

Robert A. Beeler, Ph.D.

Associate Professor

Department of Mathematics and Statistics

East Tennessee State University

Gilbreath Hall 308A

Statement of Teaching

Since 1999, I have had a broad range of teaching experiences in the mathematical sciences at five institutions. I served as a Peer Tutor for the Department of Services for Students with Disabilities at Pellissippi State Technical Community College from January 1999 to August 2000. While rewarding, I was often challenged to find inventive ways of presenting material to students that learned differently than I. My next experience was working in the Math Tutorial Center at the University of Tennessee from August 2000 to August 2001. Here, I helped a large number of students in a variety low-level math courses. Because a student could come in with a basic algebra problem or a more difficult multivariable calculus problem, I was forced to keep my skills sharp and be able to explain mathematical concepts to students at different ability levels. When I began my Master's Degree at the University of Tennessee, I accepted an assistantship that allowed me to gain additional experience. While here, I received a year of training while teaching recitation sections of College Algebra and Business Calculus, under the supervision of a more experienced instructor.

This year of training helped me to teach my first class at Clemson University and to quickly progress with Business Calculus, Calculus I, and Calculus II. Since these classes are completely standardized, the syllabi tend to be inflexible and extensive. As such, I learned to conduct the class in a timely and efficient manner. Test problems in these classes were written via committee, with other instructors contributing problems and suggestions. Because the grading of these tests was also standardized, I needed to be very careful to emphasize certain points in class and to ensure that the construction and grading of my daily assignments was consistent with the standards of the department.

While at Clemson, I spent some time as an Adjunct Instructor at Tri-County Technical College, a nearby two-year institution, where I taught Intermediate Algebra and College Algebra. This was a valuable experience because I was permitted and expected to construct my own exams and develop my own rubrics.

My experiences at these institutions helped to prepare me for my current position at East Tennessee State University. As a professor at ETSU, I have had the opportunity to work with more advanced students as well as to incorporate technology into my lectures. One of

the most fascinating pieces of technology that I have had the privilege of using has been the Smart Board. By writing my notes on the touch sensitive computer screen and projecting them onto the screen, I am able to save the notes onto the Desire 2 Learn website. This has the advantage of allowing students who are absent to simply download the material that they miss. This also enables students to have a complete set of classroom notes without having to copy every word that I write. Further, with the notes on-line, there is never any confusion as to what was covered in class. This also allows me to seamlessly switch between on-line content and the lecture notes. The system allows the retrieval of notes from earlier in the lecture or earlier in the semester as needed. Desire 2 Learn also allows me to post practice tests and grades on-line. My experiences with the Smart Board prompted me to write an article for *The Encyclopedia of Mathematics and Society* on its use and history. Students have responded positively to this integration of technology into the classroom and I plan to continue using it in my classes in the future.

One of the most rewarding aspects of teaching at ETSU is the opportunity to work with more advanced students. While here, I have taught upper level courses such as Combinatorics, Graph Theory, Elementary Number Theory, Introduction to Modern Algebra I and II, and the graduate level Algebra. I have also taught lower level classes such as Calculus I, Calculus II, Introduction to Probability and Statistics, Math Reasoning, and Linear Algebra. I look forward to teaching additional classes at ETSU, in particular Math History and the graduate level Graph Theory course. In Fall 2018, I will be teaching the Calculus Based Probability and Statistics for the first time.

Being dissatisfied with the available texts on Combinatorics, I took it upon myself to write an elementary text. This text has been classroom tested several times in my courses. The student response to the text has been positive. Teaching this class multiple times has afforded me to edit and add to the text. This allowed me to publish the manuscript with Springer in 2015. Additional details regarding this publication are given in my Statement of Research.

I have also had the opportunity to supervise six Master's theses, one honors thesis, nine undergraduate research projects, and supervise ten honors enhanced projects. I have also been on the advisory committee for twenty-six additional students. Twenty of my papers have ETSU student co-authors. Further details on these papers can be found in my Curriculum Vita and in my Statement of Research. In particular, my Statement of Research further elaborates on the connection of teaching and research and the importance of research to a teaching institution.

All of these experiences helped to shape my teaching philosophy. I believe that is essential that departmental standards be maintained and improved upon. I personally believe that if you set high expectations for your students, then most of them will rise to the occasion. I have found that the reason many students fail a class is not because of high standards, but because they lack a mastery of the prerequisites. As such, I give Calculus students a basic skills test and encourage students to return to a lower course if they fail to make above a certain grade. Also, I use a short amount of class time to review certain key concepts, before they are needed in class. In particular, I have found that students are notoriously weak in trigonometry and in certain techniques from algebra, such as completing the square. On occasion, I even use these key concepts as the sole basis for a quiz. For example, I review and quiz the trigonometric identities before covering trigonometric integrals and substitutions in Calculus II. This helps to ensure that students have mastered the content of a course, before moving forward. I believe that it is equally important to retain a sense of compassion for the students. As such, I believe it is important to look at factors beyond the numerical average to determine the student's final grade, especially in borderline cases. Some factors that I consider include attendance, participation, use of office hours, improvement over the course of the semester, and whether the student has any documented extenuating circumstances. In short, if I am to increase a student's grade, I want to see that they have done everything in their power to achieve that grade.

Because I expect a lot from my students, I must expect even more from myself. I view teaching as a competitive act, and it is my responsibility to ensure that I get my fair share of the students' time. This entails basic civilities such as saying "hello," smiling, and learning their names. Typically, I end class by thanking the students for coming and telling them that I look forward to seeing them at the next class meeting. I also employ frequent daily assignments, such as group exercises and quizzes in lower level classes. I have found that the approach of group exercises is a very effective tool for learning. First, these seem to be less stressful for the students. Second, this requires the student to be an active participant in class, rather than a passive observer of the lecture material. Third, it allows the student to see that the technique being demonstrated in class may not be as easy as I make it appear. Hopefully, this has the positive benefit of encouraging them to practice these techniques before they have to demonstrate them on a test. Finally, when I gave individual quizzes in-class, the time would essentially be wasted for those who were ill-prepared. With group exercises, there is a chance that they might learn something. Using group exercises also encourages students to use many of these same study partners outside of class. This will

no doubt help to prepare them for the in-class test, which is an individual effort. I also frequently warn them that if they are relying too much on their group, the test may not go well for them. I also give a number of individual assignments to compensate for the group work. I encourage class participation in other ways, for example, I often prompt the class for the next step in a demonstration or to provide the specific numbers or functions to be used in an example. In upper level classes, in-class group exercises are usually not as practical, as these problems are expected to take more time and thought to complete. Nonetheless, even in a theoretical math class, there are some computational problems that lend themselves to a quick in-class exercise. Further, it is generally assumed that these students collaborate to some degree on their homework assignments.

My teaching strategies have been proven to be effective. The quantitative scores on my student evaluations are consistently high. In addition, the written comments on my evaluations consistently use words such as “fun,” “organized,” “passionate,” “efficient” (with respect to time), and “prepared.” I am well-known for my “open door policy” and an excellent rapport with my students. A selection of comments from the written SAIs as well as complete physical copies of my SAIs are included as part of my dossier. However, a few comments that stand out include:

- (i) “I believe that our instructor is by far the best Calculus teacher I have ever had. He comes in and explains everything. He used our class time perfectly so that he can teach us but at the same time he will allow for questions and explain something until the entire class understands... He really cares about his students and that’s sometimes rare, but he makes a point of being friendly and funny to make the class go by faster.” (Spring 2008, Calculus I)
- (ii) “[Dr. Beeler] is awesome. He made everything so interesting. He did not waste a minute of time. If things weren’t clear, he used an example... He was so awesome. He would take as long as needed to help students understand. I knew nothing about graph theory and [Dr. Beeler] knew so much. It made me feel great learning from an expert. It was like I was at more expensive college.” (Spring 2008, Graph Theory)
- (iii) “Teaching methods were great. The instructor showed numerous examples of each type of problem. Group work also helps me understand the material. The instructor is very approachable. He will help the student until he/she understands. He seems to care about his students’ success. I have learned all of the course content in this class. It has taught me valuable higher level thinking skills.” (Spring 2009, Calculus II)

- (iv) “The course was well thought out. It was very clear that he had spent a great deal of time with the material... I love the fact that there are posted notes from each class period. I also liked that he followed the book. It made it clear as to what was expected. I felt comfortable asking questions and [his] responses were clear and thoughtful. He encourages us to try things out or do additional exercises to improve understanding. He was not critical of students for not understanding... What I have learned from this class makes me think that I might want to study this on a graduate school level.” (Fall 2009, Combinatorics)
- (v) “He is always on time, interesting and reviews any questions we may have. Feedback is easy to get and helpful. Dr. Beeler is definitely unique in his teaching style but it is just amazing to see. He is fun and interesting, yet serious about our learning. I have never had a teacher like him. Dr. Beeler is just amazing. He truly cares for the students and is always willing to help. He is constantly challenging us but in a way that we can increase our knowledge and skills. Its just an amazing atmosphere to be in.” (Spring 2011, Calculus II)
- (vi) “Dr. Beeler’s tests were pretty straightforward and tested our [mastery] of Calculus II pretty accurately. He always reviewed what topics would be covered and always lived up to his word. Dr. Beeler always used class time to his advantage by teaching as long as he could. He always gave us group exercises which helped if we knew the material You can tell Dr. Beeler wants his students to learn.” (Calculus II, Spring 2013)
- (vii) “I personally have learned a lot from this class. It provided me with a way of thinking that I did not expect. The content took a lot of visualization joined with math, which I enjoyed. I definitely think the way Dr. Beeler taught this class required students to use higher level thinking skills.” (Combinatorics, Fall 2013)
- (viii) “Dr. Beeler... is consistently entertaining. This keeps his audience captivated and attentive. As such, we are more prone to soaking up information. The assignments have often been a challenge, but in a fun way. It was never to the point to where we couldn’t go into his office to speak with him for more insight on a problem. As far as course content, Dr. Beeler made it fun. I thoroughly enjoy Graph Theory because it was presented in a puzzle-like format.” (Introduction to Graph Theory, Spring 2015)
- (ix) “Dr. Beeler covers more material in one lecture than some professors cover in an entire week. The homework is hard and the tests aren’t easy. However, Dr. Beeler is the

best professor you will ever have. He will work with you one on one and help you understand the material in any way he can. That does not mean that this will be an easy class, but Dr. Beeler has a way of making you want to work even harder to understand the content. I honestly believe that had it not been for Dr. Beeler, I would not have made it through this semester. I can't imagine having to take this class with any other professor. It was a privilege to be taught by Dr. Beeler." (Combinatorics, Fall 2015)

- (x) "If another student was taking this course with Dr. Beeler, I would have to tell them that they are about to experience the best math course of their college career. This class is challenging and difficult. Dr. Beeler moves very quickly and you will need to write very neatly and swiftly. The tests are hard and you will spend HOURS studying the material, but it is worth it. Dr. Beeler's classes are fun and he makes you want to learn. Most importantly, Dr. Beeler wants you to succeed. He will spend what spare time he has helping you in any way that he can. He will not just hand out answers or easy grades. He expects you to work for your grade, to earn your grade." (Introduction to Algebra I, Fall 2015)
- (xi) "Be prepared for a LOT of excitement! Beeler is a very energetic person, and he manages to channel this into his lectures. There's never a dull moment in class. Also, be willing to have a fun back-and-forth with Beeler. It's never NOT fun!" (Intro to Algebra II, Spring 2016)
- (xii) "Dr. Beeler brought a level of enthusiasm that I haven't seen in a long time. It seems he truly enjoyed covering the material which made/makes the class so much more interesting and not as intimidating as others." (Combinatorics, Fall 2017)
- (xiii) "Dr. Beeler is a very well-rounded professor. He is able to relate to students and does an outstanding job overall at connecting with students. His instructional method is effective and engaging. He truly is an outstanding professor." (Intro to Algebra I, Fall 2017)

In addition, I have several letters of support from current and former students. The effectiveness of my teaching is further supported by the Peer Reviews conducted by my colleagues in the Mathematics Department. Both the letters of support from students and the Peer Reviews of teaching can be found in my dossier. In 2004, I was awarded the Faculty Award for Excellence in Teaching at Clemson University. I was also awarded the College of Arts

and Sciences award for Outstanding New Faculty for the 2010-2011 academic year for my commitment to the teaching, research, and service missions of ETSU.

In October 2017, I was the first featured teacher on ETSU's newly created Center for Teaching Excellence. Mr. Phil Smith of the center interviewed me and posted his article at <https://www.etsu.edu/teaching/featureteacherarchive.php>. This article includes some of my observations about teaching as well as my advice on how to be a better teacher.

In 2017, my commitment to the teaching mission of ETSU was recognized when I received the Distinguished Faculty Award for Teaching at both the college and the university level. This award identifies me as one of the best instructors at ETSU. The nomination letter lauds my "high level of organization, the liveliness of [my] classroom environment, [my] ability to keep students engaged, and the clarity of [my] presentations." The nomination also notes that "There are not many math teachers whose students describe their classes as fun." As described on the academic affairs website, being selected for the university award required nomination from my colleague Dr. Robert Gardner, being selected at the college level from other qualified instructors, a letter of support from Dean Anderson, and being chosen from outstanding nominees from the other colleges by the university awards committee. As described in the press release, "This is ETSU's highest honor" and I feel honored for my contributions to the teaching mission were commended in this way. I hope to continue to live up to this honor by serving the teaching mission of ETSU faithfully for years to come.