

Introduction to Epidemiology

Summer HSSP 2020

Introduction

Hello! My name is Kenny, and I super hyped to be teaching epidemiology for HSSP this year! This class is intended for students who have little to no background in biology, but would like to learn more about diseases and disease research. Even if you don't even know what epidemiology is (trust me, most people I meet don't), you are invited to take this class.

So what is epidemiology, anyway? It's the study of diseases – how they spread, how they're distributed, and how we can stop them. In this class, we'll learn about the basics of diseases. But before we do that, we'll cover some introductory biology and chemistry that will be useful when we start talking about diseases.

Given the situation with the current pandemic, I imagine many of you might be curious about the epidemiology of COVID-19 specifically. However, this class will not focus on COVID-19, although we will study the outbreak briefly.

How the Course is Structured

We will begin the class by going over cellular biology and evolution. These particular topics in biology will be the most relevant when we start to discuss diseases. We'll then cover the human immune system for a bit, and then we'll spend the rest of our weeks together talking about epidemiology.

To make the class as broad as possible, we will also devote a session to topics related to epidemiology, including the politics and legal issues about disease prevention (a topic known as ethics).

The class will be interactive – you are expected to participate and ask questions, so don't be shy! Although there will be some boring moments, especially near the beginning of the class when we go over the basics, the class is not designed to be 6 weeks of dry lecture. My goal is for you to not only learn disease science, but to experience it as well. This means putting yourself in the mindset of an epidemiologist and thinking about diseases from a new perspective. Normally, when we think about diseases, we often think about how we can prevent them from infecting us individually. But as an epidemiologist, you must think on a much grander scale: how do we keep our whole country safe?

Schedule

Date	Topic
Week 1: July 11 th	Intro to the Class and Basic Biology
Week 2: July 18 th	Immunology
Week 3: July 25 st	Diseases, Part I: How They Infect Us and Spread
Week 4: August 1 st	Diseases, Part II: How We Fight Them
Week 5: August 8 th	Overview of Epidemiology: What do Epidemiologists do Every Day?
Week 6: August 15 th	Related Topics: Government, Law, Ethics

Final Remarks

I want to emphasize that the only thing you need for this class is an interest in science and diseases. If you are interested in becoming a doctor or researcher, I would highly recommend taking this course. Or, you could just have a fascination with diseases, but don't want to enter science. That's fine too!

Also, make sure to bring your questions! I will be happy to answer them, no matter how silly they seem. Since you probably haven't learned much about diseases yet, it's okay to be confused about things that might seem obvious – like why can't viruses and bacteria wiggle through your skin and infect you that way? Or if antibiotics can cure so many diseases, why don't we just produce a gazillion antibiotics and totally eliminate all bacterial diseases?

And remember, no grades! You are under no pressure to work harder than you need to for this class, and there is no homework (unless you want me to give you homework). This class is designed so that you get out what you put in – which means the more questions and comments you have, the more you will learn.