Tyler Chen

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My pursuit of an academic career is driven by my desire to teach classes for college students. During my PhD, I was fortunate enough to teach the department's undergrad numerical linear algebra course. I found this experience extremely rewarding, and it reinforced my desire to pursue a career involving teaching. Unfortunately, however, ███████████████ constraints meant that I was only able to teach the course once. As such, in order to gain further teaching experience, I actively sought out other teaching opportunities, and I ended up teaching two classes on interdisciplinary writing for the natural sciences in the English department. The English department's commitment to pedagogy and mentorship of new instructors greatly improved my understanding of my own teaching methodology.

Teaching philosophy.

My teaching philosophy is centered on self discovery, because students learn and retain knowledge best when they arrive at conclusions themselves. However, while an understanding of concepts is important, as an applied mathematician, I believe that developing the skills required to communicate this understanding to others is equally important.

Guiding students towards building their own understanding of the key course concepts is not easy; it requires carefully considering the purpose of every aspect of the course, from the choice of individual problems in an assignment to the order concepts are covered. In my numerical linear algebra course, I designed the curriculum from the ground up with this in mind. This allowed me to design explicit course goals which were outlined and explained on day one. Every problem set was specifically structured with the goal of getting students to develop and *intuitive* understanding of the mathematical concepts we study within the context of the course goals. Similarly, the course was organized in a way which aimed to maximize the potential for building connections between the various concepts we covered.

In addition to understanding the course concepts, I also believe it's important that students can explain these concepts to others. This particularly important for the many students who will eventually be in positions where they have to work with people from other disciplines. My interdisciplinary writing courses focused heavily on making rhetorical choices based on the intended audience, and my numerical linear algebra course incorporated many similar ideas. In particular, homework problems frequently asked for open ended responses which were designed to force students to think about how to answer technical problems in a more intuitive and broadly understandable way. Having students condense course concepts to a more broadly understandable form not only builds communication skills, but helps reinforce their own understandings of the topic.

Metacognition.

I believe an important aspect of self discovery is discovery of self. Towards this end, I try to get students to think explicitly about how they, as an individual, learn best. For instance, at the beginning of each course I ask students to reflect on why they are enrolled in the class and what they hope to learn. Then, in the middle of the quarter I have students reflect on their progress as well as provide feedback about my teaching and the course. This provides

an explicit opportunity for them to think about how the class is serving them, and simultaneously, gives me the chance to make adjustments to the course before the course is over. My hope is that students will be able to transfer a better understanding of their own learning style to other contexts through the rest of their college careers and beyond.

Student engagement.

I aim to engage personally with students. In larger classes this can be difficult, so I hold frequent office hours. This gives students the opportunity to interact directly with the instructor and one another in a smaller group setting. Moreover, I find back-and-forth interactions with students provide excellent opportunity to nudge them in the direction of grasping a problem on their own, aiding in the goal of self discovery. Office hours also provide me an opportunity to get to know students individually, which helps me to better address their individual learning needs. This better connection transfers back to the classroom, where students are more likely to participate and engage.

Creating welcoming and accommodating classrooms.

I am committed to ensuring my classrooms are as welcoming as possible.

On the first day of class, I cover basic on campus resources including how to obtain official accommodations as well as general resources regarding mental and physical health on campus. In addition, I make it clear that I am willing to work with any student individually to try and accommodate their individual learning needs to the best of my ability. In my experience, this proactive approach seems to help students feel more comfortable advocating for themselves with regards to their own learning experience.

Throughout the rest of the term, I make an effort to remind students of these resources. This is especially relevant during midterms and finals, when many students may be experiencing high levels of stress and anxiety. More broadly, I try to gauge the overall sentiment of the class. If a large number of students have exams or a big project due a given day, or even if the class simply seems to be burned out, then I will try to modify the workload in my class to help balance things out. In my view, this is not only better for students' mental health, but helps keep students learning effectively without losing motivation.

Future plans.

I view a postdoc as an opportunity for me to continue to develop my teaching theory and practice. I am particularly interested in research based teaching methods for mathematics, and intend to supplement the knowledge I gain from hands on experiences with established theory.

Instructor, Applied Linear Algebra and Numerical Analysis (UW AMATH 352) ..... *Spring 2021*

Instructor, Interdisciplinary Writing/Natural Science (UW ENGL 199) .... *Winter 2021*

Instructor, Interdisciplinary Writing/Natural Science (UW ENGL 199)........... *Autumn 2020*

TA, Probability and Statistics for Computational Finance (UW CFRM 410) .... *Winter 2019*

TA, Calculus with Analytic Geometry I (UW MATH 124) .... *Autumn 2018*

TA, Calculus with Analytic Geometry II (UW MATH 12)........................... *Winter 2018*

TA, Calculus with Analytic Geometry II (UW MATH 125)......................... *Autumn 2017*

Lab TA, Electronics (Tufts PHY 41).. *Spring 2017*

Lab TA, Electronics (Tufts PHY 41)... *Spring 2016*

Grader, Discrete Mathematics (Tufts MATH 61) .... *Spring 2016*

Grader, Calculus III (Tufts MATH 42)... *Fall 2015*

Grader, Differential Equations (Tufts MATH 51) .... *Spring 2015*

Grader, Calculus III (Tufts MATH 42)... *Fall 2014*