SOCY 398 – Diffusion: How things Spread

Spring 2024 – Sloan 103

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Office Hours: M/W 1-2pm ("drop in" or by appointment - https://calendly.com/jimiadams)
NOTE: Drop in hours will be in person only. Appointments can be virtual (a link will be auto-generated) or in person.

Course Description

Why are some people more/less likely than others to contract a sexually transmitted infection, even when engaging in the same behaviors? What leads ideas or cultural tastes to become popular or fade away? How do we learn the behaviors we engage in? This class will investigate the various ways that these types of things spread through a population. We will explore the similarities and differences in operation of diffusion processes for the spread of things ranging from infectious diseases, to ideas, and behaviors.

Objectives

By the end of the semester, participants will be able to:

- Describe the basic stages of a diffusion curve.
- Differentiate between simple and complex models of contagion.
- Identify why diseases, ideas, and behaviors (and other "bits") differ in the ways they diffuse.
- Apply select network models of diffusion (density, centrality, etc.) to account for diffusion success/failure and speed.

Assigned Readings

All required readings and supplemental materials will be available via Blackboard.

Course Structure & Requirements

First and foremost, this course will be organized as an online seminar. What this means practically is that you are expected to *contribute to* as much as you *consume from* the content of the course. To do so will require that you: (1) *complete* and *critically analyze* readings from the various perspectives pertinent to understanding, explaining, and seeking to improve these public health issues, (2) *learn from* posted online lectures and related materials that interpret those readings and related scholarship, (3) *produce content* in a variety of formats that demonstrates comprehension and application of those ideas, and (4) *make use* of that material in exams. Much of our reading for this course will be primary peer-reviewed research articles. At times the content of these will be over your head. This is to be expected. Your aim will not be to fully interpret the minutiae of every aspect of these readings, but to **extract the key dimension(s) of public health they bring to bear on the topic at hand**, and use those ideas to help construct a well-informed course. To aid this, I will provide guidance on strategies for how to optimize your reading, particularly on how to extract key ideas from articles **used for different aims** in the course.

Requirements

I – Reading Elements (33%)

A. Reading Reactions (25 points each) For any 8 modules (your choice), you are responsible to submit a brief engagement with one of the assigned reading(s). More details are provided in a separate handout for the aims/structure of these reactions.

II – Project Elements (33%)

Each of these elements *can* (but are not required to) address the same topic, in which case each element (and the feedback you receive on it) can be built upon (but not merely reproduced) in the later element(s). More details are provided in separate handouts for each of these assignments.

A. Article Summary (35 points, 6% of total grade)

You will *individually* present a summary of a primary research article (from beyond the required set) on a topic of your choosing. These presentations will be 7-10 minutes, and presentation style is up to the student. The key aim here is to *distill* core components of a primary research article and communicate those in *written and oral form* to *generally informed scholars* (in training) who share some common knowledge about the broad topic matter, but not the particulars of your specific focus.

B. Infographic (65 points, 11% of total grade)

Individually, or with a partner, you will produce an infographic addressing (at least) 4 key elements of a single behavior/attitude/health outcome pertinent to the topic of diffusion. The key idea here is to present in v*isual/graphical form* the "big ideas" that an uninformed member of the public should know about your topic. The article summarized in part A can be *a* source for this element, but should ***not*** be the only source material you use in this assignment (3-5 sources likely necessary). If you choose to do this assignment as a team, each group member will receive the same grade.

C. Podcast or Video (100 points, 17% of total grade)

Individually, or with a partner, you will produce a podcast or video of 8-10 minutes highlighting an event/outcome/story that *illustrates* a diffusion phenomenon and *interpreting* that through the lens of the scientific study of diffusion. The key aims here are (1) to *apply the conceptual and theoretical ideas* developed in the course to (2) convey those to a general audience in a way that translates those ideas for someone who hasn't encountered them before, in an *oral and/or video format*. The article summarized in parts A & B can be *part of* the sources for this element, but should ***not*** be the only source material you use in this assignment (5-7 sources likely necessary). If you choose to do this assignment as a team, each group member will receive the same grade.

III – Exams (200 points, 33% of total grade):

A. Mid-term Exam (100 points, 16.5% of total grade)

All material covered up to the class period preceding the mid-term is fair game for this exam. It will consist of a mix of multiple choice, short answer, and essay questions. Exams will be conducted in class, see schedule for details.

B. Second Exam (100 points, 16.5% of total grade)

The second exam is not comprehensive, and will focus primarily on material covered since the mid-term. However, some material in this course will build on itself over time, and that aggregation of knowledge is fair game if it carries over. We may also revisit any poorly understood concepts from the first half of the course if necessary, making them also appropriate as 2nd exam material. Exams will be conducted in class, see schedule for details.

Grading

Maximum Potential Points (600):

Reading (33%, 200 points)	Projects (33%, 200 points)	Exams (33%, 200 points)
Reactions (25 points each)	Article Summary (35 points)	Exam 1 (100 points)
	Infographic (65 points)	Exam 2 (100 points)
	Podcast/Video (100 points)	

Grading Expectations:
Participation, presentation, and paper grades you earn will reflect how thoroughly your work demonstrates the particular assignment requirements *and* overall course aims, which will correspond to the following sets of expectations:

- A Work that, **in addition to** meeting an assignment's **minimum requirements**, also ***consistently*** reflects **engagement** with other material from the course where appropriate & in ways that **exceed course objectives** will earn grades in the A range.
- F Work that, **in addition to** meeting an assignment's **minimum requirements**, also ***occasionally*** reflects **engagement** with other material from the course where appropriate, in ways that **meet course objectives** will earn grades in the B range.
- C Work that **addresses only** an assignment's **minimum requirements** will earn grades in the C range.
- D Work that **incompletely addresses** an assignment's **minimum requirements** will earn grades in the D range.
- B Work that **fails to address** an assignment's **minimum requirements** will earn grades in the F range.

Please note now that there are NO extra credit opportunities in this course. For this course to be successful and for you to be successful in this course, we need everyone keeping up with requirements throughout the semester.

Final Grade Computation:
Your final grade will be determined by summing the number of points earned from each of the above categories. Letter grades will be determined from your point total as follows:

Letter Grade	Points Range	Letter Grade	Points Range	Letter Grade	Points Range
A	564+	B	498-525	C	435-464
A-	540-563	B-	480-497	C-	420-434
B+	526-539	C+	465-479	D	360-419

Any student accumulating 359 or fewer points will receive an F for the course.

Course Expectations

What I expect from you:
1 – *Make a concerted effort to bring the best you can to the course.* This means doing readings each week, completing required assignments on time, putting forth effort into the evaluated elements of the course. It also means taking ownership over the grades you earn.
2 – *Treat others in the class with respect.* This includes simple norms of regular interaction in an online forum and thoughtfully considering the contributions of others. At times we'll potentially cover material of a sensitive nature; being able to respect other's expressed opinions makes critical discourse possible.

Personal Computers Use: Personal electronics may be used only for legitimate classroom purposes, such as taking notes, downloading class information, or working on an in-class exercise.

What you can expect from me:
1 – *Make a concerted effort to bring the best I can to the course.* This means leading a class appropriate to its level, selecting "up to date" material that helps illustrate the course's key aims (though I'll aim to

keep covid from over-taking our course, even despite its direct relevance), regularly being available for interaction via Blackboard & office hours, and adapting as is appropriate for the needs of the class.
2 – *Treat others in the class with respect.* This includes being prepared for class, returning graded materials in a timely manner with useful feedback, seeking to be impartial in the assessment of student work, while holding it to the standards of the course and college. It also means fostering an environment where diverse perspectives can comfortably be shared in class.

What we all can expect from each other:
Behave in a manner reflecting common courtesies. Show up to office hours or other appointments as scheduled. Maintain professionalism in all electronic communication (e.g., email/Blackboard messages). Put forth our best efforts to maintain a productive and welcoming course.

Due Dates & Late Assignments:

- Reading Reactions are due to Blackboard by ***11:59pm on their respective due dates***. Given that there are multiple opportunities to complete these throughout the semester, no late summaries will be accepted.
- Article Summary, Infographic & Podcast/Video Project Elements are due to Blackboard by ***11:59pm, on their specified due dates***. If late, they will be deducted 25% if they are 5 minutes to 24 hours late, 50% if 24-48 hours late, and will not be accepted if more than 48 hours late.
- Exams are administered in person. Unexcused absences will result in a zero on the missed exam.

Course Communication:

- *The Syllabus* has answers to the most common questions pertaining to the course. Be sure check the syllabus first, before asking me about due-dates, assignment requirements, etc.
- *Office Hours* are available to add to your experience in this course. **Please make use of them.** These are meant to supplement required course work and in-class elements. As such, while I am happy to discuss course materials or other aspects of public health/academia in general with you during this time, they should not be viewed as an opportunity to ask, "What did I miss in class?" (You should find peers in the class with whom you can share notes for that purpose.)
- *Blackboard* will be used for the majority of communication in this course. You can find a copy of the syllabus, additional assigned readings, and all assignments there. I will also post any lecture notes after each class. To make your experience in this course successful, you should expect to make this resource a *regular* part of your preparation for this course.
- *E-mail* should be used for quick communications (things that can be responded to in no more than a few sentences); use office hours for anything requiring more depth. You should only use your USC email account for communication related to this course; I will not read/reply to emails from your personal accounts (e.g., Yahoo!, Hotmail, etc; honestly they very regularly get filtered from my inbox). Please consider e-mail as subject to the same standards of communication as you would all other forms written material in this course (i.e., you should use complete sentences, proper punctuation, etc.). I will typically respond to email within ***48 hours***.

University, CAS, and other Important Administrative Policies

Academic Integrity. You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in a minimum academic penalty of your failing the assignment (i.e., receiving a zero) and will result in additional disciplinary measures. This includes improper citation of sources, using another student's work and any other form of academic misrepresentation.

Plagiarism. Using the words or ideas of another as if they were one's own is a serious form of academic dishonesty. If another person's complete sentence, syntax, key words, or the specific or unique ideas and information are used, one must give that person credit through proper citation.
Please remember that avoiding plagiarism is only a minimal threshold for maintaining academic integrity. Additionally, the first tenet of the Carolinian Creed is, "I will practice personal and academic integrity." There are useful resources on what this entails available for you at:

- Carolinian Creed (http://www.sa.sc.edu/creed)
- Academic Responsibility (http://www.sc.edu/policies/staf625.pdf)
- Office of Student Conduct and Academic Integrity (https://www.sa.sc.edu/academicintegrity/)

If you remain unsure what this means for your successful participation in and completion of assignemnts in this course, ask, don't assume.

Class Recording. *The recording of class lectures, discussions, or any other teaching activity associated with this course is prohibited.* "Recording" refers to any analog or digital sound or image reproduction. Exceptions may be granted with disability documentation and/or the written permission of your professor. In such cases, the accommodation letter must be presented to the instructor in advance of any recording being done and all students in the course will be notified whenever recording.

Grades of Incomplete: The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course. Students have up to one year (three semesters) to complete course requirements. Dr. adams is the final authority on whether you qualify for an incomplete. Incomplete work must be finished within the time allowed or the "I" will automatically be recorded as an "F" on your transcript.

Course Schedule Overview

NOTE: this schedule is subject to change. Changes will be announced in class and on Blackboard.

Topic	Readings	Focus	Assignments Due
Preliminaries (Jan 8, 10) – Setting the Stage			
Introductions	none		
Overview	Gladwell 2000	C	
Module 1 (Jan 17, 22, 24) – Models (NOTE: this module spans 2 weeks)			
SEIR & R_0	Mishra et al 2011	M	
Measles	Rasmussen et al 2015	E	
Model Variants	adams 2020	M	
Infection Duration	Darbon et al 2019	E	
Module 2 (Jan 29, 31) – Infectious Diseases			
Basic Epidemiology	Friis & Sellers 2014	C	
HIV	Rothenberg et al 1998	E	
Module 3 (Feb 5, 7) – Slowing Epidemics			
Vaccines & Herd Immunity	Anderson & May 1985	M	
Disrupting Flu	Salathé & Jones 2010	E	Article Summary

Module 4 (Feb 12, 14) – Complex Contagions

From Simple to Complex	Centola 2018	M	
Contraception	Valente et al 1997	E	

Module 5 (Feb 19, 21) – Innovations

Diffusion of Innovations	Rogers 1995	C	
Tetracycline Prescribing	Coleman et al 1957	E	

Exam 1 - Feb 26

Module 6 (Feb 28) – Misinformation & Perceptions

Secrets	Cowan 2014	C	
Corrections & Backfires	Swire-Thompson et al 2022	E	Infographic

Module 7 (Mar 11, 13) – Behavioral Influence

Interpersonal Dynamics	Brechwald & Prinstein 2011	C	
Opioids	de Vaan & Stuart 2019	E	

Module 8 (Mar 20, 25) – Network (Interpersonal) Approaches

Network Models	Kadushin 2012	M	
Concurrency	Morris 2007	E	

Module 8 (Mar 27, Apr 1) – Indirect (Broadcast) Approaches

Critical Mass Models	Valente 1995	M	
Media & Small Groups	Katz & Lazarsfeld 1955	C	

Module 10 (Apr 3, 8) – Complex Contagions, part 2

Blacklists	Rossman 2004	E	
Health Lifestyles	adams et al 2022	E	Podcast

Module 11 (Apr 10, 15) – Mediated Contagion

Vector-borne Diseases	Costa et al 2017	C	
Chikunguya & Zika	Riou et al 2017	E	

Module 12 (Apr 17, 22) – Spatial Approaches

Spatial & "Spatial" Models	González-Bailón 2017	M	
Cholera	Emch et al 2009		

Exam 2 – Apr 24 (9am)

Full Reference Information for Required Readings

- adams, jimi, Elizabeth Lawrence, Joshua Goode, David R. Schaefer, & Stefanie Mollborn. 2022. "Peer Network Dynamics of Adolescents' Health Lifestyles." *Journal of Health & Social Behavior* 63(1): 125-141.
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- Katz E, Lazarsfeld PF. 1955 [2006]. "Norms and Networks in the Process of Persuasion: Linking Small Group Research with Mass Media Research." Excerpts from *Personal Influence: The Part Played by People in the Flow of Mass Communication.* Transaction.
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- Morris M. 2007. "Local Acts, Global Consequences: Networks and the Spread of HIV." WALS Lecture, NIH. https://videocast.nih.gov/Summary.asp?File=13792&bhcp=1
- Rasmussen LD, et al. 2015. "Phylogenetic and Epidemiological Analysis of Measles Outbreaks in Denmark, 2013 to 2014." *Euroesurveillance* 20(39): 1-10.
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- Gabriel Rossman. 2004. "Elites, Masses, and Media Blacklists: The Dixie Chicks Controversy." *Social Forces* 83(1): 61–79.
- Rothenberg, Richard B. et al., 1998. "Social Network Dynamics and HIV Transmission." *AIDS* 12:1529-1536.
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