

Biology of Plagues: Past and Present

BILD 30

Summer Session I 2022

Instructor: Tara Spencer

Office: Tata Hall 4014

Office Hours: Wednesdays @1 PM (Tata Hall 4014)

Email: t2spence@ucsd.edu (Please put BILD 30 in the subject line)

Welcome to BILD 30!

This class is designed to give you a foundational understanding of microbiology, and the role that microorganisms play in human disease. Moreover, I hope to provide you with an appreciation of the role that humans play in pandemics. This class is only open to non-biology majors, and it is my desire that you will also see the connection between your own fields and the plagues of past and present.

Learning Objectives

- 1) Understand basic principles of general biology, microbiology, and immunology that are needed to understand pandemics/epidemics.
- 2) Identify social and biological factors that enable the prevalence, transmission, prevention, and treatment of infectious diseases.
- 3) Appreciate the diversity of microbial life and pandemics they cause.
- 4) Acknowledge the contributions of hard-working individuals to the control/obliteration of various pandemics.
- 5) Appreciate the geographical distribution of ongoing pandemics.
- 6) Defend the role of the scientific process in curbing pandemics.
- 7) Illustrate the impact of society, wealth, and politics on pandemics and vice versa.
- 8) Evaluate current public health systems and devise alternative methods to combat current pandemics.
- 9) Appreciate how cool and essential microbiology and global health are!

Course Website

We will be using [Canvas](#) in this class. All course materials and assignments will be posted here, and you will also submit them here.

If you are taking this class through UCSD Extension, it is imperative that you email the Extension Office to get access to Canvas ASAP.

COVID-19 Guidance

The syllabus is subject to change, due to campus efforts to contain COVID-19. These changes will be communicated at the earliest opportunity via Canvas Announcements. You may find it useful to ensure your Canvas settings are such that you receive Announcements via email as well.

General COVID-19 guidance from the UCSD campus can be found [here](#).
You can also find support for virtual learning [here](#).

Podcast/Zoom Recordings

This class is scheduled to be held in person. The audio will be shared via podcast following the lectures. Discussion Sections will be recorded on Zoom and shared on Canvas under Modules. In the event that the class is forced to be remote due to a change in the COVID-19 pandemic, the class will be held on Zoom and all recordings will be shared on Canvas under Modules.

Lectures

All lectures will be held on **Mondays** and **Wednesdays** from **2 PM - 4:50 PM** in **Peterson Hall 103**. Due to the ongoing pandemic, attendance is not mandatory. However, it is highly recommended that you attend lectures so that you have the opportunity to ask questions, and for the immersive experience of active learning (which has been proven to enhance student learning and information retention).

Textbook

In this class we will use *Get Well Soon: History's Worst Plagues and the Heroes Who Fought Them* by Jennifer Wright (2017). To prepare for lectures indicated on the class schedules, you will be asked to read a chapter of *Get Well Soon*. For each of the plagues we study in this class (except for those caused by mosquito-borne viruses), there is a chapter in the textbook.

There are two chapters that you are not required to read: "Lobotomies" and "The Dancing Plague" (but I encourage you to read them in your free time after the class because they're amazing!).

Films, Short Videos and Podcasts

Throughout this class, you will be assigned three films and several short videos. These are required materials - they serve to review some of the material that is done in class so they are for your benefit. There are two films that cover material that will be reviewed in class. For each of these films, there will be assigned questions that will help highlight the material to focus on while watching the films.

There will be times when I recommend listening to an episode of the podcast *This Podcast will kill you*. This is **not mandatory**, but this podcast is amazing and does a great job of explaining the history of several plagues that we will discuss in class. You can also get **extra credit** by picking out something mentioned in the podcast that was not highlighted in class (See **Extra Credit**).

Discussion Sections

Discussion sections will be held in person as follows:

Section #	Days	Times	Location
-----------	------	-------	----------

A01	Tuesday, Thursday	9 AM - 9:50 AM	SOLIS 110
-----	-------------------	----------------	-----------

Important dates for the UCSD academic year can be found [here](#).

As with lectures, attendance is not mandatory but is *highly* encouraged!

Midterms and Final Exam

The midterm exam will be held in person on **July 15th @ 1 PM in Peterson 103**.

The final exam will be a take-home exam due on **July 29th @ 11:59 PM**.

For each exam, you are required to bring your Student ID - it will be required for you to submit your exams.

The final exam will be **cumulative** - however, only **25%** of the exam will cover material that was tested on the midterm.

Missed Exams

Alternate exams will **only** be scheduled in the case of an emergency. Please check your schedule to ensure that you have no clashes. You are responsible for clearing the absence from the exam with me before the exam date (unless it is an *extreme emergency that can be documented* in which case I must be notified within 24 hours).

Exam Regrade Policy

The regrading of examinations will be considered **unusual**, rather than a routine request. Exams must be written **in pen (NO PENCIL)** to be considered for regrading. In order to submit a request for regrading, please submit the following:

- 1) The **original** copy of the exam
- 2) A brief explanation of the regrading request.

Please submit your regrade request within **ONE WEEK** of the return of the graded examinations. It is understood that by submitting this regrade request, you agree to accept the score of the entire regraded examination, not the original score. So if we identify additional errors to those highlighted in the first round of grading, points will be deducted therein.

Due to time constraints, we will not be able to regrade the final examination.

Exam Review Sessions

Exam Review Sessions will be held by me; they will take place in the discussion section right before the exam. Additionally, in the last half hour of the class preceding each exam, there will also be a short review exercise that can be submitted for extra credit. The exercise will be held in person during class, but since attendance is not mandatory, the exercise will be due **the night before the exam**.

Course Grade

This class will be graded on a curve. At the end of the summer session, the scores will be added up and then curved. Plus and Minus scores will be assigned where appropriate.

Minute Papers (100 points)	10%
Pre-Class Quizzes (200 points)	20%
Weekly Assignments (200 points)	20%
Midterm Exam (250 points)	25%
Final Exam (250 points)	25%
Total # of points = 1000 points	

How can I do well in this class?

1. **Read the chapters before coming to class.** This requires you to read the schedule ahead of time. It is scientifically proven that information retention from lectures is enhanced by taking the time to read relevant material before class (and after too!).
2. **Take intentional notes.** You are not required to know all the material that is found in the *Get Well Soon* book. It will be helpful for you to take notes and review them before coming to class, although the content will be repeated in class. That way, you can focus more on the discussion and reduce your note-taking then.
 - The name of the organism that causes the disease
 - The type of organism/microbial entity
 - The context and history of the disease
 - Potential treatments for the disease
 - The roles played by specific individuals in disease spreading or elimination
 - Any symptoms that are a hallmark of this disease (will be discussed in lecture)
 - Other information specific to a disease which will be highlighted in the pre-lecture quiz.

You will also be encouraged to take notes during class. Regarding lecture notes, I would like to encourage you to take notes on any biological mechanisms and especially to note things that are not explained in detail in the slides. There is only so much that the PowerPoint can explain, and the rest of it will be verbalized by me.

3. **Attend lectures (or listen to them!).** Even better than reading the material ahead of time and doing the pre-lecture quizzes, is that the information will be reiterated in class. There is a lot of material that will be covered in class that is not covered in the textbook. In order to do well in this class, you will have to read the text *and* attend lectures.
4. **Review (or rewrite) lecture notes within 24 hours.** While it is helpful to read ahead, pay attention during lectures and take notes, the final piece to this puzzle is to reread the notes within 24 hours. There is also extensive research showing the role of note review in the retention of lecture material in the long term.
5. **Formulate questions from the learning objectives and practice answering them.** The learning objectives are what I (and all course instructors) use to devise the lecture material and the examinations. They are the things I want you all to know by the time the course is over! It will be in your best interest to devise questions for yourself to practice based on the learning objectives of the class, and of each lecture.
6. **Practice doing the weekly assignments on your own.**

7. **Collaborate with your classmates.** You're all in this together! Please know that you are not alone as you endure the challenges associated with taking a new class. You guys can help each other. Moreover, there is scientific evidence that collaboration can lead to long-term retention of information.
8. **Come to office hours.** I am here as your instructor to ensure that you can succeed in this class. Please communicate with me if there is a challenging topic, and we can go over it together during office hours.
9. **Give me feedback when asked!** This is not my class - it is ours. I want to ensure that you all have the best learning experience that you can have. I was once a student too, and I still am, so I understand what it is like to learn new material in a new context. As part of your minute paper, you have the option to write if something in the class is not working (e.g. Do you feel that the workload is overwhelming? Would you like to improve the inclusiveness of the class?). I will literally take any feedback!

Extra credit

I am a proponent of inclusive learning strategies, and I know that some students are built to do well in some assignments, while others might struggle with them. I also know that life happens and sometimes you might miss an assignment. I have devised what I think is a fair way for students to get extra credit while still having the opportunity to learn the material thoroughly:

- (1) Exam Review Exercises: Before each exam, there will be an exam review session in class. In this review session, I will give you all an exercise to help you prepare for the exam. It is not mandatory, but if you complete it, you will get extra credit **on the exam in question**. You can get **5 extra credit points on each exam**. For those unable to attend the class in person, it will also be posted on Canvas. It must be completed before the exam in question to get full credit!
- (2) *This Podcast Will Kill You*: In the class schedule, there are a few episodes of the podcast that I have suggested, but which are **not mandatory**. They are good to listen to mindlessly, to help the information to stick more (or perhaps they do a better job of explaining things than I do). If you listen to any of the episodes and write a short paragraph to describe the contribution of one person, mentioned in the podcast, to science, you can get a **maximum of 5 extra credit points added to any one exam** (i.e. you can do this twice and get 5 points on either exam).
- (3) Artwork/Social Media Post/Literature Piece. As you will learn in this class, diseases are caused by microorganisms but pandemics are caused by people. For many of the plagues we will discuss in this class, art and literature were critical in shaping people's perceptions of diseases. As an extra credit assignment, you can create any artwork, social media post, or literature piece about one of the plagues we study in this class. For this assignment, you can receive **10 extra credit points on your midterm exam**. However, this must be submitted before the midterm exam to get full credit!
- (4) Each exam will also have extra credit questions.

Academic Integrity

The University of California, San Diego has an established [Academic Code of Conduct](#) which outlines the high priority that the school places on **academic integrity**. BILD 30 students are expected to adhere to the highest standards of academic integrity and honesty. In summary, all

academic work assigned in this class will be completed by those to whom it is assigned, and only authorized aid is permitted for use. This means that the minute papers, midterm, and final exams are to be done individually. You are prohibited from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. However, you are allowed to collaborate for the podcast assignment, and for the weekly assignment (for the latter, collaboration is mandatory), and you are allowed to communicate personal and academic challenges that might affect your performance with me.

Academic dishonesty is any means employed to attain course credit in any unauthorized manner. BILD 30 students are academically honest; they work hard for their grades, collaborate with their colleagues, and communicate any personal or academic challenges with the instructor. Academic dishonesty will not be tolerated in this or any class on campus. Any student who is caught participating in academic dishonesty may receive a failing grade or may be suspended. Your future is not worth risking trying to get a better grade by cheating.

Accessibility

The University of California, San Diego is committed to providing an educational environment that is accessible to all students. In accordance with this policy, students in need of accommodations due to a disability should contact the [Office for Students with Disabilities \(OSD\)](#) for verification and determination of reasonable accommodations as soon as possible at the beginning of each quarter. After you do this, please notify me of the accommodations being made.

Discrimination and Harassment

The University of California, in accordance with applicable federal and state laws and university policies, **does not discriminate** on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the [Office for the Prevention of Harassment & Discrimination \(OPHD\)](#) at (858) 534-8298. You may also [report bias](#) here.

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options. A student who chooses not to report may still contact [CARE at the Sexual Assault Resource Center](#) for more information, emotional support,

individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include [Counseling and Psychological Services](#), [Office of the Ombuds](#), and [Student Health Services](#).

Inclusion

If you have any ideas on how we can make this class more inclusive, please email me at t2spence@ucsd.edu, or you can contact the Office of Diversity, Equity and Inclusion:

Email: diversity@ucsd.edu

Website: <https://diversity.ucsd.edu/> <https://students.ucsd.edu/student-life/diversity/index.html>

This course is a *flipped* course: for some of the lectures outlined below in the schedule, there will be pre-class material posted on [Canvas](#) that must be completed *prior* to attending class. These are designed to mentally prepare you for the class, and to assist you with information retention (and thus success in the class!).

Class Schedule

Date	Lecture	Topics to be covered	Reading in <i>Get Well Soon</i> , film/video or
------	---------	----------------------	---

	#		podcast episode
6/27	1	Basic Microbiology Basic Immunology	Life On Us: A Microscopic Safari Episode 1 and 2 How Bacteria Rule Over Your Body How The Immune System Actually Works You are Immune Against Every Disease <i>*This Podcast Will Kill You: Ep 26</i>
6/29	2	Influenza Leprosy	<i>Get Well Soon: Sp*nish flu</i> <i>Get Well Soon: Leprosy</i> <i>*This Podcast Will Kill You: Ep 1</i> <i>*This Podcast Will Kill You: Ep 2</i>
7/4	3	Syphilis Encephalitis lethargica	<i>Get Well Soon: Syphilis</i> <i>Get Well Soon: Encephalitis lethargica</i> <i>*This Podcast Will Kill You: Ep 36</i> <i>*This Podcast Will Kill You: Ep 30</i>
7/6	4	Bubonic plague <i>Helicobacter pylori</i>	<i>Get Well Soon: Bubonic Plague</i> Plague 101 <i>*This Podcast Will Kill You: Ep 5</i> <i>*This Podcast Will Kill You: Ep 6</i> <i>*This Podcast Will Kill You: Ep 28</i>
7/11	5	Mosquito-borne infections Typhoid	<i>Get Well Soon: Typhoid</i> <i>*This Podcast Will Kill You: Ep 8</i> <i>*This Podcast Will Kill You: Ep 10</i> <i>*This Podcast Will Kill You: Ep 11</i> <i>*This Podcast Will Kill You: Ep 42</i> <i>*This Podcast Will Kill You: Ep 86</i>
MIDTERM EXAM: July 15th, 2022 @1 PM in PETERSON 103			
7/13	6	Cholera Polio	<i>Get Well Soon: Cholera</i> <i>Get Well Soon: Polio</i> Part I: Suffering the disease Part II: Progress in the Americas Part III: The Polio Endgame <i>*This Podcast Will Kill You: Ep 4</i> <i>*This Podcast Will Kill You: Ep 7</i>
7/18	7	HIV Smallpox	<i>Get Well Soon: Antonine Plague</i> <i>Bending the Arc (Netflix)</i> <i>*This Podcast Will Kill You: Ep 12</i> <i>*This Podcast Will Kill You: Ep 3</i>
7/20	8	COVID Vaccines	How coronaviruses work The Side Effects of Vaccines <i>*This Podcast Will Kill You: Ep 26</i>

7/25	9	Antibiotic Resistance	The Antibiotic Apocalypse Explained <i>*This Podcast Will Kill You: Ep 50</i> <i>*This Podcast Will Kill You: Ep 51</i>
7/27	10	Review	
TAKE-HOME FINAL DUE: July 29th 2022 @ 11:59 PM			

* Not mandatory but extremely helpful and can give you extra credit.