



Course Banner Art by Oliver Carter (IG: @oliverink)

# Welcome

Welcome to Numbers & Social Justice! This course has been specifically designed for students who have historically struggled in math and statistics courses - our goal is to demystify the language of statistics and develop an appreciation for what it can (and cannot) tell us. At the end of this course, you will be able to read the world with statistics. As a critical, statistically literate individual, you will understand how social institutions and policies are shaped by statistics and challenge these to advance justice and equity.


### Course Objectives:

- Develop a critical disposition towards data presented in news media, social media, and research papers.
- Make sense of models including typical data representations (e.g., charts, graphs, text). Consider the affordances and constraints of these models as they relate to social justice .
- Make sense of and critically analyze representations of data and statistical claims.
- Develop an understanding of how studies are designed and data is collected.
- Develop an understanding of statistical concepts and apply this knowledge.
- Apply quantitative reasoning.
- Apply contextual knowledge of the world.

**Class Meetings**  
M/W 9am-12:30pm  
Phys Sci 140  
June 26 - July 26

**Section Meetings**  
Tuesdays  
9am-10am  
10am-11am  
online/zoom





**We are members of a community residing on unceded ancestral lands. The following statement was formulated by the tribal chairperson of the Amah Mutsun Tribal Band in collaboration with Rick Flores, Horticulturist and Steward of the Amah Mutsun Relearning Program at the UCSC Arboretum:**

**We would like to begin by acknowledging that the land on which we gather is the traditional and unceded territory of the Uypi Tribe of the Awaswas Nation. Today these lands are represented by the Amah Mutsun Tribal Band who are the descendants of the Awaswas and Mutsun Nations whose ancestors were taken to Mission Santa Cruz and Mission San Juan Bautista during Spanish colonization of the Central Coast. Today the Amah Mutsun are working hard to fulfill their obligation to the Creator to care for and steward Mother Earth and all living things through relearning efforts and the Amah Mutsun Land Trust.**

# The Team

We are dedicated to your success in this course. Please don't hesitate to reach out with questions or just to chat. We want to hear from you!



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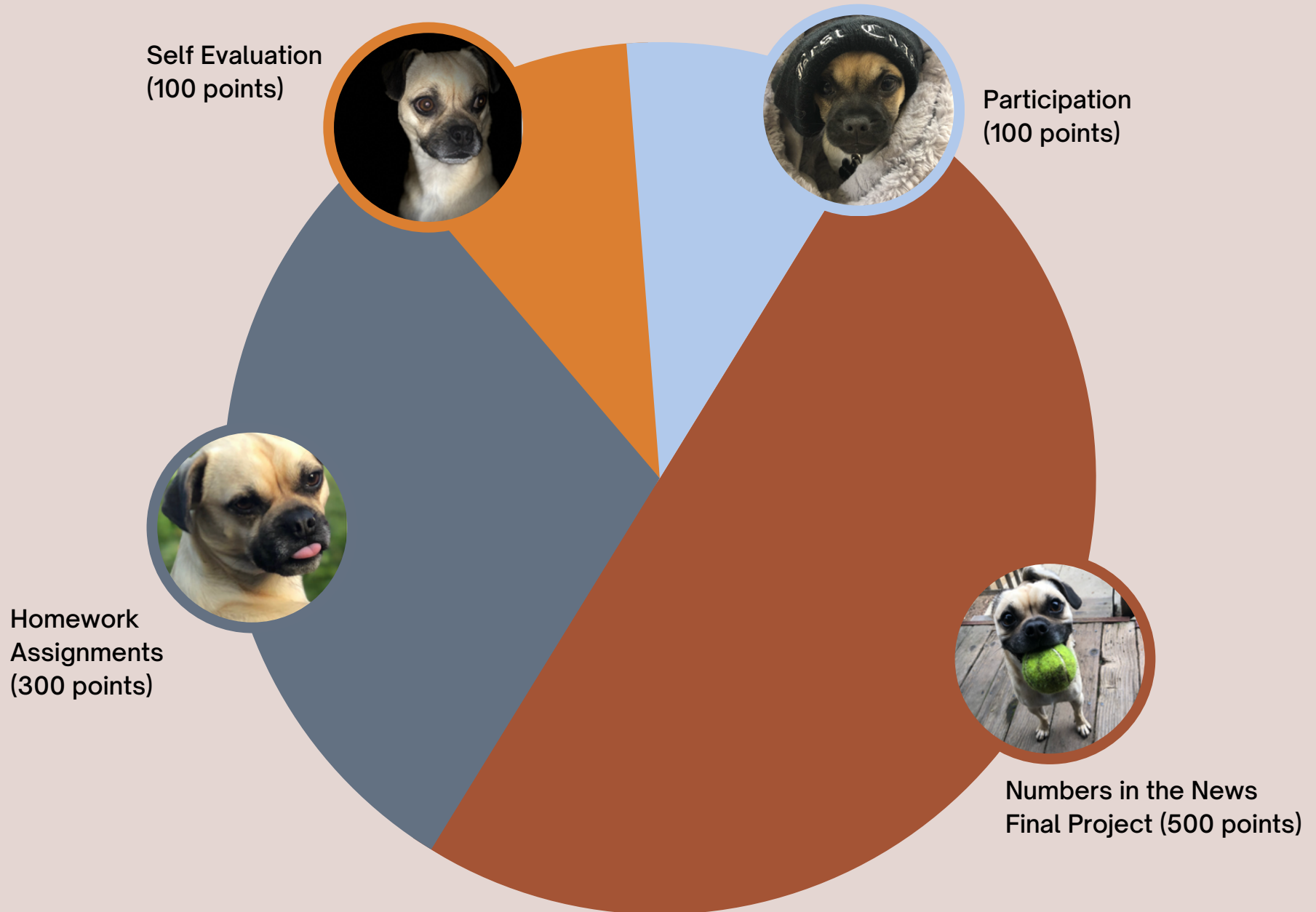


In this course, you will have the opportunity to redefine and reclaim mathematics for yourself and your own purposes. This course aims to repair potential harms done in prior STEM courses in which students may have been minoritized, neglected, or abused. I hope you will experience mathematics as creative rather than prescriptive in an environment that acknowledges and honors your emotions, experiences, identities, and knowledge and sees these as strengths. We will be practicing "rough math" - a method of estimating values and relationships without needing to be exact. You should never need to use a calculator in this course, and, in some instances, calculators are forbidden. Don't worry! - this is all about getting reacquainted with the brilliant calculator you have inside your head.

I ask that you always show all your "work" - your mathematical thinking. This helps me understand what you're thinking and decide how best to teach. In our class sessions, I will model how you can show this type of mathematical thinking.

The most important thing about "rough math" is that we find a way to communicate a numerical value in a way that is as meaningful as possible.

# How you will be graded



# Participation (100 points)

Participation is not just about attendance. We do not all participate the same way. Some people like to speak up in groups, others prefer to listen. Some folks like to write, others prefer to read and comment. Different types of interaction require different amounts of effort from us. Let us begin not only by acknowledging these differences, but by celebrating them as strengths you bring to the course. Critical statistical literacy requires context knowledge of the world and the many ways people experience it.

This is a hybrid course; lectures will be in person and discussion sections will be on Zoom. Your attendance in all class sessions is expected. If circumstances cause you to miss, we can work around that. Please just send an email letting us know. If you want to pass the course, you have to show up - important collaborative learning will be happening in our class meetings! We'll do our best to make our synchronous meetings worth your time.

Each week you'll get a participation score out of 20 points. There are several ways to participate in this course. If you find that none of these are working for you, please reach out to me so we can make a plan that will work for you.

- **Participate by listening actively and sharing your thoughts and opinions in large and small groups.**
- **Try all the math activities. This will look like taking notes, drawing, coloring, and moving objects, alone and with partners and in small groups.**
- **Communicate with your classmates and/or me when something is getting in the way of your participation. Make space intentionally for others to participate.**
- **Make public annotations to the course readings using hypothesis (in canvas). These can be questions you have, connections to other course materials, or just any thoughts.**
- **Read and comment thoughtfully on others' annotations of the readings.**



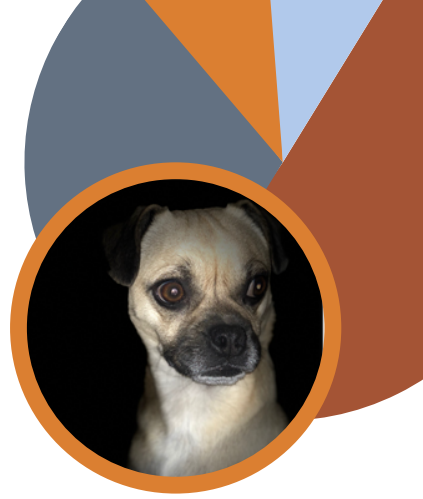
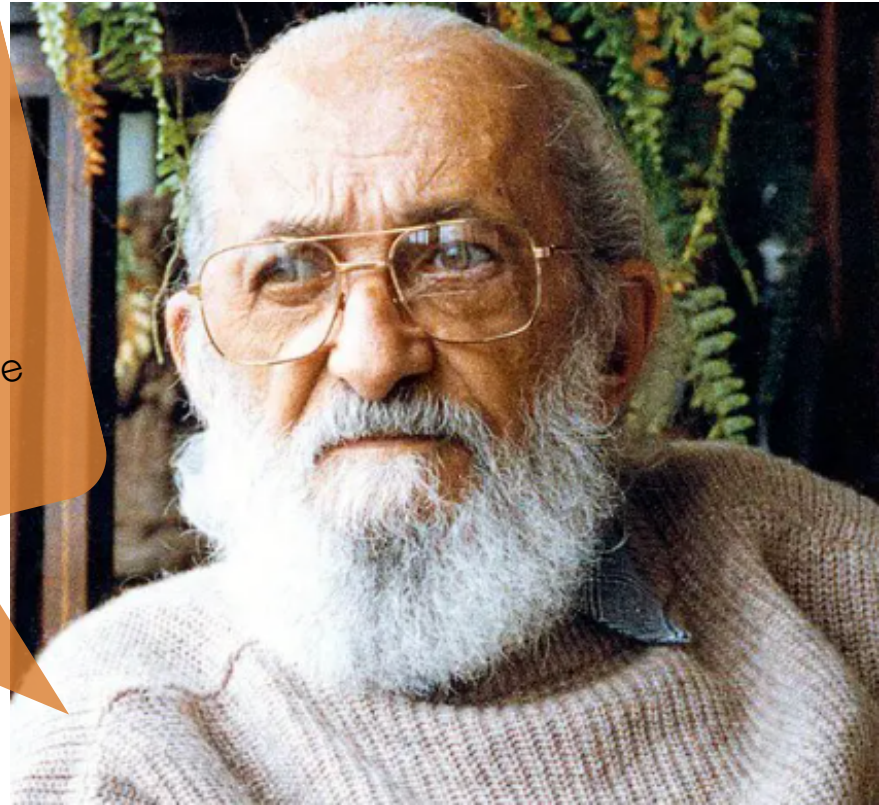
# Self Evaluation (100 points)

No one knows more about your learning and your effort than you, and I want to support you in developing your metacognitive and self-reflective skills. Each week, you will have an assignment (due Friday by midnight) in which you reflect honestly on the past week, identify what is most important to you, and evaluate your work. These reflections will be fairly short (just a couple paragraphs but certainly more than a few sentences) and should be thoughtful and meaningful to you. I will provide you with some guiding questions for each self-evaluation, but you aren't required to focus all your writing on the prompt. I trust you to make this reflection a space for you to communicate with me about yourself, your life, and your learning in the class.

Each week you will give yourself a score out of 20 points. I reserve the right to contest your score if necessary. These self-evaluations make up 10% of your overall grade.

Liberation is a praxis: the action and reflection of [people] upon their world in order to transform it.

Paulo Friere



# Homework (300 points)

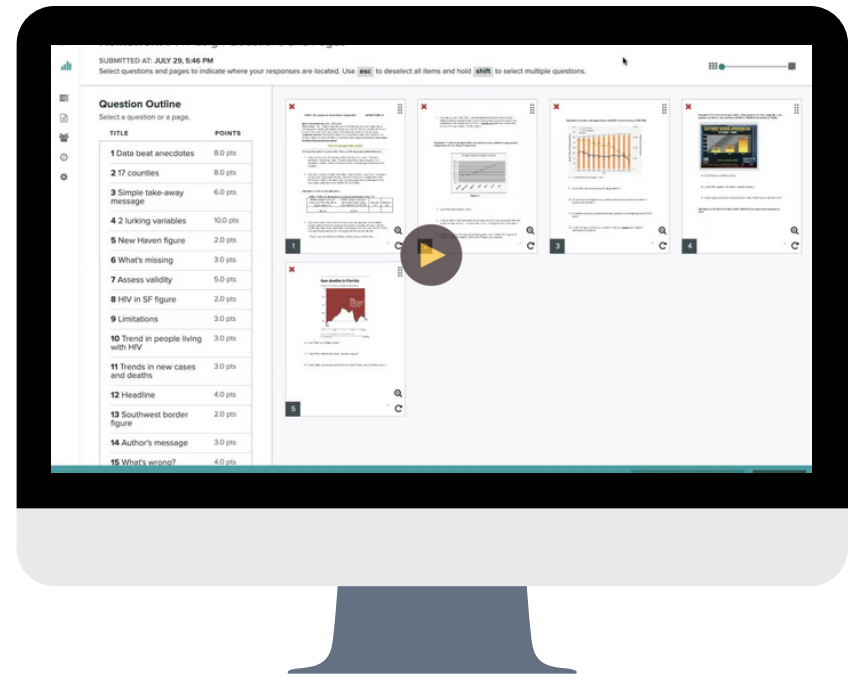
Homework assignments are meant to be a place for you to reflect on and apply what you are learning. It is not my expectation that you complete this either as a group or independently - do whatever works for you. It is my expectation that you will write your answers in your own words and cite all your sources (be it a website, a classmate, a friend, course lectures, readings, etc.). Give credit where it's due, leave a trail of your thinking for others to follow, and be honest and critical about where your ideas come from. Collaboration is not cheating - but taking someone else's intellectual work and presenting it as your own is not only a kind of appropriation, but essentially an unjust act. I do not particularly care about the format of these citations, just make them clear and informative.



You will have four homework assignments, each worth 75 points. A link to the google doc containing the assignment will be posted on canvas .

Once you have opened the google doc, you will need to create a copy in your own google drive or download it (in whichever format you prefer). You will need to be able to type into the document and upload images of your math work.

When you are ready to turn it in, you will need to save it as a pdf and then upload it into Gradescope (on canvas). You will need to select which questions are on which pages of your assignment. There is a tutorial on using Gradescope on our canvas site, we will review how to do it in class, and you can always ask if you're having trouble.



# Final Project (500 points)

This is the major project of the course, and it is worth 50% of your overall grade. You will select a news article that relates to a social justice topic and contains plenty of quantitative data, and you will write an essay or record a presentation in which you critically analyze the author's use of data. This is your chance to synthesize and apply everything you've learned in the course to a real-world topic that you are passionate about. The final project is due on Monday, July 31, at midnight, but there are smaller deadlines throughout the course designed to support you.

For this assignment you'll want to read several news articles to find one that best fits the assignment. It needs to be longer than just 100 words or so, and should be from a **major news site**. In week one, you will select your article and get it approved. In class, we will read and discuss several example projects. You will turn in your rough draft by Friday of week three (July 14). I will return those drafts with comments as quickly as possible so you have time to schedule a conference before you revise and turn in the final version of your project due Monday, July 31, at midnight.

Your essay or presentation should answer the question: **How does this article use data to make claims?** To do that you'll touch on the following:

## Introduce the article

What is the topic? How does it relate to social justice?

What is the source? What do you know about this source? Check out [mediabiasfactcheck.com](https://www.mediabiasfactcheck.com).

What is the thesis of the article? What is the author's perspective and who is the intended audience? What is the message?

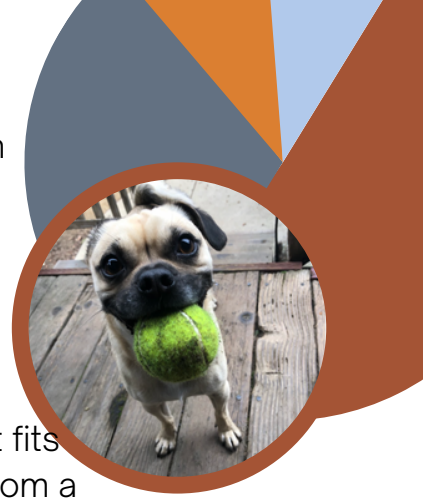
## Critical Analysis

How well does the data fit the author's story? Is anything about it incomplete or misleading? In other words, do you detect any bias and, if so, in what direction? Is there anything you'd have done to improve the presentation of data? In what ways does the quantitative information serve your understanding of the issue/s?

## Draw Conclusions

What additional information would help you make sense of the information that's reported? Identify a question or two.

What value did you derive from carefully assessing the quantitative information in the context of the overall article?





# Schedule

Week 1: What is statistics and how can it help us build a more just world?  
What does it mean to read, read between, and read beyond the data presented?

Due: Self Evaluation #1, Homework #1, Numbers in the News Article selection, Various materials on Canvas

Week 2: What does it mean to operationalize a concept?  
How does statistics define the world so that it can be described quantitatively?

Due: Self Evaluation #2, Homework #2, Various materials on Canvas

Week 3: How is data collected?  
Can we measure and calculate social change?

Due: Self Evaluation #3, Homework #3, Numbers in the News Rough Draft, Various materials on Canvas

Week 4: What is average?  
How does thinking critically about averages help us understand inequities in society?

Due: Self Evaluation #4, Homework #4, Various materials on Canvas

Week 5: How can we help our brains be more statistically literate?  
What are the societal implications of statistical literacy?

Due: Self Evaluation #5, Numbers in the News Final, Various materials on Canvas

# Course Readings

Farmer, P. (1996). Social inequalities and emerging infectious diseases. *Emerging infectious diseases*, 2(4), 259.

Moore, D. S., Notz, W. I., & Notz, W. (2006). *Statistics: Concepts and controversies*. Macmillan.

Pager, D., & Shepherd, H. (2008). The sociology of discrimination: Racial discrimination in employment, housing, credit, and consumer markets. *Annu. Rev. Sociol.*, 34, 181-209.

Davis, L. J. (1997). Constructing normalcy. *The disability studies reader*, 3, 3-19.

Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases: Biases in judgments reveal some heuristics of thinking under uncertainty. *science*, 185(4157), 1124-1131.

Along with selected news articles, podcasts, videos, and tiktoks.

All materials available on Canvas.

**In our in-class discussions, we will have the opportunity to explore challenging, high-stakes issues and increase our understandings of different perspectives. Our conversations may not always be easy. We sometimes will make mistakes in our speaking and our listening. Sometimes we will need patience or courage or imagination or any number of qualities in combination to engage our texts, our classmates, and our own ideas and experiences. Always we will need respect for others. Thus, an important aim of our classroom interactions will be for us to increase our facility with the sometimes difficult conversations that arise inside issues of social justice as we deepen our understandings of multiple perspectives – and make the most of being with people of many backgrounds, experiences, and positions.**

I aim to make our learning community as accessible as possible. This means that I aim to provide accessible materials and to create opportunities for different kinds of engagement in our classroom space. If you come across materials that are not accessible to you, or experience a barrier to your participation in a class or meeting, please bring this to my attention and I will gladly work with you to ensure accessibility. If you are a student with a disability (disabilities can include mental health and attention-related, learning, vision, hearing, physical or health impacts) who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me privately during my office hours or by appointment, preferably within the first week of the quarter. At that time, I would also like us to discuss ways we can ensure your full participation in the course. I encourage all students who may benefit from learning more about DRC services to contact the DRC by phone at 831-459-2089 or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu).

I am committed to providing a safe learning environment that is free of all forms of gender discrimination and sexual harassment, which are explicitly prohibited under Title IX. If you have experienced any form of sexual harassment, sexual assault, domestic violence, dating violence, or stalking, know that you are not alone. The Title IX Office, the Campus Advocacy, Resources & Education (CARE) office, and Counseling & Psychological Services (CAPS) are all resources that you can rely on for support.

Please be aware that if you tell me about a situation involving Title IX misconduct, I am required to share this information with the Title IX Coordinator. This reporting responsibility also applies to course TAs and tutors (as well to all UCSC employees who are not designated as “confidential” employees, which is a special designation granted to counselors and CARE advocates). Although I have to make that notification, you will control how your case will be handled, including whether or not you wish to pursue a formal complaint. The goal is to make sure that you are aware of the range of options available to you and that you have access to the resources you need.

Confidential resources are available through CARE. Confidentiality means CARE advocates will not share any information with Title IX, the police, parents, or anyone else without explicit permission. CARE advocates are trained to support you in understanding your rights and options, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

You can contact CARE at (831) 502-2273 or [care@ucsc.edu](mailto:care@ucsc.edu).

These resources are also available to you:

- If you need help figuring out what resources you or someone else might need, visit the Sexual Violence Prevention & Response (SAFE) website, which provides information and resources for different situations.
- Counseling & Psychological Services (CAPS) can provide confidential counseling support. Call them at (831) 459-2628.
- You can also report gender discrimination and sexual harassment and violence directly to the University’s Title IX Office, by calling (831) 459-2462 or by using their online reporting tool.
- Reports to law enforcement can be made to the UC Police Department, (831) 459-2231 ext. 1.
- For emergencies, call 911.