UC Berkeley

Data 8 Tutor Handbook

**A Comprehensive Guide to Becoming An Amazing Data 8 Tutor**

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Table of Contents

[Welcome](#_yzkmuosnlo05)

[Responsibilities](#_fn8ufugyx84i)

[Tutoring Sessions](#_tri52lrz3pd9)

[Pedagogy](#_u4j4hvh6iu85)

[Grading](#_dg0e4rplvap)

[Office Hours](#_j85s9csx7s3m)

[Communication Channels](#_hf5mj9dprjyv)

[Thank You](#_3il8b76ovbh1)

# Welcome

Dear Data 8 Tutor,

Congratulations and welcome to Data 8! On behalf of the Data 8 community, we are so thrilled that you are joining us to assist one of the most amazing courses offered here at UC Berkeley and we wish you every success.

We, the Data 8 community, believe that each tutor contributes directly to the growth and success of both the course itself and the numerous students that we serve. You are the lifeline between students, GSIs, and instructors. We hope you will take pride in being a member of our community!

This handbook was developed to describe some of the expectations, experiences, and advice from our current/former instructors, (u)GSIs, and tutors to support you in the journey of becoming the best tutor that you can be!

Thank you to the passionate instructors, (u)GSIs, and Tutors who made this handbook possible. Especially, a huge thank you to the Communications, Student Experience, and GSI Support Team members, Jessica Hu and Natalia Mushegian, who organized and compiled this handbook with me.

We hope that your experience with Data 8 will be challenging, enjoyable, and rewarding. Again, welcome!

Disclaimer: Data 8 is an ever-evolving course, some of the policies or methodologies might have changed since the latest update. Please refer to the current instructors and (u)GSIs for the most up-to-date information.

Lead uGSI of Communications, Student Experience, and GSI Support  
Jiayi Huang, Fall 2018

# Responsibilities

Listed below are the breakdown of responsibilities for the tutor role. Each item is listed, followed by the weekly hourly commitment in parentheses, unless noted otherwise.

## Returning Tutors (8 hours)

* Grading (2)
  + Read grading rubrics
  + Grading assignments
  + Handling regrades
* Two tutoring sections (2)
* Preparation (1)
  + Review material being covered in lectures that week
  + Tutoring section worksheet
  + Weekly homework/projects
* Office hours (1)
* Flexible hour (1)
  + Midterm proctoring, prep, etc.
* Staff meeting (1)

## New Tutors (8 hours)

* Grading (2)
  + Read grading rubrics
  + Grading assignments
  + Handling regrades
* Preparation (1)
  + Review material being covered in lectures that week
  + Tutoring section worksheet
  + Weekly homework/projects
* Office hours (2)
* GSI-shadowed tutoring section (1)
* Flexible hour (1)
  + Midterm proctoring, prep, etc.
* Staff meeting (1)

# Tutoring Sessions

As a tutor, your main responsibility is to teach the students in your session. Leading a session is not an easy task and here are some tips and suggestions.

* Receive and provide support:
  + The first thing to know is that you are NEVER alone.
  + Always seek out for support if you need it from your peers, staff buddies, instructors, and friends!
  + Provide support for others if you are able and willing.
* Set the tone from your first tutoring session:
  + Let the students know your teaching style, your personality (if you would like), your responsibilities as a tutor, expectations for your students, and rules.
    - (Optional) Email policy. (e.g. “Please put [Data 8] in the subject line so that I can prioritize your email and reply within 24 hours.”)
    - (Optional) No laptop/electronics policy during discussion. This aids in increasing participation and attaining students’ focus.
    - Reinforce that the idea of tutoring sections is to work through the worksheet and go over conceptual ideas. It is not an additional office hour.
  + Try to project your voice with confidence.
    - Speaking clearly in a moderate speed while projecting to your entire group helps students understand you.
    - It might be weird being the same age (or younger, in some cases) than some of your students, but you’re still their guide through the course, so don’t question your own authority.
    - Believe in yourself! You can do it!
  + Emphasize the importance of discussion and collaboration from the get-go!
    - Knowing names is critical--ensure that everyone in your tutoring group knows each other’s names.
    - It can be helpful to ask often if they have any questions. This way, students don’t feel like they’re breaking the silence of a quiet room when they talk to one another.
    - Try your best to have your students sit together and perhaps face each other (this might not be possible in some classrooms). That way they might be more inclined to speak with each other and work together.
  + (Optional) Send out a Pre-Semester Survey.
    - Get to know your students better! Sample questions include: Name, Major, Year, Pronouns, Academic Background in Computer Science and Statistics, Goal for this class, Learning style, Favorite Animal, etc.
* Establishing individual relationships with your students:
  + Learn their names.
    - Ask for a roster with students’ names and pictures and study it. It really helps!
    - Address students by their name during section.
    - If you don’t know their name, just ask--most people won’t be offended if you ask multiple times.
    - (Optional) When students are working on the worksheet, re-introduce yourself to each student and get to know them, one by one. Studying the roster is great, but sometimes actually getting face-to-face interaction with that student is the best way to make the name “stick” in your memory.
  + Helping students who are struggling.
    - Having a friendly face can be comforting at a tutoring session, and can encourage them to be more excited about attending. Why not be that friendly face?
    - Try to speak with enthusiasm! It’s not about talking at them, but rather, creating a conversation with them!
      * On this note: be mindful of potentially over-explaining concepts. Trust that you’ve created a safe enough environment such that the student feels comfortable asking you further clarifying questions if they need.
    - Be mindful of your tone and your pace -- always make sure to not come off as patronizing. It will make the struggling student more comfortable and help create a more supportive atmosphere.
    - Offer support by suggesting labs, office hours, textbook readings, and other resources.
  + Providing support outside of section.
    - Provide your students with your email and encourage them to email you with questions that they are either uncomfortable asking in front of their peers or unable to ask due to time constraints. (Make sure that this does not bleed into unfair practices though.)
* Interacting with your entire session:
  + Fielding questions.
    - When reviewing a concept with students, ask “What are your questions?” instead of “Do you have any questions?” - normalize asking questions as part of session.
    - Try using ‘temperature checks’ (thumbs up/thumbs down) to understand how much your students know about particular topics. This will help you to spend more time on concepts that are more confusing, so the tutoring section time can be used most efficiently.
    - For many students, asking a question in class takes an act of bravery, with the risk of looking stupid. Try to ensure that the student feels good for asking that question. One way of doing so is to praise them for their effort or train of thought regardless of whether they are correct or not. Refrain from praising their intelligence.
    - Instead of immediately answering a question, take the time to ask the student what their initial intuition for the answer might be, and try to guide their thought process.
    - Even if students get the answer, it can still be helpful to quickly run through important concepts.
    - If a problem is long and involved, make sure you do a runthrough to link all the parts together!
    - Explaining why these concepts are important while you teach them– such as why we use them and how they could be applied– helps keep students motivated and interested in what they’re learning.
    - If a student feels completely lost on answering a question, try asking another question related to the problem while also giving multiple answer options they can choose from! This helps students feel more comfortable in answering questions.
  + Be conscious of who you’re calling on - make sure everyone’s voice gets heard! Avoid always calling on a student who quickly comes to an answer - give everyone a chance.
  + Prepare ahead of time. Try to make sure you know not only how to do the problems on the worksheet, but also the concepts behind each question.
    - Visualizations help! While preparing, think about how you could draw the concepts using tables, charts, diagrams, etc., and how they could supplement your verbal explanations.
    - Keep in mind that students sometimes reference examples they've seen in class.
  + Don’t be afraid to say you don’t know an answer - students will appreciate and respect the honesty! Look up the answer, ask another tutor, or figure it out with the student.
    - If you cannot figure out the answer during section, follow-up with your student via email after section to ensure their question is answered or get back to them the next week.
    - Strategies if students complete the worksheet at different speeds:
    - Encourage everyone to do the worksheet in parts. For example, say “Let’s all do Part 1 together, and then we will go over it all together.” This way, students will stay on track with one another.
    - Poll your students in the beginning to ask about their learning styles
      * Some students work best by working alone, then collaborating, whereas others work best talking through ideas.
    - Tell your students approximately how much time they will have to complete a particular section, and let them know when they have roughly 30 seconds left. That way, those who have finished early know how much longer they need to wait.
    - If you notice a student who has finished the worksheet much faster than everyone else, try to engage in relevant conversation with that person until others have finished.
    - If a student is taking more time than all the others or came late, it can be helpful to spend a little more time with them. You can do this as the others work quietly on the next problems to try and get them up to speed.
* Icebreakers:
  + Having an icebreaker during the first session really helps both you and the students to get to know each other.
  + Students can potentially form discussion groups through icebreakers! Knowing other students in the class helps one stay connected in this course as well.
  + Icebreaker Ideas:
    - Vinitra: Numerical 2 truths and lie, and groups pick one and share with the class.
    - Vasilis: “Why you’re taking the class + tell me something people don’t usually know about you.”
    - Fahad: Spirit Animal and explanation.
    - Jiayi: Share a unique numerical fact about you!
      * e.g. This is my 7th semester with Data 8.
    - Emma: your favorite class you’ve taken at Cal!
      * Pretty cool because you can get class suggestions this way too.
    - Divyesh: Have them come up with the weirdest fact/ personal habit they all have in common.
      * e.g. Everyone in the group brushes their teeth starting from the back left of their lower jaw
      * e.g. Everyone in the group is from some part of SoCal

# Pedagogy

Pedagogy is the art of teaching. Here are some tips and suggestions on how to teach more effectively.

* Prep, prep, and prep! The time spent preparing is directly proportional to the success of your explanations!
* Remember that students are seeing this material for the first time. Try to remember your thought process from the first time you learned it, and walk students through the thought process that helped you remember it the first time around!
* Always carry whiteboard markers with you - the Soda front office may give you some for free. Whiteboard markers in rooms you teach or hold office hours in rarely work.
* When answering a student’s question in office hours, its best not to give them the answer directly - because then the student did not learn why they were stuck nor how to get unstuck. The goal is to ask the student guiding questions that lead the students slightly closer to the answer without showing them the whole way.
  + Sometimes this is enough and the student can find the answer on their own.
  + Other times more guiding questions must be created to help the student arrive ever closer at the answer.
  + This strategy allows the student to see the guided thought process of solving the problem.
* Try and have the student teach the concept back to you. It’s a good way to check full understanding and identify the ideas that they don’t understand as well.
* (optional) Carry a small notebook and pen (or use the whiteboard) with you in office hours and around tutoring session to illustrate concepts. Sometimes examples are better communicated visually, instead of purely out loud, and pen and paper can be faster than instructing the student to slowly type the example in their jupyter notebook.
  + An example usage: if you are trying to illustrate array indexing, you can draw my\_arr = [1, 2, 3] , and use arrows and lines to illustrate that the third element is at index 2.

# Grading

* Workflow
  + Each week, you’ll be assigned to grade several submissions of one written question from a homework and/or project
  + You’ll also be asked to handle regrade requests from the previous week’s assignment
  + In addition to grading the assignment itself, you’ll also need to fill out a document that describes common mistakes students made.
* Grading will be handled through Gradescope (gradescope.com)
* Gradescope “hotkeys”
  + Numbers for point values
  + Z for next submission
  + Save view (bottom left corner)!
  + Previous/Next page: j/k
  + Zoom In/ Zoom Out: f/g
* Gradescope features: adding comments, reusing comments, etc.
* Cheating
  + If an answer is extremely similar to the provided solutions, or if two answers appear to be similarly structured, make sure to report them to course staff and the professor(s). (You’d be surprised how many times you see identical or nearly identical solutions.)
  + If a student appears to have copied the official solutions for one question, look through his other pages to see if his responses to the other problems are also extremely similar to the official solutions.
* Collaboration:
  + It is encouraged for you to reach out to those with the same question as you so you have one uniform perspective for treating responses
    - Reach out to your fellow tutors by making a Slack group, or by conferring at the grading parties.
* Ping tutor support lead or grading logistics lead if you think the rubric should offer half/partial credit (before this you should confirm with your group whether or not this is a common thing)
* Create a/add to common mistakes page so that we can improve the class, students can know why they missed points, and you can reuse comments on submissions
* Regrade requests
  + If a student emails you with an issue, refer them to Gradescope. If they changed the question and the cell is not on Gradescope, they’ll need to submit a regrade request with instructions for the tutor to go to OkPy and look at their answer.
  + Make sure you refer to both the answer key, the question, and the common mistakes for that question if you’re not sure about accepting a request
  + If a student talks about the underlying logic behind their answer in their regrade requests, but they don’t state these assumptions, then don’t give them credit

# Office Hours

Hosting office hours requires preparation, patience, efficiency, and understanding. The goal of office hours is not to get a student to the solution, but to give them a better understanding of the problem.

Teaching strategies

* Really try to put yourself in their shoes and think back to what confused you when you took the class (for loops, function definitions, regression, etc. are common confusions).
* Close your laptop when talking to the student (don’t look at the solutions!)
  + You are allocated time every week to prepare for labs and office hours. Familiarizing yourself with the solution is a must before you host office hours.
  + Looking at the solution makes you more likely to lead students to “the answer,” rather than taking them from where they’re stuck to the natural next step.
* Build off of the student’s thought process--this allows them to have ownership of their work and builds confidence.
* Directly ask what is causing them doubt.
* Dealing with students who ask you to check if their answer is correct:
  + Ask them to walk you through their thought process
  + Use the Socratic method--ask them some questions to draw out some of their critical thinking.
  + Answer their question with additional questions.
* This is your time to really push through conceptual ideas! Don’t be afraid to do work on the whiteboard or use the textbook as a visual aid!

General tips/troubleshooting

* Be patient and avoid feeding them the answer:
  + Wait for the students to get through their thought process and let them go through the whole question.
  + How do you know how much a student knows?
    - Ask them to explain the concept.
    - Then if they don’t seem to understand everything, or thoroughly, take a step back and explain things completely.
  + It’s okay to get a student unstuck on one part of a problem without necessarily helping them through the entire question.
    - It’s OK to say things like “attempt the first part for now, I will circle back to you later.”
  + If a student is really not getting it, try to do a toy example on the whiteboard and work it through with them and have them generalize to the actual problem at hand.
* Build off of the student’s thought process--this allows them to have ownership of their work and builds confidence.
  + Start out questions with “What is your understanding of this question?” or “What is your thought process so far?”
  + Sometimes it is helpful to establish whether you’re talking to someone with previous coding or statistics experience so that you can pace your explanation accordingly.
  + If the student is having trouble starting off with how to implement their ideas walk them through the Python Reference and show them how to find the functions that may be useful. Try to let them reason through why certain functions may/may not work for them to build more intuition.
* Debugging Python code:
  + Helping students debug
    - Teach them to understand the error message.
    - Add empty cells to run each line of code separately.
    - Break down a large chunk of code into smaller pieces when a student tries to nest functions (especially with Table functions and helper functions).
    - Sometimes, the most effective way to help them is to teach them a debugging technique that they could use to track down the source of the bug on their own.
    - Other times, it may be more appropriate to tell them directly the source of the bug (e.g. missing a parenthesis).
  + Check their understanding of the code they have.
    - “Can you explain to me what each line of this does?”
    - “How does your code work to try and tackle this problem?”
  + Try to leave a student with strategies rather than straight answers.
    - “Let me show you how to look this up in the datascience docs” or “here's how you could go about debugging this.”
    - “When I see these pieces in the question, it brings this to mind.”
* Dealing with busy OH:
  + Explain to a group if OH are crowded and many people have the same question, or even pair/group people together who have the same question.
  + Don’t be afraid to point the student in the direction of the textbook. If they’re clearly still working through something, possibly requeue them and come back to them later on
  + Ask course staff to come help if the wait time is overwhelmingly long. This is likely to occur during project weeks.
* Ask for support:
  + Everyone on staff is more willing to help than you may think, at Data 8 we have fostered a tight-knit, supportive community!
  + Slack #office-hour channel
  + If you are having difficulty explaining a concept/have spent a while on it with a student, maybe tap in another member of staff (if at Office Hours)- fresh eyes on code or a fresh perspective in general might help!

# Communication Channels

It's okay to ask questions! Other tutors and other GSIs may have or have had the same question when it was their first time teaching. If you're having trouble explaining a concept or justifying an answer, please feel free to pose the question on any of these channels.

* Slack--for quick communication:
  + This is the primary way to stay up-to-date.
  + We reach the 10,000 message limit on Slack very quickly, past which messages start getting deleted. If you have something that you may need to reference much later, Piazza/Google Drive may be a better place to post it.
  + Data 8 staff is a vibrant and active community! Make sure to join the social channels (such as #eatwithme, #studywithme, #getfitwithme, and more) to facilitate spending time with staff outside of work hours.
* Piazza--for larger questions:
  + “How would you explain this question/concept?”
    - It’s best to pose questions such as these on Piazza (since everyone can benefit and Slack has a message limit), or better yet, bring it up in-person at a staff meeting.
  + If you have a larger logistics question, or something that you may have to reference later, this would be the place to post it.
  + Contains weekly lab posts, including solutions and check-off forms. Be sure to provide feedback after you teach your lab!

# Thank You

A list of contributors who made this handbook possible.

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