

The Ohio State University  
**HIV: From Microbiology to Macrohistory**  
[History 3xxx/Microbiology 3xxx]  
Spring Semester 2015

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Class meetings: Monday and Wednesday, 9.35-10.55, in TBA Hall, room 1234.

Expected enrollment: 40 students

### **Course Description**

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This course is an interdisciplinary exploration of HIV/AIDS. In 2012, an estimated 35.3 million people around the world were living with HIV, a number startling close to the estimated number of people who have died from AIDS since 1981. Unlocking the virological secrets of HIV/AIDS has been one of the grand scientific challenges of the last three decades, and the disease remains one of the world's most serious challenges to human health and development. The burden of the disease is very uneven globally, and sub-Saharan Africa, where the disease originated, is home to 69% of those living with HIV today. How did this virus and this global pandemic come to be? The course traces the evolution of the virus at both the molecular level and within in its global historical context. Team-taught by a virologist and a historian, the goal of the class, at the broadest level, is to put the sciences and humanities in conversation.

The course will require students to apply the theory of evolution by natural selection to explain the origin of HIV (chimpanzees in Africa) and the ability of HIV to develop drug resistance and evade an effective vaccine. The course will simultaneously put these scientific processes and the effects of disease into historical context. The very scientific revolutions that led to Darwin's theory of evolution and Koch's postulates of infection transmission helped make European colonialism possible. For example Social Darwinism justified imperial aims, Pasteurian ideals of contamination influenced notions of racial purity, and the new field of tropical medicine was created to protect colonial administrators and soldiers in their distant postings. Similarly, colonial rule and the creation of the extractive economies of central and southern Africa set in motion population movements, wealth inequalities, and structures of power that amplified the

effects—decades later—of HIV and contributed to what would become a global pandemic. Although the academy approaches the medical facts of disease and its social consequences through distinct disciplines, those who have contracted the virus experience all aspects of the disease. This course makes it possible for students to consider the medical, scientific, social, political, and economic causes and consequences of one of the world's most devastating viruses.

## **Objectives**

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This course examines the human immunodeficiency virus (HIV) as both a scientific phenomenon and a historical entity. The course is interdisciplinary and encourages students to take intellectual risks in asking questions and trying to learn new methodologies. The course aspires to convey broad and differing perspectives as a means of demonstrating the interconnectivity of scientific and humanistic learning. To do this, the course has five specific learning goals drawn from history and from microbiology:

1. Students acquire a perspective on the history of HIV and an understanding of the factors that have shaped the evolution, progression, and treatment of the virus.
2. Students display knowledge about the origins and nature of contemporary scientific, medical, and social issues and develop a foundation for comparative understanding of other diseases.
3. Students think, speak, and write critically about primary and secondary historical sources. Students will examine diverse interpretations of past events related to the history of science, tropical medicine, political formulations, and economic structures in their historical contexts.
4. Students understand evolutionary processes of viruses, the diversity within HIV, and how the forms of this virus have impacted their environment, including their roles in human health and disease.
5. Students acquire the ability to appraise scientific data related to HIV/AIDS presented in the popular press for accuracy and scientific merit and understand issues and ethical conflicts associated with applications of biotechnology.

## **Required Texts**

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The course draws on a wide variety of literature from the sciences and humanities. These include scientific and historical journal articles; government and supragovernmental reports and data sets; chapters from historical monographs; primary source documents; journalistic accounts, and several films/film excerpts. While most readings will be available either through OSU databases or Carmen, students may wish to consider purchasing one of two books that provide textbook-like coverage: John Iliffe, *The African AIDS Epidemic: A History* (Ohio University Press, 2006) and/or Jacques Pepin, *The Origins of AIDS* (Cambridge University Press, 2011)

## **Course Requirements, Policies, and Grades**

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**Enrollment:** All students must be officially enrolled in the course by the end of the second full week of the semester. No requests to add the course will be approved by the department chairs after that time. Enrolling officially and on time is solely the responsibility of the student.

**Attendance and Participation:** Students are expected to attend all meetings of the course. Preparation for class and in-class participation and contributions are important to student learning and are weighed heavily in the final grade. The rubric on preparation, participation, and contribution will be distributed and discussed during the first week. Note that the highest participation grades will go to those who help build the discussions through their own contributions and their questions to peers. The most valuable contributions often begin with the words, "I don't understand." Coming to class prepared and answering questions from your peers and your instructor are also helpful.

In the event that you must miss class, you are responsible for the contents of the lecture and/or discussion. Furthermore, if you miss class on the day of a quiz or participation grade, you will not be permitted to make it up without prior arrangement with the instructor. Students who must miss class for religious observances must notify the instructor of their absence in advance.

**Short Writing/Reflections/Problem Sets:** Most weeks students will write a short (one page) assignment or reflection. Given the interdisciplinary nature of the course, sometimes this will take the form of a problem set. The goal of these assignments is to evaluate student progress and allow students to respond to the ideas of the course.

**Reading:** Due to the interdisciplinary nature of this course, we draw on an unusually wide variety of sources. Reading and understanding these is one of the key ways students are expected to learn. The amount of reading varies each week. As a general rule of thumb, students should plan to spend at least two hours studying and reading outside of class for every hour they spend in it. Thus for this course, students should allocate more than five hours per work to complete their assignments.

**Primary Source Paper:** students will write one short essay (3-5 pages) that interprets primary sources and uses them to make a historical interpretation/argument.

**Final Project:** Students will complete a research project that will require them to work across disciplines to analyze or propose solutions to HIV/AIDS related problems. The work for the project will be done in steps, with feedback. Students will receive instruction on each step early in the semester, and students should begin considering the topics of research to which they are most drawn. Some students will be asked to present aspects of their work during the last week of classes.

**Submission of work:** All written work is due at the beginning of class on the day indicated on the syllabus. Please submit all papers electronically via the course's

Carmen dropbox, with your last name as the first word in the file name. All written assignments should be typed, double-spaced, with 1-inch margins and in a 12-point font. Your name should be on the first page and all pages should be numbered.

**Late work:** All students are responsible for knowing and adhering to the deadlines for course assignments. Late work will be penalized five points per day. The only exception to this will be when you have explicit, advanced permission from the one of the professors. If you anticipate a problem in completing or submitting your work on time, you must contact the instructors in a timely manner. If you do not hear back, you should assume that your work is due on the original date.

**Examinations:** The course will have a midterm and a final examination to test both factual knowledge and interpretive ability. Students must take the exams at the scheduled time. Make-up examinations will only be allowed for urgent reasons, such as medical or legal emergencies. Students are expected to inform the instructor of such emergencies in a timely manner. Students will be expected to present proof of the emergency, such as an official statement from the University Medical Center. (The “Explanatory Statement for Absence from Class” that can be found on the Wilce Health Center website does not constitute an official statement.) Students who qualify for make-up exams must submit proof of the emergency to the instructors within five days of the scheduled exam.

**Plagiarism and academic misconduct:** It is the responsibility of the Committee on Academic Misconduct (COAM) to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed, illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Plagiarism is presenting another person's words, ideas, or sequence of arguments as your own without attribution. We will discuss what constitutes plagiarism and how to cite sources properly in this course. If at any point, however, you have a question about this, please ask. If you are tempted to plagiarize or find yourself using material from the Internet or any other source and trying to pass it off as your own, stop working on the assignment and contact the instructors. It is better to submit work late than to violate the Code of Student Conduct. It is the instructors' responsibility to report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487), and the professor and discussion section leaders take this responsibility seriously. For additional information, see the Code of Student Conduct (<http://studentaffairs.osu.edu/csc/>).

**Students with disabilities** that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292.3307, TDD 292.0901; <http://www.ods.ohio-state.edu>.

**Email:** Electronic mail is a valuable tool. The instructors will, from time to time, send emails to the class. We are also happy to respond to your email messages that conform to the appropriate standards. In academic and professional settings, all emails should have a descriptive subject line ("Question about HIV course assignment"), begin with a respectful salutation ("Prof. Kwiek" or "Prof. McDow"), and conform to standard English with proper punctuation and capitalization. For an excellent overview of how students can most effectively use email with their professors, please see "How to e-mail a professor" <<http://mleddy.blogspot.com/2005/01/how-to-e-mail-professor.html>>

**Grading:** Final course grades will be calculated according to the following rubric using the grading scale below.

Participation/contributions to in-class discussion	25%
Short writing/reflections/problem sets (weekly)	15%
Midterm	20%
Primary Source Paper	10%
Final Project	10%
Final exam	20%

Grading Scale: 93-100 = A; 90-92 = A-; 87-89 = B+; 83-86 = B; 80-82 = B-; 77-79 = C+; 73-76 = C; 70-72 = C-; 67-69 = D+; 63-66 = D; 60-62 = D-; 0-59 = F

To do well, come to class and participate, complete the reading outside of class. Above all, ask questions when you do not understand or need more information. The course is designed for you to succeed.

## Course Schedule

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The schedule below includes the topics and learning objectives for each week. The chart also shows how each topic aligns with learning objectives from history (H) and microbiology (M). The objectives referred to are as follows:

- H1. Students acquire a perspective on history and an understanding of the factors that shape human activity.
- H2. Students display knowledge about the origins and nature of contemporary issues and develop a foundation for future comparative understanding.
- H3. Students think, speak, and write critically about primary and secondary historical sources by examining diverse interpretations of past events and ideas in their historical contexts.
- M1: Students understand evolutionary processes, the diversity of microorganisms, and how microorganisms impact their environment, including their roles in human health and disease.

M2: Students acquire the ability to appraise scientific data presented in the popular press for accuracy and scientific merit and understand issues and ethical conflicts associated with applications of biotechnology.

M3. Students acquire the ability to design experiments to test hypotheses, perform analyses, interpret and analyze data, and present scientific information in written and oral formats.

Wk	Topic	Learning Obj.		Specific learning objective	Materials
		Hist.	Micro.		
1 1/12	Introductions	H1, H3	M2	Explain the goals of the course and its narrative arc. Catalog, critique, and discuss common perceptions (and misperceptions) of HIV/AIDS and of Africa.	Binyavanga Wainaina, "How to Write about Africa," <i>Granta</i> 92, 2005 Paula A. Treichler, <i>How to Have Theory in an Epidemic: Cultural Chronicles of AIDS (1999)</i> , excerpt
2 1/19	Foundations and the challenge of working across disciplines	H3	M2, M3	Understand the process and purpose of hypothesis testing. Generate and test a hypothesis. Compare primary and secondary historical sources as the evidentiary basis for historical arguments. Learn basic techniques to critique and contextualize primary sources.	Flipped class: Conducting t-tests in Excel (Youtube video)
3 1/26	Human origins to early modern era	H1, H2		Understand the broad outline of humankind's African origins and evolution. Trace human migrations within Africa to understand the high degree of differentiation within African populations.	
4 2/2	Science and disease in 19th century	H1, H2, H3	M1, M2	Describe the transition in theories of disease from humoral and miasma to germ theory. List and apply Koch's postulates; draw HIV replication cycle; explain why HIV infection is permanent; describe the immune response to HIV.	Paul De Kruif, <i>Microbe Hunters</i> . Chps 3-5. Primary literature and textbook excerpts describing HIV discovery and life cycle. "Reverse Transcription," This Week in Virology: <a href="http://www.twiv.tv/2010/01/17/twiv-66-reverse-transcription/">http://www.twiv.tv/2010/01/17/twiv-66-reverse-transcription/</a>
5 2/9	European colonialism and reordering African livelihoods (1)	H1, H2, H3		Consider the influence of contemporary scientific thought on nationalism and racial order. Recognize patterns of colonial conquest and administration. Examine the process of economic transformation from peasant livelihoods to wage labor.	Luise White, "Livestock, Labor, and Reproduction: Prostitution in Nairobi and the East African Protectorate, ca. 1900-1918," <i>The Comforts of Home: Prostitution in Colonial Nairobi (1990)</i>

6 2/16	European colonialism and reordering African livelihoods (2)	H1, H2, H3	M2	Assess the way that disease environments and the birth of public health shaped African health systems.	Jacque Pepin, "The legacies of colonial medicine," (Chps 8-9), <i>The Origins of AIDS</i> (2011)
7 2/23	Evolution of an epidemic	H1, H2, H3	M1	List tenets of Darwinian evolution by natural selection; use a phylogenetic tree to explain HIV ancestry. Consider a virus (and its mutations) as a historical source. Differentiate the paths and context of the spread of HIV from central Africa to eastern, southern, and western Africa	RadioLab, "Patient Zero," " <a href="http://www.radiolab.org/story/169879-patient-zero/">http://www.radiolab.org/story/169879-patient-zero/</a> John Iliffe, <i>The African AIDS Epidemic: A History</i> (2006), Chps 3-6 on the spread of HIV across Africa
8 3/2	<b>Midterm</b> (review and examination)				
9 (3/9)	Birth of a global pandemic	H1, H2	M1, M2	Define epidemiology. Describe the epidemiology of the HIV pandemic. Compare and contrast the North American and African HIV epidemic.	Jacque Pepin, "From the Congo to the Caribbean," (Chp 11), <i>The Origins of AIDS</i> (2011) Gapminder charts. WHO/UNAIDS publications.
-- 3/16	<b>Spring Break</b>				
10 3/23	American AIDS/GRID/"Gay Plague"	H1, H2, H3	M2	Understand how stigma of marginalized groups affected the social and scientific response to HIV; Analyze the role of activist groups in drawing attention to the disease	Film: How to Survive a Plague.
11 3/30	Rumors and denialism: from Thabo Mbeki to Magic Johnson	H3	M1, M2	Evaluate arguments used to deny HIV causes AIDS	Newspaper articles N. Natrass, <i>Mortal Combat: AIDS denialism and the struggle for antiretrovirals in South Africa</i> (2007), <i>excerpts</i>
12 4/6	Global (disproportionate) response to HIV	H2, H3	M2	Identify the contradictions and inequalities within late 20 <sup>th</sup> -century globalization and apply these to HIV/AIDS.	Primary Source Analysis based on published interviews with three women from East Africa
13 4/13	Big pharma and treatment ethics	H1, H3	M1, M2	Outline history of HIV drug discovery and development. List Belmont Principles and understand the function of the Helsinki Declaration.	Movie: "Constant Gardener" News articles on South Africa's Treatment Action Campaign
14 4/20	The future of HIV: vaccine failure and the search for a cure	H2	M1, M2	Summarize vaccine strategies and understand why they failed. Describe a human genetic polymorphism that confers HIV resistance. Explain how it could be used for a treatment. Compose plausible arguments for and against proposed treatments.	Primary literature (Lancet. 1996 Nov 16;348(9038):1347-51. Emerg Infect Dis. 1997 Jul-Sep;3(3):261-71.)

15 4/24	<b>Presentations</b>	H3	Synthesize complex material, summarize research, and present final projects.	
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### **Concluding Notes**

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This syllabus is subject to revision as the semester proceeds. Announcements will be made in class or via OSU email accounts. Students are responsible for being aware of any changes.

If you have any questions about the content or conduct of the course, please do not hesitate to contact Prof. Kwiek <kwiek.2(at)osu.edu> and/or Prof. McDow <mcdow.4(at)osu.edu>