

## Week 1. Infectious Diseases, Pandemics, and Viruses

PowerPoint slides will be on Moodle by the morning of the presentation and will be discussed via Zoom and recorded. Please try to be present in “real time” for these via Zoom. Recorded sessions will be available on Google Drive, COVID-19. You have access to the Drive; please check this.

We will answer each of these questions this week.

- a. What is the difference between an epidemic and a pandemic?
- b. What constitutes an infectious disease?
- c. What is epidemiology, and how can epidemiology help us explain the spread of an infectious disease? What is  $R_0$ ; what is a “super-spreader event”; who is a “super-spreader”?
- d. What have we learned from other pandemics of the 20<sup>th</sup> and 21<sup>st</sup> century? What have we forgotten?
- e. What is a virus? How are viruses different from other infectious organisms? What are the components of viruses? How are viruses different from each other?
- f. What is a viral infection? What are the different types of viral infections?
- g. How does a virus infect a host? What is a host receptor, and what is the viral ligand for that receptor?
- h. What are zoonotic viral diseases? What is “Spillover” and how often and when has this happened? How can viruses jump species barriers and cause diseases in humans?
- i. What is a coronavirus? What is SARS-CoV-19, and how is this virus different from other coronaviruses that cause disease in humans?

PowerPoint Presentations: Presentations are listed under Session/Presentation and named with a number\_Title , e.g. 1\_COVID-19

### Overview.

- 1\_COVID-19 Overview
- 2\_Infectious Diseases, Epidemics and Pandemics
- 3\_What’s going on in this figure?
- 4\_Epidemiology
- 5\_Influenza, Viruses and Infections
- 6\_COVID-19 Virus

Assignments: Upload all assignments by 9AM, CTZ, (due date in parentheses).

- 1A: Personal History (due Tuesday, April 21)
- 1B: Navigating the Uncharted (due Tuesday, April 21)
- 1C: Current Questions (due Friday, April 24)

## Week 1 Schedule

Date	Session/ Presentation	Concepts covered	Activities to be completed by the next day:
Monday April 20	AM: Zoom meeting with entire class <ul style="list-style-type: none"> <li>Overview of Course</li> <li>Groups, Teams and Assignments</li> <li>Assignments for this week</li> <li>1_ <a href="#">COVID-19 Overview</a></li> <li>2_ Infectious Diseases, Epidemics and Pandemics</li> </ul>	a. What is the difference between an epidemic and a pandemic? b. What constitutes an infectious disease?	Two assignments due tomorrow, Tuesday by 9AM, Central Time Zone:  Assignment 1A: Upload to Moodle by 9AM, CTZ, tomorrow Assignment 1B: Article: Upload your answers to the questions on the Fauci article by 9AM, CTZ, tomorrow <a href="#">Fauci, et al., Covid-19—Navigating the Uncharted</a> . (2020) NEJM  Preview the figures: What is going on in this figure? We will discuss these tomorrow (document on Moodle)
Tuesday April 21	3_What's going on in this figure? 4_Epidemiology, A Tale of Two Cities	c. What is epidemiology, and how can epidemiology help us explain the spread of an infectious disease? What is $R_0$ ; what is a "super-spreader event"; who is a "super-spreader"? d. What have we learned from other pandemics of the 20th and 21st century? What have we forgotten?	Remember Assignments 1A and 1B are due by 9AM, CTZ, today.  Homework: Watch the Khan Academy Flu videos and upload at least one question you have to the Moodle Forum by 9AM, CTZ, tomorrow <a href="#">What is the flu?</a> <a href="#">Catching and spreading the flu</a> <a href="#">When flu viruses attack!</a> <a href="#">Three types of flu</a> <a href="#">Naming the flu: H-something, N-something</a> <a href="#">Testing for the flu</a> <a href="#">Genetic shift in flu</a> <a href="#">Flu shift and drift</a>

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			Meet with your team this afternoon. Your TA will send you an invite and will supervise this meeting. Determine an outline for your Current Questions paper (Assignment 1C).
Wednesday April 22	5_ Influenza, Viruses and Infections	<p>e. What is a virus? How are viruses different from other infectious organisms? What are the components of viruses? How are viruses different from each other?</p> <p>f. What is a viral infection? What are the different types of viral infections?</p> <p>g. How does a virus infect a host? What is a host receptor, and what is the viral ligand for that receptor?</p>	<p>Homework: Read the following articles and upload at least one question you have regarding this material to the Moodle Forum by 9AM, CTZ, tomorrow</p> <p>Khan Academy: <a href="#">Introduction to viruses</a></p> <p>National Geographic:</p> <ul style="list-style-type: none"> <li>• <a href="#">What is the coronavirus</a></li> <li>• <a href="#">The hunt for the next potential coronavirus animal host</a></li> <li>• <a href="#">Coronavirus 101: What you need to know</a></li> <li>• <a href="#">Here we go again: Hopeful, fake animal news keeps spreading amid pandemic</a></li> </ul> <p><a href="#">M. Tuttle, Give Bats a Break. (2017) Issues in Science and Technology 33(3).</a></p> <p>Meet with your team this afternoon. Your TA will send you an invite and will supervise this meeting. Work on rough draft of Current Questions paper (Assignment 1C).</p>
Thursday April 23	6_COVID-19 Virus	h. What are zoonotic viral diseases? What is "Spillover" and how often and when has this happened? How can viruses jump species barriers and cause diseases in humans?	<b>Finalize Current Questions paper (Assignment 1C)</b>

Week 1 Schedule

Date	Session/ Presentation	Concepts covered	Activities to be completed by the next day:
		i. What is a coronavirus? What is SARS-CoV-19, and how is this virus different from other coronaviruses that cause disease in humans?	
Friday April 24	On the Front Lines of the Pandemic: Conversations with healthcare providers	1. What if everyone wore a facemask? Would this stop or slow the pandemic? 2. Does relying on computer modeling help or hurt a country's response to the pandemic? 3. What is the role of the government and of the media in spreading misinformation and scientific expertise?	<b>Current Questions, Assignment 1C, upload by 9AM, CTZ, today</b>  <b>To be completed by Tuesday, April 28, 9AM, CTZ</b> <b>Assignment 1D: Gregg and the Pandemic of COVID-19</b>  Read article from <a href="#">New York Times</a> for Monday Examine website: <a href="#">Visualizing What COVID-19 Does to Your Body</a>