

Teaching Philosophy Statement

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I consider teaching as one of the most enjoyable experiences during graduate school. I am very passionate about teaching because it fulfills my inner need to give back to my society what I have learned. Also, it is one of the most effective ways to master a certain topic. Therefore, when I prepare a class for teaching, I try my best to thoroughly understand the class topics in order to be able to answer my students' questions. Students' insightful questions help me to understand class topics from different perspectives. Teaching computer science to diverse groups of students with different backgrounds and capabilities is very challenging and very satisfying especially when you succeed at creating an inclusive class environment that welcomes everyone. This environment creates harmony between diverse students and enhances the education process.

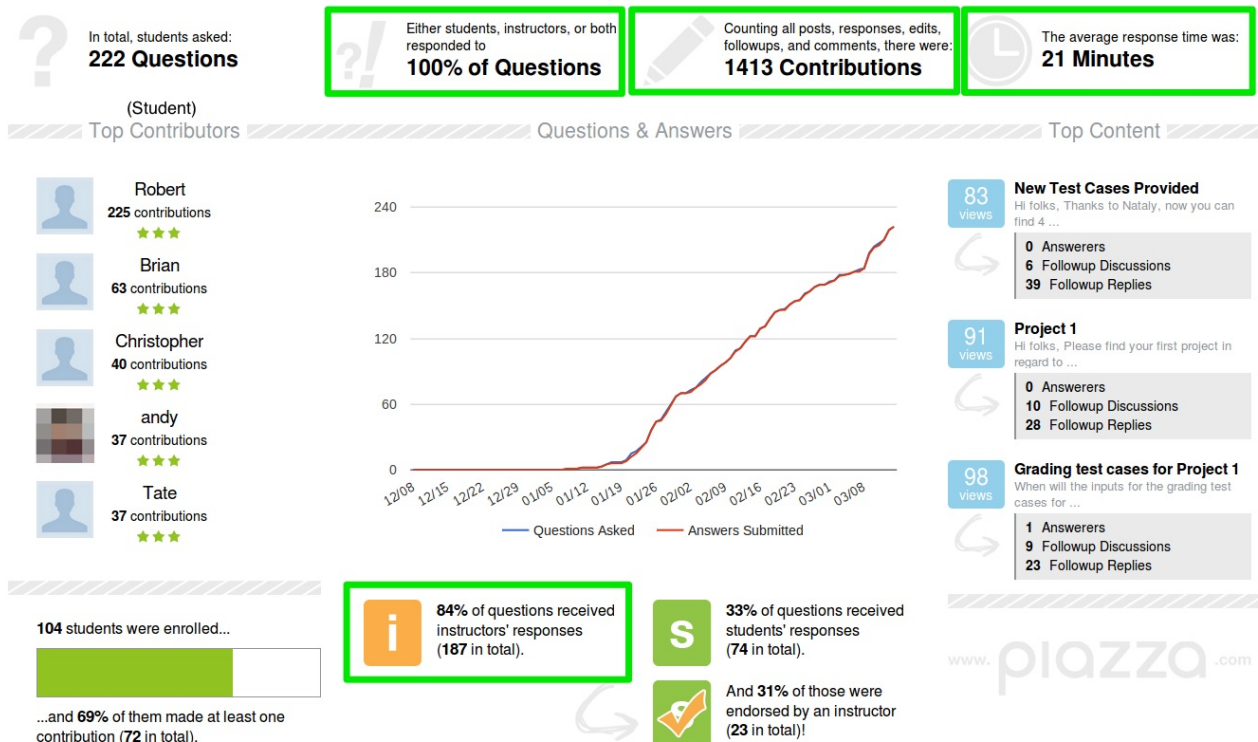
I gained my first teaching experience when I served as a teaching assistant (TA) in the Computer and Systems Engineering Department at Alexandria University in Egypt. I worked as a TA there for *three* academic years (2010-2013) then I joined the Computer Science department at UCSB where I worked as a TA for additional *three* academic years (2013-2016). During these *six* years, I assisted in teaching a variety of classes for freshman, junior, senior, and graduate students. I was honored to be chosen to serve as the **Lead TA** for the Computer Science department at UCSB (2015-16). As a lead TA, I taught CS501 to new graduate students. During this class, my students and I discussed different topics from the TA handbook by the Instructional Development Institute at UCSB. In Computer Science, graduate students are diverse from different backgrounds and it is important to train them to teach to diverse groups at UCSB. By teaching this class, my students and I got a better understanding on how to effectively lead discussion and lab sessions, how to prevent, detect, and report cheating, how to auto-grade programming assignments, how to create an inclusive teaching environment that welcomes all students from different backgrounds, and finally how to use UCSB resources to get instructional support, to handle classroom legal issues, and to help distressed students.

When I teach a computer science class, I usually have four different goals. *First*, I want to make sure that students understand the fundamental concepts I am explaining. To do so, I usually prepare different examples and discussion scenarios that challenge their understanding and make sure that students not only understand the examples but also the concepts behind these examples. The *second* goal is to make sure that they can apply their understanding of these fundamental concepts on other examples. I usually prepare homework assignments and programming projects that requires students to use what they learned in both direct and innovative ways to make sure that they understand different concepts thoroughly. *Third*, students should be able to see the big

picture and know how to apply what they learn to real-life situations. For that, I usually prepare additional slides, real-life use cases, and hold discussions to explain why are we studying these concepts and where they fit in the big picture of understanding different computer systems. For example, in Data Structures and Algorithms (CS130A), we asked our students to implement a real-life social network project where user data is stored in different representations. Students had to implement and use different data structures (hashmaps, graphs, b-trees, and linked lists) all together with all the interactions between these data structures. This helps our students better understand different data structures and how to use them to build complex systems like social networks. *Finally*, I want to make sure that students not only learn the class materials, but also are able to self-teach themselves beyond the class level. Therefore, I usually hold additional office hours and open online communication channels with my students through *Piazza and e-mails* to give them the opportunity to ask about and discuss any related topics beyond the class syllabus. In fact, many students have met with me to discuss my research and my industrial experiences and how they could use what they learn in research and industrial projects.

Teaching Philosophy. I believe that a successful teaching process has to be *student-centered*. Students spend their time, effort, and money to take classes that help them better understand their field of study and we, as the teaching staff, have to be passionate and enthusiastic to engage students in the loop. Therefore, when I assist in teaching a class, I divide my responsibilities into *three* important roles: before, during, and after my discussion session. **Before** a discussion session, I always meet with the class teaching team; the instructor, other TAs, and readers to ensure that we are all aligned with class materials explained during the lecture. In addition, I discuss the materials and examples I prepare to ensure that they serve the discussion session purpose of clarifying and ensuring the understanding of lecture materials. *Regular communication and cooperation* among the teaching team helps maintain high quality education. **During** a discussion session, I do my utmost effort to have an *interactive* discussion. I use different teaching strategies like group discussion, dry run, and concept map to engage students in my discussion sessions. I encourage my students to contribute by making sure that their opinions and contributions are always appreciated. Using these strategies help me to break the boundaries between me and my students and among the students themselves. **After** the class, I make sure that I am *reachable* to my students through all possible communication means. I hold weekly office hours when students can come and discuss any question they have about the class materials or about any Computer Science related questions. In classes CS40 and CS130A, I used to have more than 30 students during my office hours and I never left before answering all my students' questions even if I had to stay more than my announced office hours. In addition to office hours, I usually maintain high *responsiveness* on *emails and Piazza* questions. In CS130A winter 2016, we had more than **1400 contributions** and an average response time of **21 mins** as shown in Figure 1.

A successful teaching process should have a closed loop **feedback** mechanism. Students opinions have to be listened to and appreciated. For this, I collect *anonymously* mid-quarter and final class evaluations. I encourage



(a) All contributions

Name, Email	(Course Instructors)	days online	posts viewed *	contributions**
[Anonymized]	[Anonymized]	92	231	65
[Anonymized]	[Anonymized]	34	19	10
[Anonymized]	[Anonymized]	56	52	11
[Anonymized]	[Anonymized]	93	307	163
Victor Zakhary	victorzakhary@cs.ucsb.edu	105	301	306

(b) Instructor contributions

Figure 1: CS130 Winter 2016 Piazza Report (Student and Instructors' information is anonymized for privacy purpose)

my students to honestly write the strengths and the weaknesses of my teaching methodologies and I use their feedback to enhance and tune my strategies to achieve the best outcome for this class and the following ones. Also, I create an *anonymous* weekly feedback form where my students can freely express their positive and negative opinions about my discussion sessions. I always ask them to write *constructive feedback* to understand their perspective about the pros and the cons of my teaching methodologies and their opinions on how to address the weaknesses. I use their submissions to gauge their level of satisfaction and to discover and address my weaknesses.

As a graduate student, I am fortunate to have the opportunity to teach smart and enthusiastic students to empower them with my Computer Science knowledge, learn from them how to be a better teacher, and advance my Computer Science understanding along the way.