

## **Epidemiology in Kenya** IPBH-3550 (3 credits)

### **Kenya: Global Health and Human Rights**

*This syllabus is representative of a typical semester. Because courses develop and change over time to take advantage of unique learning opportunities, actual course content varies from semester to semester.*

#### **Course Description**

The Epidemiology in Kenya seminar examines trends and patterns in the burden of diseases in Kenya and explores the specifics related to epidemiological research conducted in the country by Kenya Medical Research Institute (KEMRI) in conjunction with US Centers for Disease Control and Prevention (CDC) and health practitioners that inform the planning, implementation, and evaluation cycle in public health promotion. The course starts by delving into the importance of epidemiology in the context of Kenya, a developing country. Students will describe and apply epidemiological terms using hands-on data to make causal inferences and be able to communicate their findings to both lay and professional audiences.

Further, the course introduces the principles, concepts, and methods of population-based epidemiology - the study of patterns and determinants of disease in different populations. Topics include the dynamic behavior of disease, measures of disease incidence, prevalence and effect, uses of rates and proportions and other statistics to assess population health, epidemiologic study designs, and bias in investigating the extent of disease problems and the associations between risk factors and disease outcomes.

Students will learn and apply basic concepts of epidemiology to multiple domains of public health. The course will illustrate how epidemiology can be applied to better understand, characterize, and promote health at community level. The course will engage the students in active and experiential learning through lectures, readings, assignments, team activities, individual projects, case studies, group discussions and educational excursions.

#### **Learning Outcomes**

Upon completion of the course, students will be able to:

- Explain the importance of epidemiology to scientific, ethical, economic and political discussions of health issues;
- Describe public health problems using epidemiological terms such as person, place, and time;

- Calculate basic epidemiology measures by causal inferences, including how to mitigate bias and the effects of confounding factors; and
- Communicate epidemiologic information to lay and professional audiences (disease outbreak investigation); and policy development.

### **Language of Instruction**

The course is taught in English.

### **Instructional Methods**

Lectures with key personalities in public health are complemented by case studies at Kenya Medical Research Institute (KEMRI) and Centers for Disease Control in Kisumu, case studies of Kisumu City Department of Public Health, Teaching and Referral Hospitals. Students also study research protocols that utilize epidemiologic designs to answer specific research questions.

### **Required Texts**

See Course Schedule for a full list of readings. Students are responsible for all the required readings, and should be prepared to bring them to bear on discussions in class. The readings will help you place the classes in their context, to challenge and engage lecturers, to generate questions for class discussions and to deepen your knowledge of particular aspects discussed in class.

### **Assignments and Evaluation**

#### Assignment Descriptions and Grading Criteria

- 1) **Assessing the role of Epidemiology in Kenya's Health Care System (30%):** Assess the role of epidemiology in the planning, delivery, and evaluation of Kenya's health policy and health care system? To what extent is data used in the planning and delivery of Kenya's health care system? What types of data are used? Where are the gaps? 1500 words.
- 2) **Infographics Project (30%):** Students are required to prepare a creative presentation (PPT, etc.) that examines the distribution, patterns, and trends of any one communicable or non-communicable disease in Kenya. The student should choose which data set they will use and provide a justification for the choice of data set (World Bank Data, WHO Data, DHS, etc.). The PPT should be 15 to 20 slides. Each EPI student completing this assignment will make a presentation to the entire student group on a date as shown on the program calendar.
- 3) **USOMA Community Project Paper (30%):** Instructions will be provided prior to the USOMA Action Research Week.
- 4) **Participation (10%):** Participation in class refers to attendance, punctuality, attentive listening and active engagement in all lectures, discussions, educational excursions, and other activities. It also means polite and respectful behavior.

## Assessment

- Epidemiology in Kenya's Health Care System – 30%
- Infographics Project - 30%
- USOMA Community Project Paper - 30%
- Participation - 10%

## Attendance and Participation

Due to the nature of SIT Study Abroad programs, and the importance of student and instructor contributions in each and every class session, attendance at all classes and for all program excursions is required. Criteria for evaluation of student performance include attendance and participation in program activities. Students must fully participate in all program components and courses. Students may not voluntarily opt out of required program activities. Valid reasons for absence – such as illness – must be discussed with the academic director or other designated staff person. Absences impact academic performance, may impact grades, and could result in dismissal from the program.

## Late Assignments

SIT Study Abroad programs integrate traditional classroom lectures and discussion with field-based experiences, site visits and debriefs. The curriculum is designed to build on itself and progress to the culmination (projects, ISP, case studies, internship, etc.). It is critical that students complete assignments in a timely manner to continue to benefit from the sequences in assignments, reflections and experiences throughout the program.

Example: Students may request a justified extension for one paper/assignment during the semester. Requests must be made in writing and at least 12 hours before the posted due date and time. If reason for request is accepted, an extension of up to one week may be granted at that time. Any further requests for extensions will not be granted. Students who fail to submit the assignment within the extension period will receive an 'F' for the assignment.

## Grading Scale

94-100%	A
90-93%	A-
87-89%	B+
84-86%	B
80-83%	B-
77-79%	C+
74-76%	C
70-73%	C-
67-69%	D+
64-66%	D
below 64	F

## Program Expectations

- Show up prepared. Be on time, have your readings completed and points in mind for discussion or clarification. Complying with these elements raises the level of class discussion for everyone.
- Have assignments completed on schedule, printed, and done accordingly to the specified requirements. This will help ensure that your assignments are returned in a timely manner.
- Ask questions in class. Engage the lecturer. These are often very busy professionals who are doing us an honor by coming to speak.
- Comply with academic integrity policies (no plagiarism or cheating, nothing unethical).
- Respect differences of opinion (classmates', lecturers, local constituents engaged with on the visits). You are not expected to agree with everything you hear, but you are expected to listen across difference and consider other perspectives with respect.
- Storing Your Work: Keep several copies of your work as back up and keep one copy accessible to you through an online forum, such as an attachment in your email, the course learning management system, or cloud-based storage. This way your work will always be available to despite technical issues. Lost files, deleted drives, or computer crashes are not excuses for late, missing work.
- All written assignments should be typed and double-spaced.

## SIT Policies and Resources

Please refer to the [SIT Study Abroad Handbook](#) and the [Policies](#) section of the SIT website for all academic and student affairs policies. Students are accountable for complying with all published policies. Of particular relevance to this course are the policies regarding: academic integrity, Family Educational Rights and Privacy Act (FERPA), research and ethics in field study and internships, late assignments, academic status, academic appeals, diversity and disability, sexual harassment and misconduct, and the student code of conduct.

Please refer to the SIT Study Abroad Handbook and SIT website for information on important resources and services provided through our central administration in Vermont, such as [Library resources and research support](#), [Disability Services](#), [Counseling Services](#), [Title IX information](#), and [Equity, Diversity, and Inclusion](#) resources.

## Course Schedule

*\*Please be aware that topics and excursions may vary to take advantage of any emerging events, to accommodate changes in our lecturers' availability, and to respect any changes that would affect student safety. Students will be notified if this occurs*

### Course Schedule Module 1: Overview of epidemiology

This module introduces students to key concepts in the field of epidemiology and how the field has evolved.

- Definition of Epidemiologic Terms
- History and Philosophy of Epidemiology
- Historic Developments in Epidemiology

### Assigned reading

- Krieger, N. (2014). *Epidemiology and the people's health: Theory and context*. New York, NY: Oxford University Press. [Chapter 1].
- Winkelstein, W. (2000) Interface of epidemiology and history: a commentary on past, present, and future. *Epidemiol Rev.* 22:2–6.
- Vandenbroucke, JP. (2004) *Commentary: The HRT story: vindication of old epidemiological theory*. *Int J Epidemiol* 33:456–457.
- Aschengrau, A. & Seage GR (2013) *Essentials of Epidemiology in Public Health*. Sudbury, Massachusetts: Jones and Bartlett Publishers. [Chapter 1]

### Module 2: Application of epidemiology

The broad applications of epidemiology can be categorized into two focal areas i.e. uses related to health status and health services and the other use related to disease etiology. This module introduces students to Epidemiology at Kenya Medical Research Institute (KEMRI).

- Uses of Epidemiology
- Practical Disease Concepts
- Descriptive Epidemiology I

### Assigned reading

- Morris JN. (1964) Recapitulation; General (final chapter), pp 274-278. In: *Uses of Epidemiology* (second edition). London: E. & S. Livingstone LTD.
- Rose G. (2001) *Sick individuals and sick populations*. *Int J Epidemiol* 30:427–32
- Forsdahl A. (2002) *Observations throwing light on the high mortality in the county of Finnmark: Is the high mortality today a late effect of very poor living conditions in childhood and adolescence?* *Int J Epidemiol* 31:302–08
- Stampfer M. (2004) *Commentary: Hormones and heart disease: do trials and observational studies address different questions?* *Int J Epidemiol* 33:454–55

### Module 3: Epidemiology II: The Kenyan context

This module explores how epidemiological research at KEMRI/CDC and epidemiological research at the Kisumu County Government department of health informs health policy, planning and delivery. Lectures will review select articles from epidemiological work done in Kenya and in the region. Students will work with existing statistical datasets and visit laboratories to obtain experience related to processing and management of data samples from KEMRI/CDC disease surveillance and monitoring systems. Case studies will include HIV/AIDS, malaria, tuberculosis, diarrheal diseases, emerging and re-emerging infectious diseases, maternal and child health, neglected tropical diseases, non-communicable diseases. This module also provides ideas for Independent Study Project (ISP) or internship topic selection.

### Assigned reading

- Kenya AIDS Strategic Framework, 2014/2015-2018/2019
- Malaria Operational Plan FY 2017

- Moore DM, Hogg RS. (2004) *Trends in antenatal human immuno-deficiency virus prevalence in Western Kenya and Eastern Uganda: evidence of differences in health policies?* Int J Epidemiol 33:554–60
- Kenya National Strategy for the prevention and control of non-communicable diseases 2015-2020

#### **Module 4: Practical Epidemiology I**

Epidemiology does not occur in confinement and therefore in this module students will be taken through platforms that evaluate and synthesize epidemiological work in the following sectors/areas of practice: health and demographic surveillance systems, social and behavioral epidemiology, infections and outbreaks investigation, epidemiology and policy.

##### *Assigned reading*

- Kenya Demographic Health Survey, 2014
- Rodgers GB. (2002) *Income and inequality as determinants of mortality: an international cross-section analysis.* Int J Epidemiol 31:533–38
- Leung MW, Yen IH, Minkler M. (2004) *Community based participatory research: a promising approach for increasing epidemiology's relevance in the 21st century.* Int J Epidemiol 33:499–506
- Kark SL. (2003) *The social pathology of syphilis in Africans.* Int J Epidemiol 32:181–86
- Sam Shapiro. (1991) *Epidemiology and Public Policy.* American Journal of Epidemiology, Volume 134, Issue 10, 15 Pages 1057–1061

#### **Module 5: Practical Epidemiology II**

Students observe epidemiology in action in which clinical teams (KEMRI, Teaching and Referral Hospitals, County Governments) use epidemiologic information to make necessary decisions in patient management. Students are also appraised through research protocols that utilize epidemiologic designs to answer specific research questions.

##### *Assigned reading*

- Leitch I. (2001) *Growth and health.* Int J Epidemiol 30:212–16.
- Kermack WO, McKendrick AG, McKinlay PL. (2001) *Death-rates in Great Britain and Sweden. Some general regularities and their significance.* Int J Epidemiol 30:678–83.
- Davey Smith G, Ebrahim S. (2003) *'Mendelian randomization': can genetic epidemiology contribute to understanding environmental determinants of disease?* Int J Epidemiol 32:1–22.
- Berkson J. (2003) *Tests of significance considered as evidence.* Int J Epidemiol 32:687–91.
- Barrett-Connor E. (2004) *Commentary: Observation versus intervention—what's different?* Int J Epidemiol 33:457–59.
- Adcock F. (2004) *Future Work.* Int J Epidemiol 33:468
- Degenhardt L, Hall W, Lynskey N. (2003) *Testing hypotheses about the relationship between cannabis use and psychosis.* Drug Alcohol Depend 71:37–48.
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## **Module 6: Comparative study of Rwanda's healthcare systems**

Rwanda stands out in the East African region for its exceptional gains in rolling back malaria and in implementing a universal health insurance system. How has Rwanda made such progress in health promotion, and what lessons do we draw for implementing successful public health programs in tropical settings? Students begin this module by exploring Rwanda's recent history, and then conduct case studies of Rwanda's Universal health insurance scheme, HIV/AIDS and malaria.

### *Assigned Reading*

- Twahirwa, Aimable. "Sharing the burden of sickness: mutual health insurance in Rwanda."
- Bulletin of the World Health Organization, Nov. 2008, p. 823
- Epping-Jordan, J E. Pruitt, S. D. R Bengoa, Wagner, E. H. (2004) Improving the quality of health care for chronic conditions. Qual Saf Health Care