Erin Carmody

Teaching Statement

Teaching philosophy

I love to solve the problem of explaining topics in math. I want to give the students enough information so that they can put the pieces together themselves. There is nothing better than the joy of solving a math problem, and I want students to enjoy the process. Math is very difficult, and I can relate to students who feel nervous taking a math class or feel nervous taking tests or think they are not good at math. I agree with the idea that being good at math is about practice and experience. If I could choose my favorite lecture style, it would be a fast-paced well-planned lesson on advanced mathematics. At the end of the semester the students would present on a project they had consulted with me about throughout the semester. For classes like algebra, trigonometry, statistics, and even calculus, I like to have more group work, working at the board, working on homework in class, along with a shorter lesson where students can fill in their workbooks as we go through the material.

Teaching experience

Fortunately, I have been able to teach undergraduate mathematics at a variety of excellent schools giving me a rich perspective of undergraduate mathematics education. Here is a table of some of the classes I have taught. Note: I taught at University of Nebraska at Omaha when I was an undergraduate student as part of their math lab, at the University of Kansas as a master's student, and at CUNY as a PhD student.

College Algebra	Intermediate Algebra	Biostatistics	Integral Calculus	Introduction to Proofs	Abstract Algebra
Multivariable Mathematics	Independent Study in Abstract Algebra	Infinity and Art	Calculus II seminar	Calculus I seminar	Finite Mathematics
Multivariable Calculus II	Business Calculus	Linear Algebra	Calculus I	Calculus II	Linear Algebra
Multivariable Calculus	Calculus I	Philosophy of Euclidean and Non-Euclidean Geometry	Math for Liberal Arts	Introduction to Proofs Workshop	Calculus with Analytic Geometry II
Calculus with Analytic Geometry I	Mathematical Thinking	Calculus I	Calculus II	Elementary Statistics	Pre-Algebra and Algebra

SUNY Delhi   College of Saint Mary   Bowdoin College   Sarah Lawrence College

Fordham University   Emory University   Nebraska Wesleyan University   CUNY

University of Kansas   University of Nebraska at Omaha

Teaching moments

Here are some of the great teaching moments from my career so far:

• Introduction to proofs: At Sarah Lawrence, I taught an introduction to proofs class using my former advisor, Joel David Hamkins' book "Proof and the Art of Mathematics". This was a wonderful experience because the book is great and the students really enjoyed the material. Also, I got to work with students individually on a regular basis to consult with them on creative projects that they presented at the end of the semester. For example, one student wanted to write the axioms of math in the language of Toki Pona.

• Infinity and art: Again at Sarah Lawrence, I had an opportunity to teach a class in the summer to incoming freshman. I proposed and taught a class involving art and set theory. In that class, we had amazing discussions based on "The Mystery of the Aleph" by Amir D. Aczel and a book about Kurt Gödel, called "Journey to the Edge of Reason" by Stephen Budiansky. They also made wonderful images for various set theory topics, including images of the ordinal 5, for example.

• Biostatistics: At Bowdoin, I had the opportunity to teach a lab based statistics class. Preparing for the class was challenging, but with the help of professor Jack O'Brien and the book "The Art of Statistics" by David Spiegelhalter, recommended by Jack, I was able to successfully teach the class. I created lab assignments using R and consulted with students who created their own projects using R to analyze real data by the end of the semester. For example, one group of students compared nutritional information across fast food chains. It ended up being a very rewarding experience and taught me that I can dive in and teach any class.

Classes I would like teach

In the future, I would most like to teach logic, set theory, and the philosophy of math. I would also like to expand the "Infinity and Art" class to be a interdisciplinary class for mathematicians, philosophers, and artists. I'm currently working on a book "The Set Theory Guide for Artists" which includes many images I have created to help understand and visualize the topics in set theory. I could use this book as reference for several of the classes I would like to teach. For example, here are a couple images from the book. The first image on the left showing that $|(0,1)| = |\mathbb{R}|$ and the image on the right showing König's lemma, that every infinite tree with finite levels has an infinite branch.
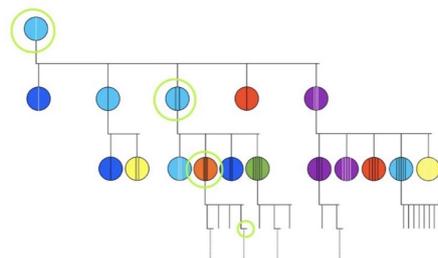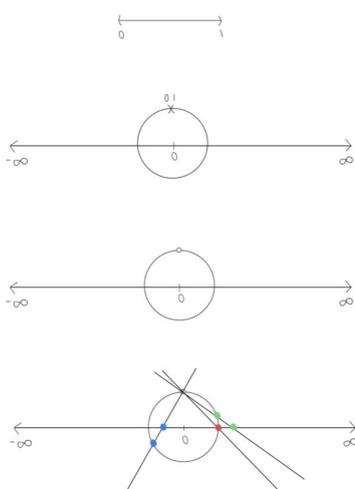
No matter the construction, an infinite tree with finite levels will have an infinite branch. This is König's Lemma:

If T is a tree of height ω

such that every level of T has finitely many nodes,

then T has an ω-branch.

▬▬▬ Comments from students

I am grateful to have taught so many thoughtful and enthusiastic students. Here are a few of the comments from students in my classes.

This course was extremely engaging! It was not at all what I believed it would be, which was a wonderful surprise! The information presented in this class was engaging and, quite frankly, extremely fascinating. For example, we learned about the Continuum Hypothesis, which was an extremely interesting topic, and while hard to understand at some points, Professor Carmody was able to guide us into the information, which made each little aspect of it highlighted in such a way that the end result simply just wowed me. The discussion elicited from this information was extremely interesting and enjoyable to partake in. My classmates had really interesting tidbits to add when something we were learning in class reminded them of something else, which was honestly my favorite part about the class, because we were so free to discuss matters that were similar but not exactly what we were learning. Assignments were short and quick, but offered you the chance to put your thoughts into words. It was the perfect class to be taken in the summer, because the course-load was extremely manageable and easy to follow, as the syllabus outlined it perfectly. Professor Carmody was an excellent teacher, as she guided us on difficult to understand topics with ease, and also answered every last one of our questions! -Infinity and Art

Infinity and Art was well-balanced as a summer class. From the first day, I knew the material was going to be unlike any class I had ever taken before, and knew I would have to embrace the challenge of a new way of discussing mathematics. The concept of infinity, which was necessarily philosophical, was intimidating, but the class was able to have some great discussions, even on zoom. Although I struggled somewhat with the zoom format when it came to jumping into discussions, I always felt that my ideas were welcome, and could tell that both teacher and students were very interested in and engaged with the course. The books for the course, particularly The Mystery of the Aleph, were fascinating and felt like an appropriate level of intensity for a relatively short class in which most, if not all, students had limited prior experience. Overall, I am very grateful for the opportunity to engage with other new students this summer through such a fun class! - Infinity and Art

I found Erin to be very interactive with the class throughout the weeks of the course. She would always make sure everyone in the class understood every topic before moving on. Her visual aids and presentations helped greatly in understanding the content of the class. The content was extremely interesting and you could tell how passionate Erin is about it. - Infinity and Art

She is a wonderful instructor. Helpful and caring. - Business Calculus

This is one of the best math teachers I've had at KU. She is very helpful on on one, an in class. She some times can go a little fast, but with a class like Engineering Calculus 2 it is to be expected. Class itself is difficult, but she makes it much more manageable. - Engineering Calculus II

Erin is a great teacher! - Engineering Calculus I