	17	Irish Potato Famine	Deadly Companions Ch. 6., Late blight of potato and tomato (Web Link)	Reading Quiz
11/5	18	Ergotism and Witchcraft	Ergot and Salem PDF	
11/10	19	Chestnut Blight	Reading on Chestnut Blight (Web Link)	Reading Quiz
11/12	20	Guest Speaker: Dr. Robert Blanchette: "Forest fungi used by Indigenous People of North America"	TBA	
11/17	21	Shamanism and Magical Mushrooms	TBA	
11/19	22	Pre-Historic Brewing	History of the World in 6 glasses Ch. 1 PDF	Reading Quiz
11/24	23	Fermented Foods	TBA	
11/26	No Class	Thanksgiving!		
12/1	24	Antibiotics	Deadly Companions Ch.6 179-183, 193-204, End of Antibiotics (Web-Link)	Reading Quiz
12/3	25	Hygiene Hypothesis and History and Future of Microbial Biotechnology	TBA	
12/8	26	Presentations 1		Written Research Project Component Due
12/10	27	Presentations 2		
12/15	28	Presentations 3		
12/23		Final Exam (Wednesday 8:00-10:00)		

Student outcomes for this course

- 1.) A deeper insight into the general effect of microbes on the development of early human societies.
- 2.) An improved understanding of the nature and science of disease and epidemics.
- 3.) For students to gain an understanding and appreciation for the major historical advances in the science of microbiology which have had a direct impact on the length and quality of life we currently enjoy.
- 4.) A survey of the major products and processes that mankind has depended on microbes to create.
- 5.) An ability to write and speak comfortably and simultaneously about issues in the sciences and the humanities and a greater appreciation for the potential unity of knowledge (consilience).

Lecture Format

The typical class session will be a combination of lecture by the instructor, discussion of class readings, and additional small group and class activities.

Student assessment

One Midterm Exam = 20% of your grade

Comprehensive Final Exam = 30%

Online Reading Quizzes = 15%

In-Class Activities = 10%

Primary Source Analysis Project = 5%

Final Research Project (20% total)

1. Research Project Final Draft = 15%
2. Final Presentation = 5%

Exams

The mid-term lecture exam will cover material covered in the first portion of the class and may include short answer, essay, and multiple choice questions. The final exam will be comprehensive and may also include questions based on presentations from the class.

Reading Quizzes

A short online quiz or reading reaction will be set up on the moodle website for students to take on or before the day a reading assignment is due. Each quiz or reading reaction must be completed by the time class begins for full points to be awarded.

In-Class Activities

Each lecture session will be roughly 50% lecture by the instructor and 50% small group and whole class discussion and activities. Specific class activities will be introduced and described on the day they are conducted. Your ability to participate in these discussions and activities will be directly related to your having completed the assigned reading for that session.

Research Project

Each student will conduct a semester long culmination research project seeking to answer a question they pose about a specific aspect of history and microbes/microbiology. Instead of writing a typical format research paper which answers this question, in this project the student will focus on an analysis of the process of conducting historic research. Students will focus on establishing the what/who/where/when of documents that they find which help them answer the question that they've posed. In addition students must analyze the potential bias represented in primary and secondary accounts as well as the overall reliability of evidence that they find. A written report which follows a standard template will be due at the end of the semester as well as

a brief oral report to the rest of the class (5 minutes). More information and a detailed rubric will be provided later in the semester as the research project nears.

Students with disabilities

The Department of Plant Pathology is committed to providing all students equal access to learning opportunities. If you need different accommodations that what is provided please let the instructor know as soon as possible. We are happy to work with you to provide and/or arrange reasonable accommodations. If you need further information contact Disabilities Services. Students registered with Disability Services, who have a letter requesting accommodations, are encouraged to contact the instructor early in the semester. Students who have, or think they may have, a disability (e.g. psychiatric, attentional, learning, vision, hearing, physical, or systemic), are invited to contact Disability Services for a confidential discussion at 612-626-1333 (V/TTY) or ds@umn.edu. Additional information is available at the DS website <http://ds.umn.edu>.

Academic Dishonesty

Academic dishonesty in any portion of the academic work for this course shall be grounds for awarding a grade of F (represents failure).

Grading

Letter grades will be calculated by the following formula;

A = achievement that is outstanding relative the level necessary to meet course requirements.

B = achievement that is significantly above the level necessary to meet course requirements.

C = achievement that meets the course requirements in every respect.

D = achievement that meets the course requirements in some respects.

F = represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not complete and there was no agreement between the instructor and the student on the conditions for awarding of an Incomplete (I).

I = (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances, e. g., hospitalization, a student is prevented from completing the work of the course on time. This grade requires a written agreement between instructor and the student.

Total Percentage of points	Letter grade
93.00 -100	A
90.00-92.99	A-
87.00-89.99	B+
83.00-86.99	B
80.00-82.99	B-
77.00-79.99	C+
73.00-76.99	C
70.00-72.99	C-
65.00-69.99	D+
60.00-64.99	D
59.99 and below	F

Exam Policy

Students are expected to take exams at the times scheduled in the syllabus and or arranged by the instructor and the final exam at the time shown in the University of Minnesota calendar. Possible exceptions include serious illness, family emergencies or a legitimate conflict with recognized University activities. If you are unable to take an exam at the scheduled time please contact the instructor as soon as possible to make other arrangements.

If you miss an exam;

Contact your instructor immediately. Students missing exams for valid (e.g., medical/bereavement) reasons must notify the instructor in advance, where possible and provide documentation if requested. If a student is able to sit the exam within 48 hours of the original exam time they may arrange to do so without penalty.

If you are unable to take the final exam;

If a student is unable to take the final examination at the scheduled time for medical or other adverse reason, she or he can and should apply for a special examination. Applications made on medical grounds should be accompanied by a medical certificate; those on the other grounds must be supported by a personal declaration stating the facts on which the application relies. Also, if you have a conflicting final exam time or three final exams within 16 hour period, you may request a time adjustment by contacting your college office and the instructors. Students should contact their instructor at least 1 week prior to the scheduled exam time to request consideration for a special examination.

Grading Disputes

Students who feel an assignment or exam questions have been graded incorrectly should submit a written explanation within one week of having the assignment or exam returned. If the disputed graded is a matter of opinion, the work will be given to two others (instructors, laboratory coordinator) for re-grading. Their decision will be final. Errors due to miscalculation will be corrected immediately. The student Resolution Center is also available to help resolve grade conflicts.

Student Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via <http://www.mentalhealth.umn.edu/>.