

Epidemiology: The Science of Disease

Summer HSSP 2019

Introduction

Hello! I am Kenny, and I'm super excited to be teaching a subject I am very, very passionate about: epidemiology, the study of diseases. In this course, we will explore a variety of diseases and how they originate and spread. We will also take a look at the people who work to prevent disease outbreaks and the techniques they use. The main goal of this course is to give you a firm foundation in epidemiology, and to introduce you to a few headline-making pathogens so you can be more informed about them. This course is also designed to give you a broad idea of what disease scientists do, if you are open to the idea of pursuing a career in epidemiology or a similar field.

How the Course is Structured

We will be making heavy use of a publication from the Centers for Disease Control and Prevention (CDC) called *Morbidity and Mortality Weekly Report* (MMWR). This is a professional publication where epidemiologists write about disease outbreaks and other topics in public health. Since the publication is for medical professionals, there will be some new terms and concepts you will be unfamiliar with, but I will walk you through it. The articles we will be reading are accessible to you, and you should not have much difficulty understanding the main points.

Every week, we will be discussing a MMWR article about a disease or disease outbreak. Each class (besides the first class) will begin with a discussion of the assigned MMWR article for the week. We will have a group discussion of the article where we will talk about where the disease the article focuses on came from, how it spread, and how health professionals worked together to stop it. At the end of each class, I will introduce the next disease and describe it in detail, including its structure and how it establishes infection.

I will email you the readings before each class, and any updates I have, so please check your email regularly. If you prefer, I can also provide printed copies of the readings for next class at the end of each class. The readings are not extensive and should take less than an hour each week. Please bring your questions and comments about the assigned articles with you to class.

Summary of a typical session:

First 2/3 of class: Discussion of assigned MMWR article, which you should read before coming to class

Final 1/3 of class: Introduction to the next disease through a short presentation

Schedule

Date	MMWR Discussion Topic	Reading
Week 1: July 7 th	Intro to the Class and MMWR	None
Week 2: July 14 th	Influenza	Update: Influenza Activity – United States, September 30, 2018-February 2, 2019
Week 3: July 21 st	Ebola	Ebola Viral Disease Outbreak – West Africa, 2014
Week 4: July 28 th	Malaria	Malaria Acquired in Haiti – 2010
Week 5: August 4 th	Tuberculosis	Global Epidemiology of Tuberculosis and Progress Toward Achieving Global Targets – 2017
Week 6: August 11 th	Foodborne Illness	Campylobacteriosis Outbreak Associated with Contaminated Municipal Water Supply – Nebraska, 2017
Week 7: August 18 th	Chronic Disease Epidemiology	Unintentional Drug Overdose Deaths with Kratom Detected – 27 States, July 2016–December 2017

Final Remarks

I am excited in your interest in this course and hope that you will join us in the journey through the world of microbes. I will provide a few final remarks so that you know what to expect from this course.

Firstly, do not be intimidated by the fact that we will be reading MMWR, which is a publication read mostly by doctors and PhD scientists. There will be some parts that you will find unfamiliar and difficult at first, and that's a natural part of learning any subject. I am here to work through any challenges you have (and no grades, so you don't get penalized for not immediately understanding something). We are reading MMWR so you can gain exposure to professional publications and science writing in general. If you choose a career in science, you will undoubtedly have to read papers that will probably be

more complicated than MMWR. A major part of this class is developing your science reading skills so that you can be more comfortable engaging with similar media later.

Secondly, this class is intended for people with some background in basic biology. You should know what viruses and bacteria are, since we will only have the first class to provide a broad introduction to infectious pathogens. You do not need to have a strong foundation in biology, since we will touch on a lot of topics as we go, but in order to go into detail, a lot of the basics won't be covered.

Finally, make sure to have fun and to learn. This class is grade-free (no exams or written assignments), so you should feel no pressure about doing well. I hope that you will get out of this class as much as you put in, so ask questions! Do not hesitate to send me an email with questions or comments – they don't have to be about what we're covering in class, either. I am teaching this course because I love the fascinating world of microbes, and my personal goal above all is to share with you my passion and knowledge.