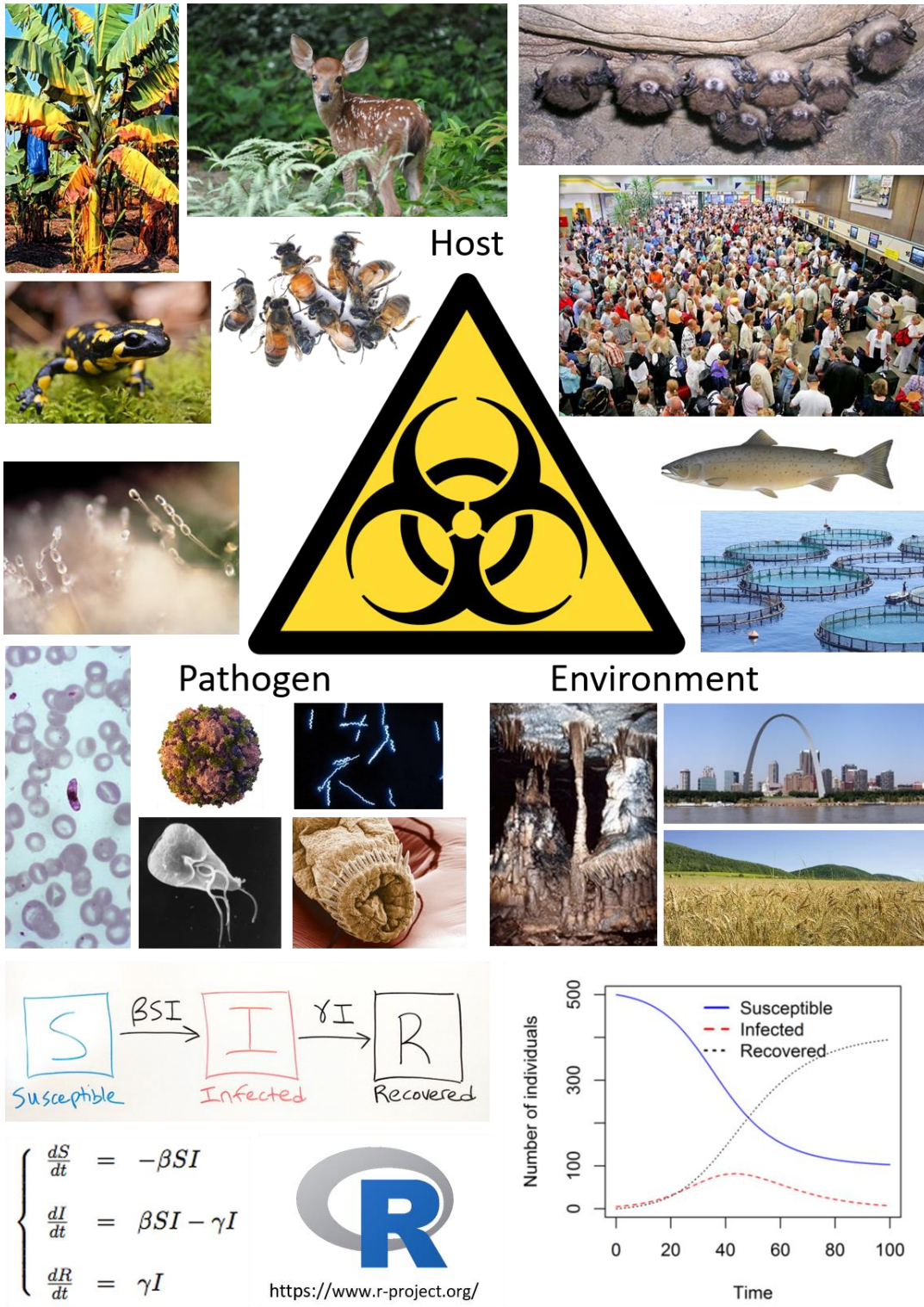


Syllabus and Course Information
Disease Ecology (BIOL 4195) – Spring 2020 – 4 credits
 Instructor: Dr. Rachel Penczykowski



Syllabus and Course Information

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Class meeting times and locations:

Class meets Tuesdays and Thursdays from 2:30 – 3:50 p.m.

Required one-hour discussion section on Fridays:

C) 10:00 a.m. – 10:50 a.m., A) 11:00 a.m. – 11:50 a.m., or B) 12:00 – 12:50 p.m.

Instructor: Dr. Rachel Penczykowski, Assistant Professor; pronouns she/her

Last name sounds like: *pen – chi* (in “chip”) – *cow – ski*

rpenczykowski@wustl.edu, 314-935-8282, McDonnell 407

Office hours: by appointment

Laboratory website: <https://penczykowskilab.com/>

Biology faculty page: <https://wubio.wustl.edu/people/rachel-penczykowski>

Assistants to the Instructor:

Emma Frawley, PhD Student; pronouns: she/her; section: C

emma.frawley@wustl.edu; office hours: by appointment; office: McDonnell 321

Philippa Tanford, PhD Student; pronouns: she/her; section: B

ptanford@wustl.edu; office hours: by appointment; office: McDonnell 421

Rhiannon Vargas, PhD Student; pronouns: she/her; section: A

rcvargas@wustl.edu; office hours: by appointment

Course Description:

Disease ecology is an interdisciplinary field that bridges concepts from fields including population ecology, community ecology, landscape ecology, and evolutionary biology. This course provides an introduction to the study of infectious diseases with an emphasis on theoretical, experimental, and quantitative approaches. The course will integrate studies of infectious diseases from across disciplines including human epidemiology, veterinary medicine, wildlife epidemiology, plant pathology, parasitology, and ecology.

The class format includes lectures, discussions of primary literature, interactive card games and other activities, hands-on simulations of population dynamics using the R language for statistical computing and graphics, and a collaborative writing project.

Topics include: history of infectious disease research for human, animal, and plant hosts; diverse parasite life history and transmission strategies; effects of infection on host fitness; foundations in population ecology; population growth models; epidemiological models; disease control strategies; host-parasite coevolution and Red Queen dynamics; effects of environment and global change on infectious disease; spatial and meta-population disease ecology; landscape ecology of disease; community ecology of disease; disease spillover; diversity-disease patterns and the dilution effect; co-infection and the host microbiome; and disease in food webs and ecosystems

Prerequisites:

Principles of Biology II (BIOL 2970) required, Introduction to Ecology (BIOL 381) recommended, or permission of instructor.

After completing this course you should be able to:

- 1) **Explain**, **compare**, and **contrast** key concepts in population and disease ecology, and **connect** these concepts across diverse taxa, ecosystem types, disciplines, and careers
- 2) **Represent** key epidemiological processes as graphical models, **translate** those graphical models to verbal and textual models, **formulate and test hypotheses** through model simulations, and **interpret** the output of model simulations
- 3) **Summarize**, **evaluate**, **explain**, and **discuss** primary literature
- 4) **Perform** targeted literature searches, **critically analyze** and **synthesize** literature search results, **apply** the mechanics of writing a collaborative literature review article, and **provide** constructive feedback on peers' writing

Required books:

Quammen, David. 2012. *Spillover: Animal Infections and the Next Human Pandemic*. W. W. Norton & Company, Ltd. ISBN-13: 978-0393346619.

Amazon list price for new paperback: < \$15

Zimmer, Carl. 2001. *Parasite Rex: Inside the Bizarre World of Nature's Most Dangerous Creatures*. Atria Books. ISBN-13: 978-0743200110

Amazon list price for new paperback: < \$10

Note: we strongly suggest starting to read this book before the first day of class.

Canvas course website:

The course website will be on Canvas (mycanvas.wustl.edu). The website will contain the current course schedule, assignments, class meeting slides, an online grade book, reading material, and important course announcements. Unless instructed otherwise, you will upload all assignments to Canvas. You should check the course website on a regular basis, and to help stay up-to-date on the course, we recommend setting the option to receive an email when we post announcements. You can access help for Canvas by clicking "Support" at mycanvas.wustl.edu or by contacting Washington University Student Technology Services (sts.wustl.edu).

Course schedule, reading assignments, and assignments:

The course schedule, readings, and assignments will be posted on Canvas.

Assessment:

The grade you earn in this course will be based on the following components, which are described in more detail later in this syllabus:

60 points: Short-answer exam on book by Carl Zimmer, *Parasite Rex*

100 points: Mini-quizzes on pre-lecture readings (online)

- 10 total graded at 10 points each (there are 11 mini-quizzes, i.e., you get one free pass)

50 points: Attendance, preparation, and participation in lectures

150 points: Attendance, preparation, and participation in discussions

- 50 points: Attendance and in-class participation in discussion
- 100 points: Discussion Question Journal – 10 total entries

240 points: Individual writing and modeling assignments

- 40 points: Parasite game “extended rules of play”
- 40 points: Epidemiological model 1
- 40 points: Epidemiological model 2
- 40 points: Epidemiological model 3
- 40 points: Epidemiological model 4
- 40 points: “Diseases are like the stars” literature/database search

400 points: Collaborative writing project assignments

- 40 points (group grade): Section outline
- 40 points (individual grade): Literature search worksheet
- 40 points (individual grade): Contributions to Table 1
- 40 points (group grade): Draft 1
- 40 points (group grade): Draft 2
- 40 points (individual grade): Your peer review of 2 other groups’ writing (20 points each)
- 40 points (group grade): Draft 3
- 40 points (individual grade): Visual abstract
- 40 points (individual grade): Science communication about our review article
- 40 points (individual grade): Within-group peer evaluation (rubric will be provided)

(1000 points total)

The following scale will be used to assign final course grades. Grades will not be “curved.” If you are taking this course Credit/No Credit, you must receive a C+ or better to receive credit.

A+	97-100%	B+	87-89%	C+	77-79%	D+	67-69%	F	0-59%
A	93-96%	B	83-86%	C	73-76%	D	63-66%		
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%		

Short-answer exam on book (6% of total grade):

Early in the course (week 2), there will be a short-answer exam on Carl Zimmer’s book, *Parasite Rex*. The goal of the exam is to demonstrate your ability to *explain*, *evaluate*, and *synthesize* fundamental concepts and observations of host–parasite interactions described by Zimmer and discussed in class. You will not be tested on memorization of specific passages from the book, but on the concepts covered, which we will reinforce during the first few class meetings. **We recommend you start reading this book before the semester begins. Exam questions will come directly from a study guide which we will email to enrolled students by January 1.**

Mini-quizzes on pre-lecture readings (10% of total grade):

The purposes of the online mini-quizzes are to 1) *evaluate* your understanding of key concepts from the pre-lecture reading assignments from books, primary literature, or literature reviews, and 2) *foster* in-depth discussion of key concepts during lecture and paper discussions.

Attendance, preparation, and participation in lectures (5% of total grade):

The Tuesday/Thursday class meetings are called “lectures”, but they will frequently involve small- and large-group discussions and hands-on activities as well as slides and video clips. To prepare for lectures, you should read all assigned literature by the beginning of each week; for this reason, mini-quizzes on the reading must be completed online before 9:00 a.m. on Tuesdays.

Grades for attendance, preparation, and participation in lectures:

To receive full points for attendance and in-class participation in lectures, we expect you to attend and actively participate in all class meetings by voicing your opinions and asking questions. You are responsible for all material covered in class whether or not you attend. If you anticipate that you must be absent from a class for a legitimate reason, please e-mail the instructors in advance.

Attendance, preparation, and participation in discussions (15% of total grade):

The goal of the discussions is to provide you with the opportunity to develop skills including how to *read* primary literature; *summarize* and *critically evaluate* concepts and data; *explain*, *discuss* and *reflect* on how these research papers link to the broader conceptual framework of the course; and *connect* concepts across diverse taxonomic groupings, ecosystems, and disciplines.

Guidelines and tips for preparing for discussions: The instructors will provide* guidelines and tips on how to read, evaluate, interpret, and discuss primary literature. (**posted on Canvas*)

Grades for attendance, preparation, and participation in discussion: Your grade for attendance, preparation, and participation in discussion will be based on two assessments:

1. Attendance and in-class participation in discussion (50 points total)

Participation will be assessed based on your level of preparation and participation, including: knowledge of the assigned reading; contributions to small-group discussions; integration of the assigned reading with lecture material and previous discussions; clarity, creativity and logic of your questions and arguments; and the productiveness of the discussion. Your grade for each discussion will be based on a total of 4 contribution points: 2 points for contributing to small-group discussions and 2 points for contributing to the whole-group discussion. (There are 13 weeks of discussion section meetings, and $13 \times 4 = 52$ points; those 2 extra points would be applied as extra credit.) Each point is earned based on a **substantive** contribution to the small-group or whole-group discussion. *See the separate document on Canvas about absences and make-up points for discussions.*

2. Discussion Question Journal (100 points total)

Writing about the discussion paper(s) encourages you to think about and engage with the text in deeper and more meaningful ways. To that end, the goals of the Discussion Question Journal are

to: a) help you prepare for and participate in discussion; b) assess your ability to summarize, explain, and reflect on primary literature; c) "prime" the class for a fun and productive discussion; and d) provide current and future graduate students with a study resource to help prepare for qualifying exams in graduate school. You will submit each entry as a separate assignment on Canvas (10 total entries). Each entry will include short answers to 2–4 questions provided in advance by the instructors, and 3 questions that you provide for group discussion.

Prior to each discussion, the instructors will choose selected questions from your journals for discussion. If one of your questions is selected, you should be prepared to elaborate on it in the group discussion. The due date for uploading entries to your Discussion Question Journal will be Friday at 9:00 a.m.

Individual writing and modeling assignments (24% of total grade):

The overall goal for these assignments is for you to engage with the concepts discussed in class through hands-on exercises, including interactive card games, database searches, and epidemiological modeling. The assignments will typically be started during class time, often in small groups. You will then have a few days to finish the assignments and turn them in, according to the course schedule posted on Canvas.

In the epidemiological modeling assignments, we will evaluate your development of skills in **representing** key epidemiological processes as graphical models, **translating** those graphical models to verbal and textual models, **formulating and testing hypotheses** through model simulations, and **summarizing and interpreting** the output of model simulations.

Note about epidemiological modeling in R: We will use the free, open-source software R (www.r-project.org) to simulate and study epidemiological models. We will use a graphical user interface in the package ‘DSAIDE’ (Dynamical Systems Approach to Infectious Disease Epidemiology; Handel 2017), and the emphasis will be on learning to simulate models under different sets of parameters and interpret plots of the outcomes, rather than on learning to code in the R language. However, motivated students are encouraged to examine the underlying code. For details, see: Handel, A. 2017. Learning infectious disease epidemiology in a modern framework. *PLoS Comput Biol* 13(10): e1005642. <https://doi.org/10.1371/journal.pcbi.1005642>.

Collaborative writing project assignments (40% of total grade):

As a class, we will write a review article on a topic in disease ecology to be disclosed in week 5, with the ultimate goal of submitting our manuscript to a journal for peer review (and hopefully, eventual publication). Details of eligibility for authorship on this manuscript will be discussed in week 5, and posted to Canvas at that time.

Students will work in small groups, and each group will write a different section of the review article, on a subtopic of the review article’s overarching topic. Each student will be expected to contribute to this project, including through targeted literature searches, synthesis of the relevant literature, and written contributions to their group’s section of text. As indicated above in the “Assessment” section of this syllabus, several of the collaborative writing project assignments will be individual assignments with individual grades. Each group will produce a section outline and three drafts of their section of text – these four components will receive a single grade for the

group (i.e., 16% of your total grade for the course is based on group work). Instructions and rubrics will be provided for within-group peer evaluations as well as between-group peer review.

The goals of the collaborative writing project are for you to experience the entire process of writing a literature review with multiple authors. Through this process, you will learn to **define** the topic, scope, and target journal/readership for a review article; **critically evaluate** the components of a high quality literature review; **perform** targeted literature searches; **critically analyze** and **synthesize** literature search results; **identify** theoretical and empirical gaps in the existing literature; **apply** the mechanics of writing a collaborative literature review article; **summarize** the completed review article through visual abstracts and science writing for the general public; and **provide** constructive feedback on peers' writing.

Late work: Up to 10% of points will be deducted per day for assignments turned in late.

Academic integrity: The academic integrity policy of Washington University in St. Louis states: "Effective learning, teaching and research all depend upon the ability of members of the academic community to trust one another and to trust the integrity of work that is submitted for academic credit or conducted in the wider arena of scholarly research. Such an atmosphere of mutual trust fosters the free exchange of ideas and enables all members of the community to achieve their highest potential. In all academic work, the ideas and contributions of others must be appropriately acknowledged and work that is presented as original must be, in fact, original. Faculty, students and administrative staff all share the responsibility of ensuring the honesty and fairness of the intellectual environment at Washington University in St. Louis."

The complete policy and procedures are available at: wustl.edu/about/compliance-policies/academic-policies/undergraduate-student-academic-integrity-policy/. As a student at Washington University, it is your responsibility to become familiar with, understand, and abide by the standards outlined in this policy before performing any academic work. Ignorance of these policies is not a defense in cases of infringement.

Any person found using unauthorized assistance (including plagiarism, submitting work for more than one class without obtaining permission from all instructors, copying answers from another student's exam, or turning in group work to which you did not contribute) will be forwarded to the Committee for Student Academic Integrity. Students found guilty by the Committee will be given a grade of F for the course and be referred to the Dean for further action.

Laptops, cell phones, and other technology: Please use technology in whatever ways facilitate your learning, and be mindful of instances that might interfere with others' learning. Let's keep an open dialogue about this throughout the semester.

Resources to help you succeed in this course:

Academic resources: The Natural Sciences Learning Center (NSLC) (nslc.wustl.edu) located in the Life Sciences building (near the greenhouse) has a computer lab and rooms available for study groups. Cornerstone offers free academic peer mentoring and training in learning skills (cornerstone.wustl.edu).

Accommodations based upon sexual assault: The University is committed to offering reasonable academic accommodations to students who are victims of sexual assault. Depending on the specific nature of the allegation, such measures may include but are not limited to: implementation of a no-contact order, course/classroom assignment changes, and other academic support services and accommodations. If you need to request such accommodations, please direct your request to Kim Webb (kim_webb@wustl.edu), Director of the Relationship and Sexual Violence Prevention Center. Ms. Webb is a confidential resource; however, requests for accommodations will be shared with the appropriate University administration and faculty. The University will maintain as confidential any accommodations or protective measures provided to an individual student so long as it does not impair the ability to provide such measures.

Bias reporting: The University has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University's Bias Report and Support System (BRSS) team. See: diversityinclusion.wustl.edu/brss/

Mental health: Professional staff members at Washington University's Mental Health Services work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: shs.wustl.edu/MentalHealth/ *Dr. Penczykowski will walk you to the Mental Health Services office if you would like: just ask.*

Other accommodations: We want you to thrive in this class and beyond! Please let us know as early as possible if you have other concerns or require other accommodations to succeed in this course, and we will do our best to meet your needs.

Contacting us: Please feel free to email, call us, or to stop by office hours. When e-mailing us, please strive to use professional email etiquette. For example, use clear subject lines, use a salutation to open your email, and sign off with your full name.

Appropriate written forms of address for instructor: Dr. or Prof. Penczykowski

Appropriate spoken forms of address for instructor: same as above, or Dr. or Prof. P.

Want to learn more? Recommended textbooks for further reading:

Collinge, Sharon K. & Chris Ray. 2006. *Disease Ecology: Community Structure and Pathogen Dynamics*. Oxford University Press, Oxford, UK.

Hatcher, Melanie J. & Alison M. Dunn. 2011. *Parasites in Ecological Communities*. Cambridge University Press, Cambridge, UK.

Keeling, Matt J. & Pejman Rohani. 2008. *Modeling Infectious Diseases in Humans and Animals*. Princeton University Press, Princeton, NJ.

Ostfeld, Richard S., Felicia Keesing, & Valerie T. Eviner. 2008. *Infectious Disease Ecology: Effects of Ecosystems on Disease and of Disease on Ecosystems*. Princeton University Press, Princeton, NJ.

Rockwood, Larry L. 2015. *Introduction to Population Ecology*, 2nd edition. Wiley-Blackwell Publishing.

Course Schedule: Disease Ecology (BIOL 4195) – Spring 2020 (Updated Dec. 24, 2019)*

***Note:** The schedule and due dates are subject to change

Week	Day	Date	Topics / Activities	Assignments due by 9am* through Canvas
1	Tues	1/14	Intro to disease ecology: Historical perspectives on the study of infectious diseases in humans, animals, and plants	
	Thurs [†]	1/16	Parasitology I: Overview of types of parasites, transmission strategies, and effects on hosts, starting with helminths and parasitoids	• Pre-course survey
	Fri	1/17	Discussion of assigned reading	
2	Tues [†]	1/21	Parasitology II: Overview of protozoans, fungi, bacteria, and viruses	
	Thurs	1/23	Parasitology III: Parasite transmission strategies and trade-offs In-class exam: Short-answer exam on Carl Zimmer's book, <i>Parasite Rex</i>	
	Fri [†]	1/24	Play and discuss parasite game	
3	Tues	1/28	Population ecology of disease I: Foundations in population ecology; introduction to modeling population growth In-class activity: Graphical modeling on whiteboard, and converting graphical models to verbal and textual descriptions	• Mini-quiz 1
	Thurs [†]	1/30	Population ecology of disease II: Building epidemiological models (SI and SIR compartmental models); using models to formulate and test hypotheses; interpretation of basic reproduction number, R_0 In-class activity: Epidemiological model 1, using 'DSAIDE' package in R	• Parasite game: extended rules of play
	Fri	1/31	Discussion of assigned reading	• Journal entry 1
4	Tues [†]	2/4	Population ecology of disease III: Disease management strategies In-class activity: Epidemiological model 2 (disease control)	• Mini-quiz 2a
	Thurs [†]	2/6	Population ecology of disease IV: Host-parasite genotypic specificity, co-evolution, and implications for disease control In-class activity: Red Queen card game	• Mini-quiz 2b • Epi model 1
	Fri	2/7	Discussion of assigned reading	• Journal entry 2

[†]bring laptop to class; *unless a different due time is indicated on Canvas

Week	Day	Date	Topics / Activities	Assignments due by 9am* through Canvas
5	Tues [†]	2/11	Population ecology of disease V: Environmental drivers of disease In-class activity: Epidemiological model 3 (environmental parameters)	<ul style="list-style-type: none"> • Mini-quiz 3a
	Thurs [†]	2/13	Collaborative writing project: Topic of our review, elements of a review, and mechanics of collaborative writing; discussion of potential sub-topics In-class activity: “Diseases are like the stars” database/literature search	<ul style="list-style-type: none"> • Poems (extra credit) • Mini-quiz 3b
	Fri	2/14	Discussion of assigned reading	<ul style="list-style-type: none"> • Journal entry 3
6	Tues	2/18	Population ecology of disease VI: Space and meta-populations	<ul style="list-style-type: none"> • Mini-quiz 4 • Epi model 2
	Thurs [†]	2/20	Population ecology of disease VII: Local adaptation; Red Queen revisited In-class activity: Analyze pooled data from Red Queen card game	<ul style="list-style-type: none"> • “Diseases are like the stars” • Epi model 3
	Fri	2/21	Discussion of assigned reading	<ul style="list-style-type: none"> • Journal entry 4
7	Tues	2/25	Population ecology of disease VIII: Landscape ecology of disease	<ul style="list-style-type: none"> • Mini-quiz 5a
	Thurs [†]	2/27	Population ecology of disease IX: Disease surveillance, remote sensing, and big data	
	Fri	2/28	Discussion of assigned reading	<ul style="list-style-type: none"> • Journal entry 5
8	Tues	3/3	Community ecology of disease I: Spillover, spillback, and zoonoses	<ul style="list-style-type: none"> • Mini-quiz 6a
	Thurs	3/5	Community ecology of disease II: Agro-ecological interface	<ul style="list-style-type: none"> • Mini-quiz 6b
	Fri	3/6	Discussion of assigned reading	<ul style="list-style-type: none"> • Journal entry 6 • Lit. search worksheet • Section outline
9	3/9-3/13		Spring Break – Enjoy! Be safe! Try not to pick up any parasites!	
10	Tues	3/17	Community ecology of disease III: Diversity-disease patterns	
	Thurs	3/19	Community ecology of disease IV: Dilution effect	<ul style="list-style-type: none"> • Mini-quiz 7
	Fri	3/20	Discussion of assigned reading	<ul style="list-style-type: none"> • Journal entry 7

[†]bring laptop to class; *unless a different due time is indicated on Canvas

Week	Day	Date	Topics / Activities	Assignments due by 9am* through Canvas
	Tues	3/24	Community ecology of disease V: Co-infection	• Mini-quiz 8
	Thurs	3/26	Community ecology of disease VI: Host microbiome and disease	
	Fri	3/27	Discussion of assigned reading	• Journal entry 8 • Draft 1 due 11:59pm
12	Mon	3/30	Collaborative writing project: Draft 1 comments returned	
	Tues[†]	3/31	Community ecology of disease VII: Diseases in food webs In-class activity: Epidemiological model 4 (food web interactions)	• Mini-quiz 9
	Thurs	4/2	Ecosystem effects of disease: Nutrient cycling and energy transfer	
	Fri	4/3	Discussion of assigned reading	• Journal entry 9
13	Tues	4/7	Collaborative writing project: Elements of a good table in our manuscript In-class activity: Evaluate example tables from published review articles	• Draft 2
	Thurs	4/9	Collaborative writing project: Visual abstracts In-class activity: Evaluate examples of visual abstracts	• Epi model 4 • Mini-quiz 10
	Fri	4/10	Discussion of our group paper	• Table 1 contributions • Journal entry 10
14	Tues	4/14	#SciComm: Communicating science to a general audience	• Draft 2 peer reviews
	Thurs[†]	4/16	Collaborative writing project: Work day	• Visual abstract • Mini-quiz 11
	Fri	4/17	Discussion of assigned reading (news articles from mini-quiz 11)	
15	Tues	4/21	Careers in disease ecology: Examples within and outside of academia	• #SciComm
	Thurs	4/23	Collaborative writing project: Visual abstract and #SciComm showcase/contest (prizes!)	
	Fri	4/24	No class	• Draft 3 • Peer evaluations • End-of-course survey

[†]bring laptop to class; *unless a different due time is indicated on Canvas

Reading assignments: Disease Ecology (BIOL 4195) – Spring 2020 (Updated Dec. 24, 2019)*

***Note:** The schedule and reading assignments are subject to change

Week	Date due	Reading assignments	Type
1	Tues, 1/14 Thurs, 1/16	Zimmer 2001, <i>Parasite Rex</i> Borer et al. 2011, <i>EcoHealth</i> Lafferty & Kuris 2002, <i>Trends Ecol. Evol.</i>	Book Review Review
2	Tues, 1/21	Zimmer 2001, <i>Parasite Rex</i>	Book
3	Tues, 1/28	Keeling & Rohani 2008, <i>Modeling Infectious Diseases</i> Ch. 1-2 Penczykowski et al. 2014, <i>Funct. Ecol.</i> Ezenwa & Jolles 2015, <i>Science</i>	Book chapters Empirical Empirical
4	Tues, 2/4	Colwell et al. 2003, <i>PNAS</i> Grant et al. 2017, <i>Front. Ecol. Environ.</i> Decaestecker et al. 2007, <i>Nature</i>	Empirical Review Empirical
5	Tues, 2/11	Altizer et al. 2006, <i>Ecol. Lett.</i> Tack & Laine 2014, <i>New Phytol.</i> Quammen 2012, <i>Spillover</i> Ch. I-III (pp. 11-164)	Review Empirical Book chapters
6	Tues, 2/18	Koskella et al. 2011, <i>Am. Nat.</i> Quammen 2012, <i>Spillover</i> Ch. IV-VI (pp. 165-310)	Empirical Book chapters
7	Tues, 2/25	Bakker et al. 2016, <i>PNAS</i> Quammen 2012, <i>Spillover</i> Ch. VII-IX (pp. 311-520)	Empirical Book chapters
8	Tues, 3/3	Plowright et al. 2017, <i>Nat. Rev. Microbiol.</i> Papaïx et al. 2015, <i>Evol. Appl.</i>	Review Theoretical
10	Tues, 3/17	Keesing et al. 2010, <i>Nature</i> Civitello et al. 2015, <i>PNAS</i>	Review Meta-analysis
11	Tues, 3/24	Pedersen & Antonovics 2013, <i>Biol. Lett.</i> Tollenaere et al. 2016, <i>Trends Plant. Sci.</i>	Empirical Review
12	Tues, 3/31	Holdo et al. 2009, <i>PLOS Biol.</i> Sato et al. 2012, <i>Ecol. Lett.</i>	Empirical Empirical
13	Tues, 4/7	Example tables (see mini-quiz 10)	Tables
14	Tues, 4/14	Science news stories and blog posts	#SciComm
15	Tues, 4/21	Example job descriptions	Job ads