Because different classes have different needs, I believe it is important to have a broad range of teaching tools, so that I am able to adapt my methods to better suit the students. In that vein, I have experience in a wide range of classroom settings as both an instructor of record and a recitation leader—a role which guides students through example-driven instruction. In my belief, teaching is multifaceted and requires constant practice in three main aspects: (1) preparation, (2) communication, and (3) student understanding; when any one of these factors excels, the others excel as well. Using these tenants in my classroom, I was recognized for my efforts in the classroom by receiving the college's Outstanding Graduate Teaching Assistant award: a competitive award granted to three graduate students across the college's five departments every year.

When I create my syllabus, it has a well-delineated schedule of instruction, quizzes, and exams. Though rigid, it has helped my students (and myself) know what to expect throughout the semester and to better prepare. Throughout the semester and in addition to office hours, I held study sessions outside of class to help students prepare for their exams. During these sessions, I would go through practice problems and discuss expectations for each assessment. I found that outside of the time-constrained environment of the classroom, these additional study sessions improved my students' understanding of the material as they had many more examples to practice, and communicating expectations alleviated students' anxiety for upcoming assessments. At the conclusion of the semester in their evaluations, my students expressed much appreciations for these extra study opportunities.

Each recitation of about 32 students would work in groups through problems and discuss the relevant material. With this format, I had a better ability to work with students' needs one-on-one, allowing me to address students' needs and provide tailored feedback in a less intimidating setting. As a byproduct, students were able to form a better understanding of the material as their specific questions could be answered by me or a classmate. However, because there are many groups (usually about eight groups of four) as opposed to a single, cohesive unit in lecture (the class itself), I quickly found that I needed to master group facilitation and time management. To help with this, I encourage the members of each group to work together by either asking questions, answering questions, or talking to each other through each step of a problem. As teaching others is an effective way of learning, students were then able to better facilitate themselves and I could focus on larger disconnects in the class. If there was a common question across all groups, however, I made sure to bring the class together to address this.

During Fall 2023 when I was a recitation leader for Calculus I, the primary instructor led weekly meetings where we discussed the material we wanted to cover, what examples to work though, and ended with a discussion on research-backed pedagogy. Throughout the semester, the students responded well to the lessons we prepared while they also provided regular feedback in the form of anonymous surveys throughout the semester. At the end of the semester, we found that the final exam scores were greater than historically comparable semesters.

As a result of this semester, I was able to improve one of my weaknesses: group formation. Too often, I found it convenient to tell students to form their own groups and have them figure out who they work with—if anyone. I learned, and subsequently implemented, more intentional group formation techniques into my classroom. For instance, I ensure that genders are balanced within each group and each group has three or four students. This helps ensure that everybody in the group member feels more comfortable to participate and has an opportunity to participate. I also try to make sure that within each group, everybody has a similar familiarity and comfort with the material; otherwise, students can easily be left behind if their group members blitz through the material.

Taking the ideas from the Spring 2023 semester further, the following semester I was part of a smaller team led by Dr. Melinda Lanius and fellow graduate student Haile Gilroy where we implemented a redesign of the course curriculum and its presentation. The lead for this project designed each lesson with relatable examples and word problems, e.g., linear approximation to model Aubie (Auburn's mascot) travel to campus, with every section having a guided workbook for students to fill out as they attended lecture and recitation. At the end of the week, the students would upload their workbooks to be graded for completion. With this course of action, we again found that the final exam scores were substantially greater than previous comparable semesters.

I plan to implement many of the changes we made such as "homework checks" to my future teaching. With the homework implemented through the online platform WebAssign, assignments were graded only for correctness, so students did not get feedback on any of the work they did for the problems. To combat this, we implemented homework checks where students were asked to write down their work for a specific

homework problem each week. We would then grade these and provide feedback on both the mathematical writing and correctness of solving the problem. This seemed to improve the persistence of course material across the semester as the feedback was more frequent, as well as the clarity of their math.

Following that semester, I also believe that only doing examples is not the most effective way for students to practice material. With the Calculus I curriculum redesign, the workbooks for each section were designed as a scaffold, building up the material via visual explanations of definitions, increasingly more complicated examples, and open-ended problems. I believe this component is crucial for students to develop a better understanding for the material as they now have much more context and foundation for the motivation of the material (e.g., derivatives measure instantaneous rate of change) or for why certain techniques are chosen to tackle problems (e.g., logarithmic differentiation can reduce the complexity of computing a derivative).

At Auburn University, Calculus I is a *uniform* class, so all of its assignments and the final exam are standardized across all sections. Throughout the refactor of the Calculus I curriculum in the Fall 2023 semester, we were finding misalignment between our learning objectives and what was evaluated on homeworks and the final exam. To help quantify and remedy this, I worked with Dr. Melinda Lanius and Haile Gilroy on developing and validating a quantitative tool to assess course alignment. We created the CAAT (course alignment analysis tool) which leverages graph theory to assess the alignment between the learning objectives that an instructor believes should be prioritized versus the learing objectives which were emphasized the most by an assignment. In analyzing the impact of instructors using the CAAT on their perception of uniform homework, we found that the CAAT affected participants' definitions of homework quality.

After developing the CAAT, I have been incorporating it into my own teaching preparation. I have found that especially when generating examples for my students, using the CAAT has led to a more methodical approach to ensure all of the learning objective I want emphasized are truly present in my lessons. Even without using the CAAT directly, my lesson plans have been more intentional in ensuring that all of the learning objectives are covered. Especially with novice instructors, I believe that the CAAT is a promising professional development tool allowing instructors to quantify the alignment between their expectations and what is actually assessed.

In all of these contexts, I try to make teaching and mentorship an inviting and personal endeavor for all parties involved. My approach to teaching is continually evolving by incorporating research-backed methodologies and feedback from my students to tailor it to the needs of the classroom. The mid-semester feedback will continue to be a feature of my classes, as for instance, it made me realize that doing an example in-depth *before* letting students loose on their work is beneficial to the students. Having this feedback cycle encourages open communication between me and my students. While I am teaching the class, I constantly remind my students that this is really *their* course and that I am there to facilitate and reinforce their learning. As I progress in my career, I hope to continue to learn and improve my instruction in the classroom to better serve my students.

Below is a summary of my course evaluations during my tenure at Auburn University. Students are presented with a series of statements and asked how well they agree with the statement; the options vary from "Strongly Agree" (a numerical score of 6) to "Strongly Disagree" (a numermical score of 0). These evaluations are anonymous to encourage students to provide honest feedback for the instructor(s). The questions are:

(1) I was encouraged to interact with the instructor regarding course content (electronically, during office hours, in class, etc.).

(2) I was provided opportunities to cooperate with other classmates about course material (electronically, inside or outside of class, etc.).

(3) I was informed of the instructor's high expectations for my work in this course.

(4) I was provided with an evaluation of my academic progress at regular intervals during the semester.

(5) I was provided with ample opportunities to apply my learning in this course.

(6) I was prompted to think critically about the course material.

(7) I was provided an environment that supported my learning.

Pre-Calculus Algebra (Instructor of Record)

Question	Number of Respondents	Mean	Median	Mode	Std. Dev.
1	40	5.6	6.0	6.0	0.58
2	40	5.6	6.0	6.0	0.74
3	40	5.4	6.0	6.0	0.92
4	40	5.5	6.0	6.0	1.05
5	40	5.6	6.0	6.0	0.62
6	40	5.7	6.0	6.0	0.57
7	40	5.8	6.0	6.0	0.49

Summary: My first semester teaching. Students appreciated the explanations I gave in class and my willingness to answer questions. However, they wish questions on exams were weighted a little less and reviews were done a different way. They did like that I took their considerations into account throughout the semester. All in all, I was still getting used to be an instructor, but it went well and I learned how to structure and interact with my classes.

Calculus I (Instructor of Record)

Question	Number of Respondents	Mean	Median	Mode	Std. Dev.
1	11	6.0	6.0	6.0	0.00
2	11	5.9	6.0	6.0	0.29
3	11	5.9	6.0	6.0	0.29
4	11	5.9	6.0	6.0	0.29
5	11	5.9	6.0	6.0	0.29
6	11	5.9	6.0	6.0	0.29
7	11	5.9	6.0	6.0	0.29

Summary: My second semester teaching and my first time teaching Calculus I. I invested a lot of time into this class after learning my students' goals for the course, e.g., passing versus getting an "A". Students were also extremely appreciative of all the extra time I spent outside of class to help them out with questions about the course, especially the review sessions I held. Overall, students were very happy with how I supported their learning.

Calculus I (Recitation Leader)

Question	Number of Respondents	Mean	Median	Mode	Std. Dev.
1	65	5.7	6.0	6.0	0.72
2	65	5.7	6.0	6.0	0.67
3	66	5.6	6.0	6.0	0.70
4	65	5.46	6.0	6.0	0.82
5	66	5.68	6.0	6.0	0.56
6	66	5.74	6.0	6.0	0.50
7	66	5.74	6.0	6.0	0.50

Summary: A continual evolution in teaching style, I incorporated more intentional active learning in my classes over time. Students appreciated the down-to-earth explanations I would give for problems, though they wish I worked more out in front of the class at the start of each class. They also liked how prompt I was in communication, both with questions and emails.

Calculus II (Recitation Leader)

Question	Number of Respondents	Mean	Median	Mode	Std. Dev.
1	43	5.49	6.0	6.0	1.04
2	43	5.7	6.0	6.0	0.67
3	43	5.4	6.0	6.0	0.90
4	43	5.3	6.0	6.0	1.05
5	43	5.5	6.0	6.0	0.90
6	43	5.6	6.0	6.0	0.84
7	43	5.5	6.0	6.0	0.97

Summary: My first time teaching Calculus II, but now with a bit more experience under my belt. Students again were grateful to the understandable explanations of problems that I gave. However, they do wish I gave a little more review before each quiz and for groups to be assigned much sooner. They did appreciate the punctual communication, echoing the sentiments of previous semesters.