SPH480
Public Health Research Methods
Spring 2022

Welcome back, Huskies!

To enter into the classroom space

When you arrive:

- Music
  - Each person, please share 1-2 tracks that makes you feel joy, comfort, calm, or otherwise well.
  - Shared playlist on Spotify
- 3 min. Self-care practice: e.g., breathing exercise, stretching, journaling independently, a moment to come into the learning community.
  - Invitations, not expectations
  - Do what works for you

Knowledge credit: Dr. Stacey Patton, PhD

What's the brain got to do with it?

- Stress changes the structures of the brain.
- When in a state of vigilance & reactivity, we cannot learn.
- "Brains grow the best, function the best in supportive relationships, low stress. Emotional regulation to enhance learning."
- Starts class with embodiment, grounding

Today's Offered Practice

- Take a deep breath– expand your belly 360 degrees, like an umbrella.
- Slow it down, and repeat 3-5 more times.

Some Assumptions

- You are full human beings.
- You deserve to be here.
- You are not required to be “strong” to be valuable.
  - Struggle is normal.
  - The outside world affects us.
  - Humans are social, and we all need help.
- Your mental health is important.
- You teach each other, and us.
- You can do this, even if it looks a little different.

Acknowledgments

- Knowledge: (via SHIFT)
- Land: UW occupies the traditional land of Coast Salish peoples: Suquamish, Tulalip and Muckleshoot nations, Duwamish Tribe. Past, present, & future
- Labor: We do our work in a country that was built by the exploitation of enslaved people from Africa, and indigenous to this land.
- **Action:**
  - https://resourcegeneration.org/land-reparations-indigenous-solidarity-action-guide/
  - https://www.racialequitytools.org/plan/issues/reparations
  - https://www.realrentduwamish.org/about-the-tribe.html

What is the impact of colonization and historical trauma on a community's health? How do we mitigate this?

Co-create Class Playlist on Padlet

- Link in the chat, and on Canvas
- Please share a song that makes you feel joyful, calm, happy, or well.
  - Include title and artist
  - If your song is not available on Spotify, please tell us where we can find it.
- Posts are anonymous, your names optional.
- Continue to add your ideas at any time today, or email the teaching team with additional song ideas.

This week's learning objectives

- **Today:**
  - Meet your instructor team & group
  - Orient to the space, approach, and course flow, and context of public health research
  - Try out some technology we will use
- **Outside of class:**
  - Be familiar with the course approach & logistics– see posted video for details
  - Think about research topics with your group
- **Quiz Section**
  - Meet with your groups, establish group norms
  - Discuss your research topic for the quarter

SPH 480 Teaching Team

Instructors

Kate West, PhD, MS
She/her/hers
westkate@uw.edu
Clinical Assistant Professor
Department of Global Health
Formerly Bioethics & Humanities

Rena Patel MD, MPH
She/her/hers
rcpatel@uw.edu
Assistant Professor
Department of Medicine, Division of Allergy and Infectious Diseases

Teaching Assistants

Donghoon Lee, MSc
He/him/his
PhD student, Health Services
donghlee@uw.edu

Kristen Danforth, MPH
She/her/hers
PhD candidate
Implementation Science-Global Health
danfortk@uw.edu

Office hours: in-person after class on Thursdays; can meet via Zoom, please email!

Rena Patel

She/her/hers rcpatel@uw.edu

UIC UNIVERSITY OF ILLINOIS AT CHICAGO

UNIVERSITY OF CAMBRIDGE

STANFORD SCHOOL OF MEDICINE

Stanford University Medical Center

HARVARD SCHOOL OF PUBLIC HEALTH

UCSF University of California San Francisco

faces Family AIDS Care and Education Services

Donghoon Lee

(He/him/his)

- BA in Economics *(Yonsei University, South Korea)*
- MSc in Health Policy, Planning and Financing *(LSE & LSHTM, UK)*
- PhD student in the Health Services program *(4th year)*

projectMalawi
help transform a life

서울대학교 의과대학 통일의학센터
Institute for Health and Unification Studies

Cost-Effectiveness Analysis of Hepatitis B Vaccination Strategies to Prevent Perinatal Transmission in North Korea: Selective Vaccination vs. Universal Vaccination

Donghoon Lee, Sang Min Park

SNUH
SEOUL NATIONAL UNIVERSITY HOSPITAL

YONSEI UNIVERSITY 연세대학교 LSE

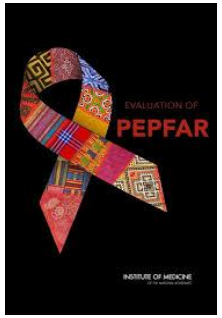
LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

FULBRIGHT

Kristen Danforth

(She/her/hers)

Global Health all the way (BS in International Health, MPH in International Health, PhD in Global Health *5th year*)



INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

Kate McGlone West, PhD, MS

(She/her/hers)

High School: French, music & theater; Barista, babysitter

M.S. Biology, CBPR, Qualitative research

CENTER FOR ALASKA NATIVE HEALTH RESEARCH

Reproductive Health (public health education& practice); restaurant server

SCHOOL OF PUBLIC HEALTH
UNIVERSITY of WASHINGTON

Ph.D. Public Health Genetics

Bioethics, Qualitative research, Community-engaged research

Research: Bioethics & Humanities
Teaching: Dept of Global Health, PH-GH Major

OBERLIN COLLEGE
LEARNING AND LABOR

B.A. Politics
A cappella, diving team, swim instructor, grocery market/café

Note: Zoom Office Hours changed to Wed, 2-3 ; in-person still Thursdays after class

This Course is a Mentored Research Experience:

Approximates real-world professional research

With more support— learn by doing

THE WHAT: DEFINING RESEARCH

"Do your research!"

Take a moment to think…

Write a technical definition of RESEARCH.

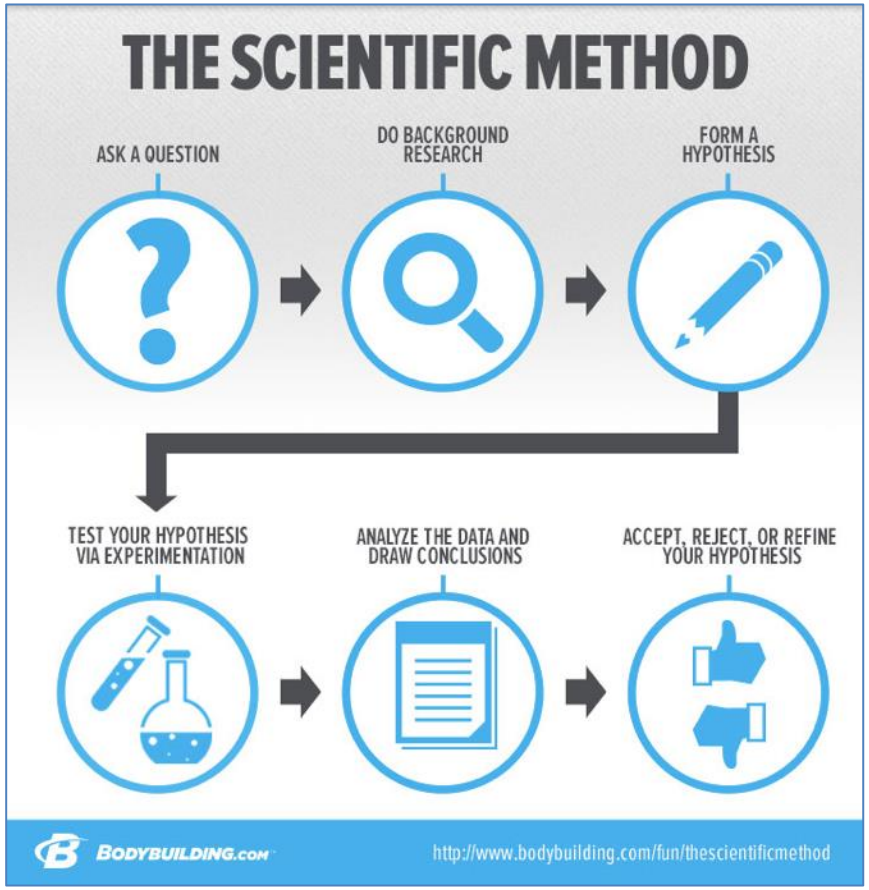
In the chat, enter your responses.

Definitions

*A **systematic** investigation, including research development, testing and evaluation, designed to **develop or contribute** to **generalizable knowledge***

[Federal definition: 45 C.F.R. 46]

Research is Systematic



PH application of scientific method

State & justify a research question

Do background research
(literature search & synthesis)

Refine question & write
testable hypotheses (if quantitative)

Design your study

Collect your data
(measurement & observation)

Analyze the data and draw conclusions
Disseminate results

Implement intervention

Adapt policy

Refine or develop new hypothesis, do more research

Paradigmatic Context

Content credit: Shawn Wilson, PhD (Opaskwayak Cree),
Research is Ceremony.

Paradigmatic Context

- Paradigm: *Underlying beliefs that guide our actions.*
  - Ways of knowing
  - How knowledge is gained
  - Ethics guiding the search for knowledge

- Think-Write-Chat: *What are the underlying beliefs of Public Health research? Consider:*
  - Ways of knowing
  - How knowledge is gained
  - Ethics guiding the search for knowledge

Content credit: Shawn Wilson, PhD (Opaskwayak Cree),
Research is Ceremony.

Public Health Research Paradigm

Ways of knowing: (Epistemology)

Phenomena are directly observed externally, experimentally, independent of the researcher's identity (positivist)

Knowledge is rooted in a person's subjective experience and must be co-constructed, with the researcher's identity as relevant (constructivist)

How knowledge is gained: (Methodology)

Observational or experimental studies (scientific method)

Quantitative, qualitative, or mixed-methods

Quantitative is often seen is more important; other approaches are gaining favor

Guiding ethics: (Axiology)

Research ethics regulations exist, but these are the floor, not the ceiling.

Communities' ethics are not built into the regulations, but are just as important to follow.

Take-home point: There are many valid approaches to research, we will dive deep into a small subset.

THE WHY: GOALS OF PH-GH RESEARCH

Take a moment to think…

Share a few goals of PH or GH RESEARCH.

Goals of PH-GH Research

→ To reduce disease burden, improve population health, create greater equity and justice

- To help create or bring attention to **equity and justice**
- To determine the **burden** of a disease (how much disease is in a population?)
- To identify the **etiology or cause** of a disease
- To identify **risk factors** for a disease
- To describe the pathogenesis or natural history of a disease to **inform treatment, prevention, vaccination**, etc.
- To **develop, test, and implement** new interventions
- To **optimize delivery** of new interventions (quality, cost, impact outcomes, implementation science)
- To **gather stakeholder views** on health policy, programs, barriers, needs, and strengths [qualitative research]
- *…..And many many more*

“The term, ‘research’ is inextricably linked to European imperialism and colonialism…
It is a history that still offends the deepest sense of our humanity.”

Dr. Linda Tuhiwai Smith

- Public health research: Long legacy of harms to individuals and communities of color, rooted in colonization.
  - Will cover more in Ethics session & CBPR session
- Students will have different personal experiences and histories with research.
- Co-opt existing structures to promote equity and justice?

Dr. Smith, Maori scholar, University of Waikato, New Zealand.

So…Why should I know *how* to do this?

- To develop a critical read of scientific (and pseudo-scientific) studies & claims
- To know the language and the tools of research to prevent harm to your own community, or one that you work with, or to benefit your community

- If you work in PH or GH, you will likely do some of the things in this class
  - Write a proposal, attend a seminar, write up a report, review literature
  - Draft questions, evaluate & improve programs, interact with regulatory bodies, communicate research with the public
  - Manage ethical challenges of a program or project

We learn by doing. Focus on the most highly transferrable skills set for PH-GH

Our commitment to you

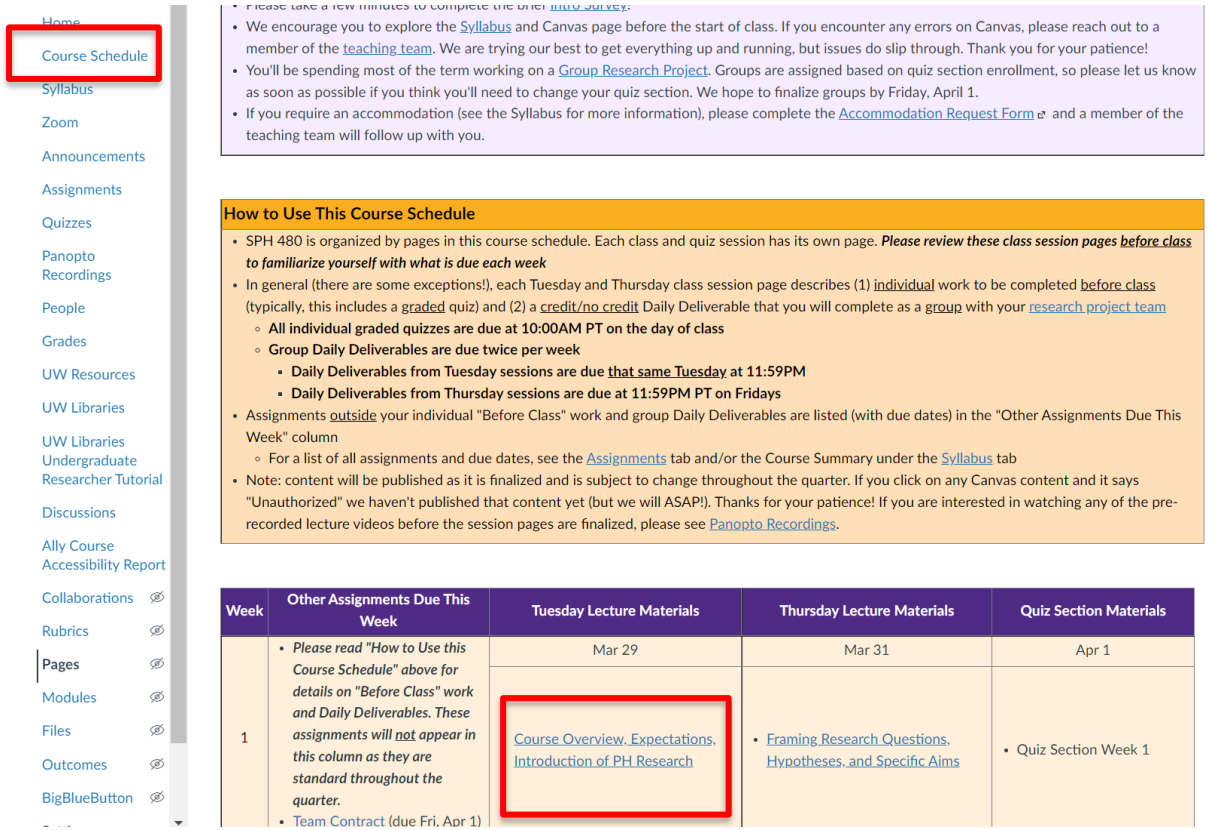
To honor the different experiences and recognize different burden that talking about research has on our students;

To solicit feedback and be responsive to student needs;

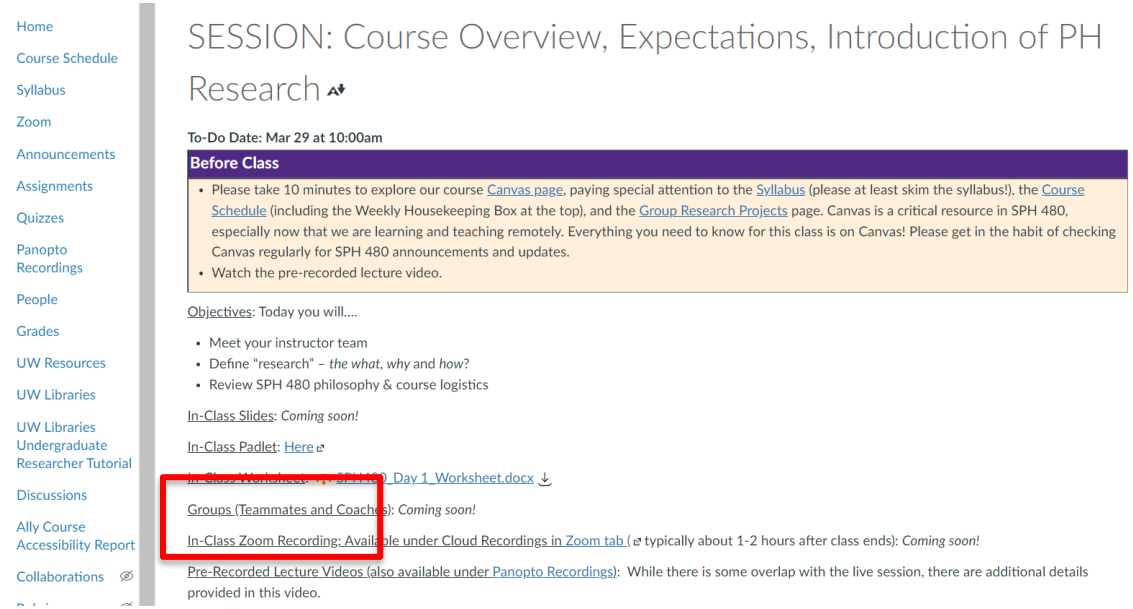
To invite you to ask for support. We believe you.

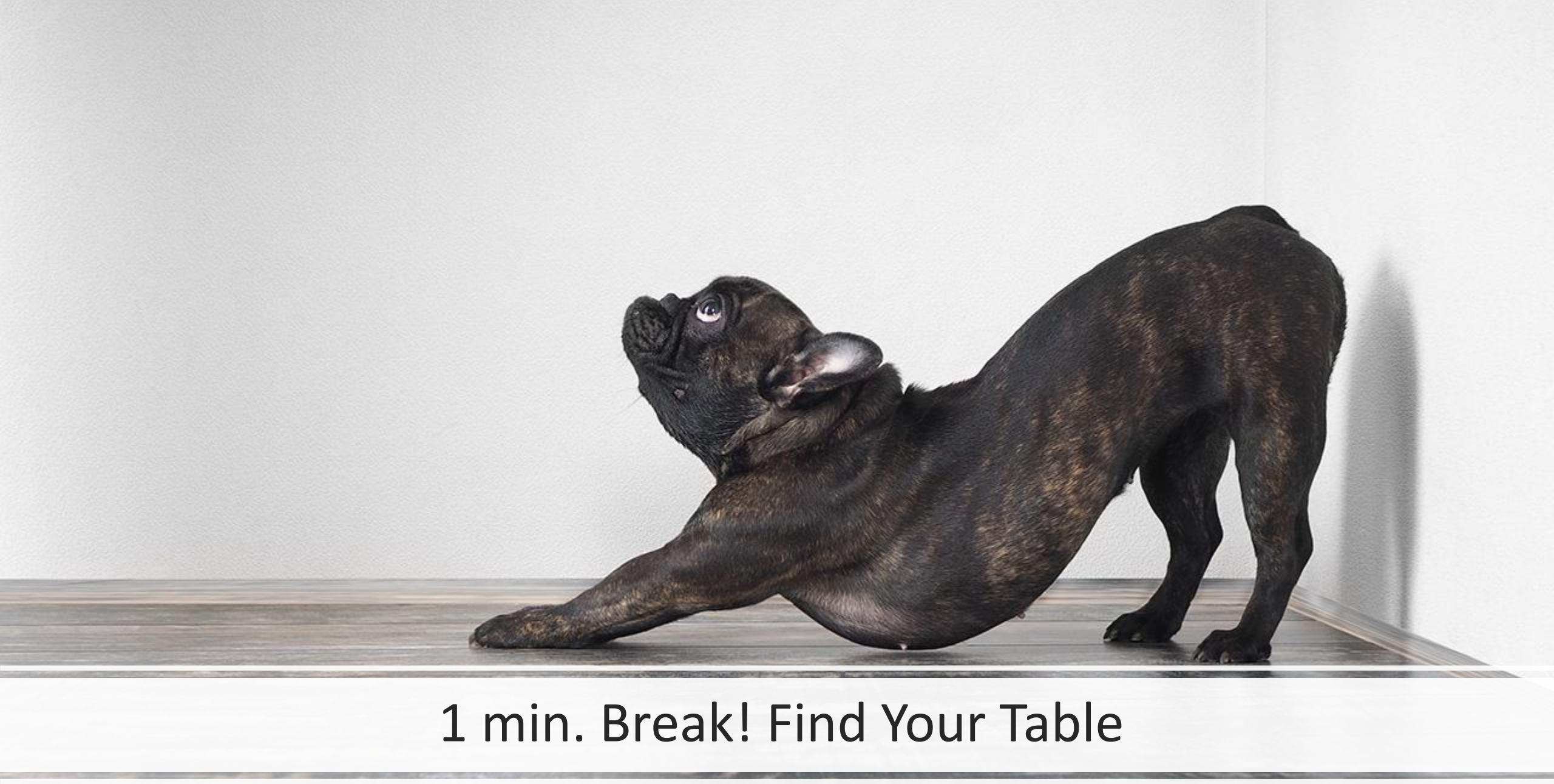
Group Assignments

Canvas: Click on Course Schedule, today's date.



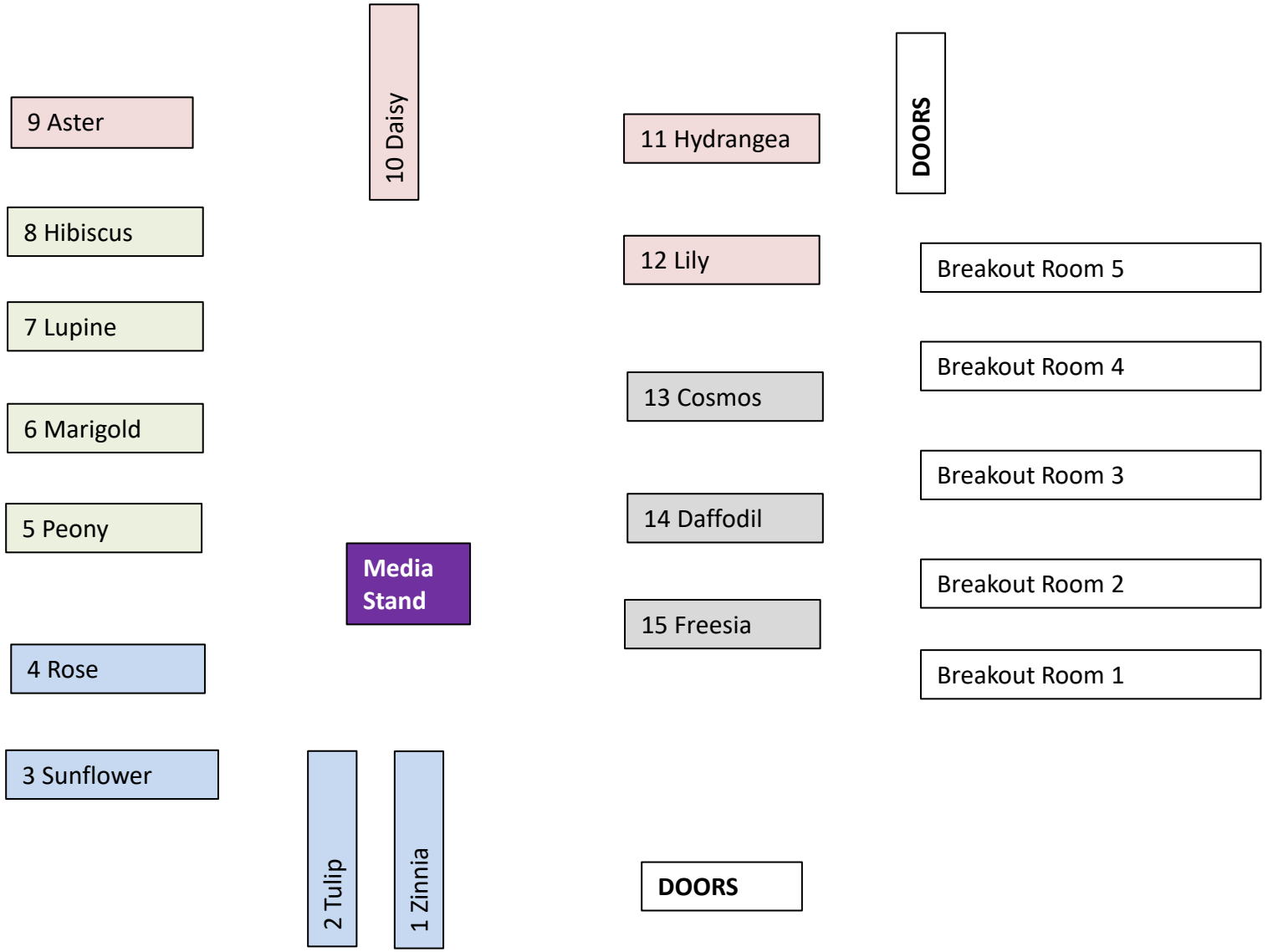
Find everything you need for the session. Open Group Assignments.





1 min. Break! Find Your Table

Room Map (not to scale!)



Groups are aligned with quiz section.

If you have a quiz section conflict, please let us know NOW.

How it works

- Prepare for class: Click the link on the course schedule for the day
  - Watch videos, read articles
  - **Short quizzes each day: first is due this Thursday**

- In class:
  - Brief review of the main points, learning objectives and instructions (Profs lead)
  - Active learning: Apply prep work to your group's project
  - Participate synchronously to receive credit for the day (2 free passes)

- Quiz sections (TAs Donghoon, Kristen lead)
  - Additional tutorials, games
  - Ungraded problem sets
  - Working on group assignments

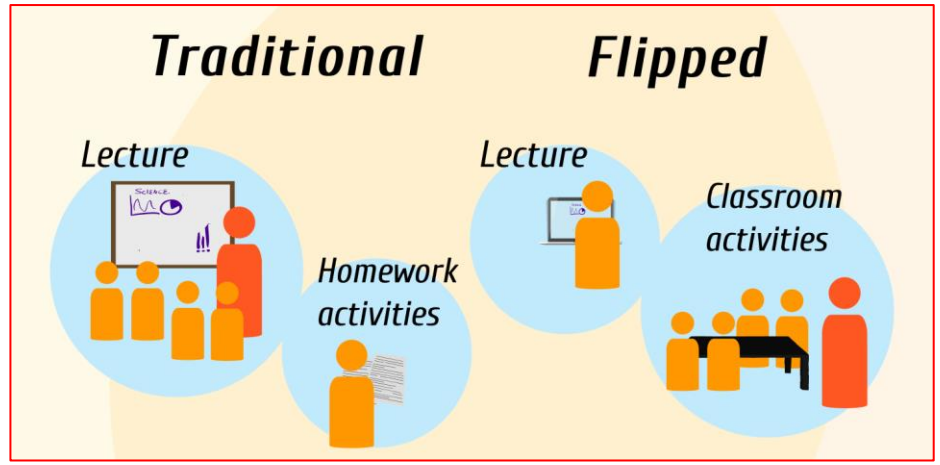


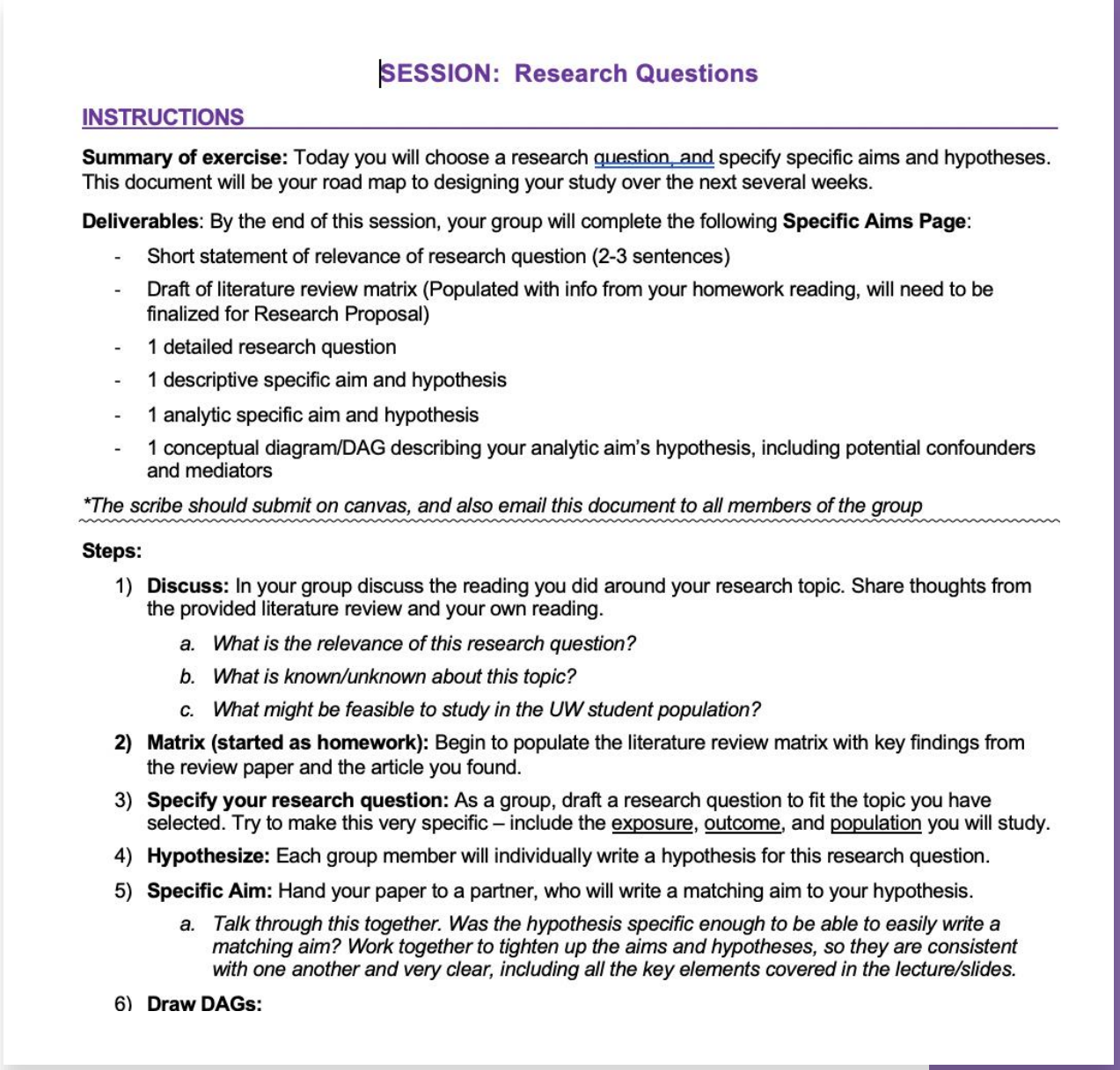
Image Credit: Olega Bedrina's blog

Course schedule tab on Canvas:

Week	Other Assignments Due This Week	Tuesday Lecture Materials	Thursday Lecture Materials	Quiz Section Materials
1	• *Please read "How to Use this Course Schedule" above for details on "Before Class" work and Daily Deliverables. These assignments will not appear in this column as they are standard throughout the quarter.* • Team Contract (due Fri, Jan 7)	Jan 4	Jan 6	Jan 7
		• Course Overview, Expectations, Introduction of PH Research	• Framing Research Questions, Hypotheses, and Specific Aims	• Quiz Section Week 1
2	None	Jan 11	Jan 13	Jan 14
		• Study Design I – Study Designs, Bias, and Confounding	• Study Design II – Populations, Sampling, and Recruitment	• Quiz Section Week 2
3	• Extra Credit: CITI Human Subjects Protections Certificate (due Fri, Jan 21)	Jan 18	Jan 20	Jan 21
		• Research Ethics	• Measurement Concepts: Conceptualization and Operationalization	• Quiz Section Week 3
4	• Extra Credit: Screentime Survey (due Fri, Jan 28)	Jan 25	Jan 27	Jan 28
		• Writing for Research	• Designing Data Collection Tools/Surveys	• Quiz Section Week 4

Daily Deliverables

- Templates completed each day **in class**
- These build up to your **Research Protocol** and **Research Report** Assignments
- Turn in by 11:59pm on:
  - Tuesday for Tuesday's class deliverable
  - Friday for Thursday's class deliverable
- Coaches will provide feedback by the following lecture
- **Expected to read and implement coach comments!**



SESSION: Research Questions

INSTRUCTIONS

Summary of exercise: Today you will choose a research question, and specify specific aims and hypotheses. This document will be your road map to designing your study over the next several weeks.

Deliverables: By the end of this session, your group will complete the following **Specific Aims Page**:

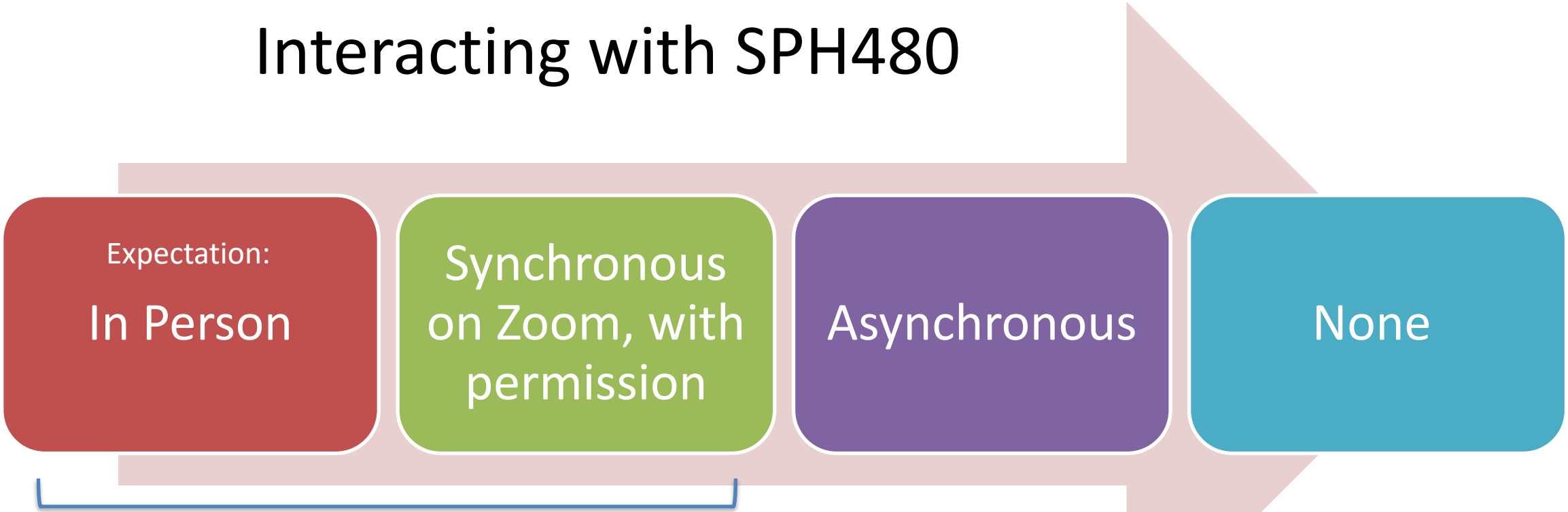
- Short statement of relevance of research question (2-3 sentences)
- Draft of literature review matrix (Populated with info from your homework reading, will need to be finalized for Research Proposal)
- 1 detailed research question
- 1 descriptive specific aim and hypothesis
- 1 analytic specific aim and hypothesis
- 1 conceptual diagram/DAG describing your analytic aim's hypothesis, including potential confounders and mediators

**The scribe should submit on canvas, and also email this document to all members of the group*

Steps:

1) **Discuss:** In your group discuss the reading you did around your research topic. Share thoughts from the provided literature review and your own reading.
   a. *What is the relevance of this research question?*
   b. *What is known/unknown about this topic?*
   c. *What might be feasible to study in the UW student population?*
2) **Matrix (started as homework):** Begin to populate the literature review matrix with key findings from the review paper and the article you found.
3) **Specify your research question:** As a group, draft a research question to fit the topic you have selected. Try to make this very specific – include the exposure, outcome, and population you will study.
4) **Hypothesize:** Each group member will individually write a hypothesis for this research question.
5) **Specific Aim:** Hand your paper to a partner, who will write a matching aim to your hypothesis.
   a. *Talk through this together. Was the hypothesis specific enough to be able to easily write a matching aim? Work together to tighten up the aims and hypotheses, so they are consistent with one another and very clear, including all the key elements covered in the lecture/slides.*
6) **Draw DAGs:**

Interacting with SPH480



Stream class, Zoom tab on Canvas

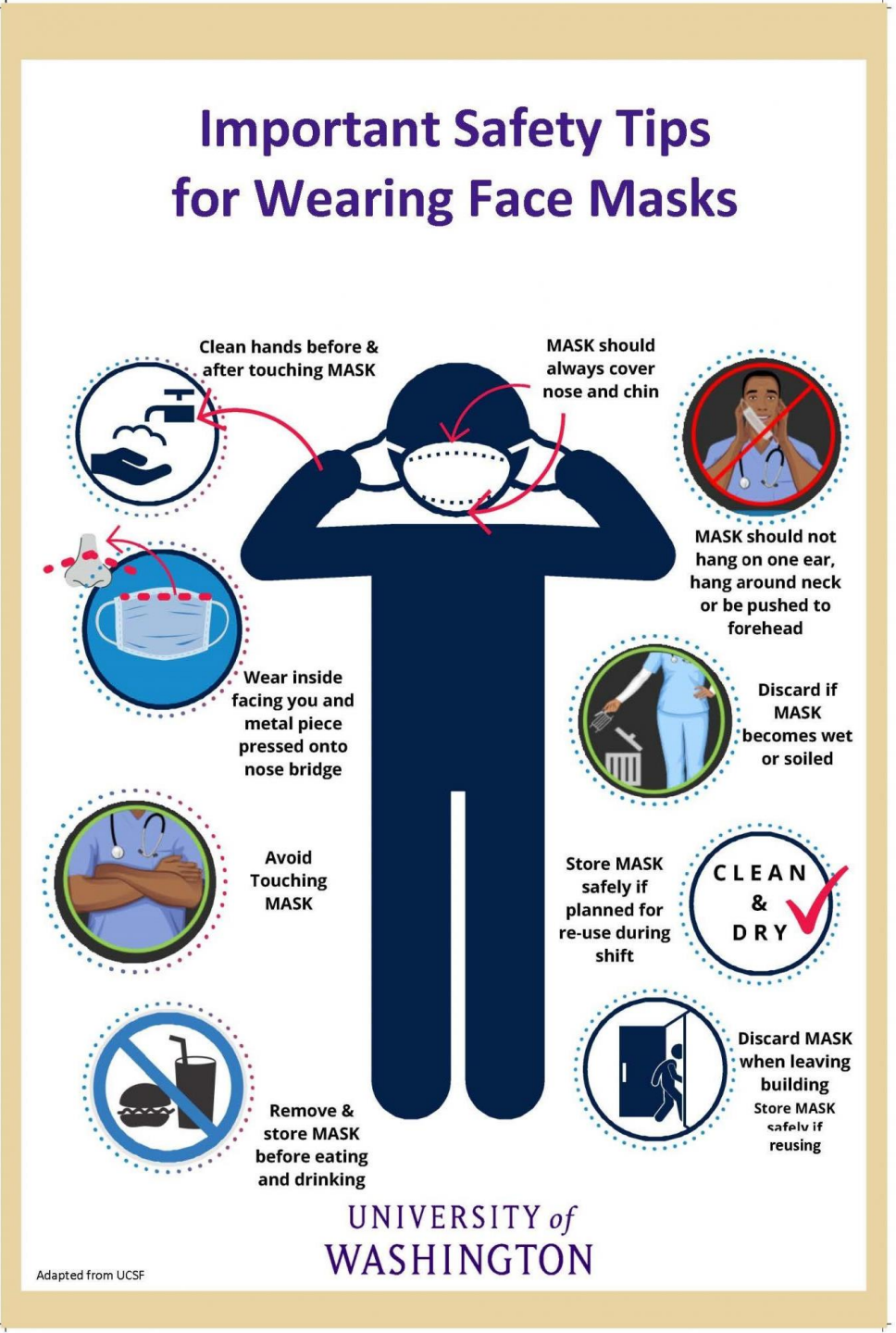
- Use Chat and/or Padlet
- Breakout rooms are preassigned, to meet with your group members if someone is participating remotely.
- Communicate to ensure group members know if you will join remotely.
- Only join remotely **with permission, so you will receive credit for the day.**

Outside of class time

- View the short Zoom recording, via session page.
- Communicate with your group mates to ensure you understand team decisions and next steps.
- **No credit for daily deliverable. Two free "incompletes"** on the deliverables per student.

Severe disruption

- Submit accommodation request
- Communicate with your group
- Make a plan for future days, and completing the course, if needed



On campus

- Fully vaccinated (2 weeks after last dose)
- Masks are strongly encouraged by the UW for the next 2 weeks
- You are welcome to continue masking, however long you wish!

Course Content & Flow

Part I:
Quantitative methods;
Survey design and conduct
Research Ethics

Part II:
Qualitative Research
Community Partnerships
Implementation science (optional)
Program Evaluation

In class group work

- Choose a research topic, refine your question and objectives
- Design the study, develop a questionnaire, recruitment materials (**Research Protocol**)
- Carry out the study
- Analyze data & write up the results **(Research Report)**

- Implementation science methodologies
- Qualitative research
- Guest speakers
- Community-based participatory research

Quiz section problem sets

Individual work

Research Seminar
Summarize and synthesize guest research seminar

Exam

Peer- & Self-Evaluation

Daily Quizzes on Canvas

Spring Quarter Course Deadlines

Group Daily Deliverables

Individual Daily Quizzes

Steadily Building Group Research Protocol

March-April

Group Research Protocol 5/2/22

Exam 5/8/22

Seminar Review 5/16/22 **ATTEND QUIZ SECTION 5/13/22

May

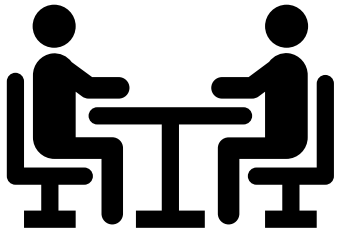
Group Research Report 6/7/22 10am

Peer and Self-Evaluations 6/7/22 11:59pm

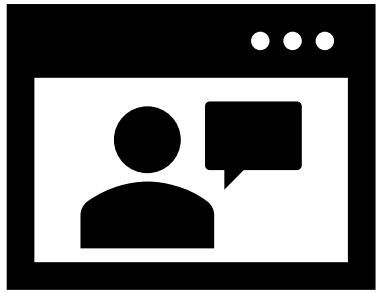
May-June

Teaching Team Office Hours

- Listed on Canvas.
- Drop-in at posted times, or email to schedule a private meeting
- Why? To check in, ask any questions, career advice/connections, get to know each other, feedback from your coach.
  - If you have specific questions about coach feedback or your own project, please ask your coach
  - Anything else, ask anyone on the teaching team



Casual in-person discussions, all are welcome.



Private meetings via Zoom

Today and the Upcoming Week

Due Today	Due Thursday	Quiz Section Friday / due Friday
• Connect with your group • Familiarize yourself with Canvas • Watch intro/logistics video posted on the Course Schedule tab on Canvas	• Watch Session 2 pre-recorded lecture videos (Research Questions, Hypotheses, and Aims) on Canvas • Complete Canvas quiz before class • Have a research topic idea for your group project.	• Check in with your group • Read/edit the *Group Contract* • Look at the *Research Protocol* and *Research Report* assignments • Discuss ideas for your research project (big picture ideas, brainstorming) • Wrap up any loose ends on course logistics • **Submit deliverable by Friday 11:59pm**
If you **need** to change quiz sections, please tell us today.	Complete the "getting to know you" survey, if you haven't already.	Get a head start on next Tuesday's content! Take the quiz early enough to review Epi as needed.

MEET YOUR GROUP

Introduce yourselves: Name, pronouns, fun fact (optional)
Share contact information as your group prefers.
Complete questions on the handout Canvas.

EXPOSURES
COVID-19-related behavior
Self-reported social distancing behavior (e.g., strict observance of guidelines or not)
Self-reported adherence to masking policy
Perceptions of COVID-19
Perception of own risk for COVID-19 infection (e.g., high risk or not high risk)
Actual risk for COVID-19 infection (e.g., based on living situation, work environment, etc.)
Perception of personal risk for adverse outcomes due to COVID-19
Social connections
Perception of "belonging"
Living environment (e.g., alone vs. with others; with friends/peers vs. with family)
Social media use (e.g., high or low)
Perception of one's social or community connectedness (e.g., high or low)
Work/school environment/ responsibilities
Perceived support to accommodate online learning needs during COVID-19 (e.g., adequate vs. inadequate support)
Working environment (work from home vs. in person work)
Current work/school load (e.g., hours per week, number of credits, etc.)
Knowledge/experience with COVID-19
Know someone who has tested positive for COVID-19
Positive COVID-19 test

OUTCOMES
Health beliefs/practices
Adoption of COVID-19 safety practices (e.g., compliance with masking or observance of social distancing)
Preventative care utilization
Substance use (use existing scale to measure)
Perceptions of personal COVID risk (high vs. normal/low risk)
Physical health
Self-perceived health status (consider existing scales)
Frequency of headaches/headache impact on life (use existing scale to measure)
Positive COVID-19 test
Mental health
Stress (Perceived Stress Scale or similar)
Depression (use existing scale to measure)
Anxiety (use existing scale to measure)
Fear of COVID-19 (high vs. low)
Academic/work performance
GPA
Self-perceived performance
Vaccine outcomes
Interest in getting vaccinated for COVID-19 (e.g., high or low)
Received COVID-19 vaccine

Before Next Lecture

- Connect with your group
- Discuss topic ideas (not limited to this list)
- Agree on a general topic (keep it high level)
- Goal is to help direct your research question, to be developed in the next class