

TEACHING STATEMENT

Dr. Yulia Dementieva

Throughout my student experience, I had many wonderful teachers who provided insight and understanding about the structure and concepts of mathematics, not only through their teaching, but also by encouraging and caring about their students. When I started teaching mathematics in 1994, my final year as a student at St. Petersburg State University, my first thought was that although I knew I had enthusiasm, competence, and the desire to teach, could I be as good as my mentors were? Since then, I have taught a broad variety of undergraduate mathematics courses for both mathematics majors and non-mathematics majors, as well as graduate mathematics courses. I have gained confidence in my teaching, enhanced my pedagogical qualities, and, more importantly, fallen in love with this aspect of my profession.

For the last eight years, as a faculty member at Marshall University, my teaching experience has included courses for both undergraduate and graduate students including Business Calculus, Applied Calculus, and regular Calculus sequence (including Calculus I Honors), Linear Algebra (for both mathematics and non-mathematics majors), Discrete Mathematics (for computer science majors, mathematics and mathematical education majors, and graduate students), Probability and Statistics (from introductory to graduate level), and History of Mathematics. In collaboration with my colleagues, I have developed four new mathematics courses: Discrete Mathematics for middle school teachers (delivered electronically), Discrete Structures (an introductory discrete mathematics course for computer science majors), Graph Theory and Combinatorics (a course for mathematics and mathematical education majors, with a component for mathematics graduate students), and Applied Probability and Statistics (a course for engineering and science students). I also redesigned and regularly teach a graduate course in Statistics for Marshall University's graduate-level Forensic Science Program.

Based on my teaching experience, the following goals, the actions I take to meet these goals, and some pedagogical tools I have found to be helpful along the way can be considered to be my teaching philosophy.

The first goal I have is to identify the set of knowledge and skills the students should possess at the completion of the course. It is necessary to devise a plan of action to meet those objectives; such a plan includes procedures, methods, relevant materials, and evaluation. The students need to know what I expect from them on a daily basis, and what they may expect in the way of evaluation; I provide this information both verbally and in the course syllabus. I also frequently give benchmarks (where we are) and directions (where we are going) so that students can keep the global picture in mind. On my personal webpage, I post useful information about each course I teach, including the syllabus, tentative schedule, homework problems, projects, test reviews, and solutions.

My second goal is to show students that the knowledge they gain from the course can be helpful in their future. In solving many everyday problems we use methods and techniques that are common in mathematics, and I try to get my students to appreciate the power of the subject. For instance, when teaching calculus to non-mathematics majors (such as engineering and

science majors), it is important to make the context relevant to the students' subjects of interest so that the students not only learn calculus techniques, but also understand how they are relevant and applicable to their areas of interest. In Fall 2009, the Department of Mathematics at Marshall University started a retention program for students who drop MTH 229 (Calculus I) class. As an instructor for the retention calculus course, I believe that for these students, the relevance of calculus to their subjects of interest, and experience with data in those subjects, are extremely useful to help them grasp the concepts necessary for them to successfully pass the required calculus sequence. I always encourage students to think about what the answer means in terms of the problem, and how reasonable the answer is. I also use mathematical software, such as *Mathematica* in my calculus classes and *Excel* and *SAS* in my statistics classes, to help students visualize their results and apply the knowledge they gain.

Finally, my third goal, which is often the hardest to attain but is the one I believe to be most important, is to teach students to think for themselves; to develop their critical and logical thinking. I would like for my students to become able to independently assess the information they are exposed to. In an effort to evaluate student progress during my lectures, I frequently ask questions for content information as well as to challenge students to think. I also encourage them to ask questions during or after class, as this provides good feedback of how well the class grasps the material. I recommend that students attempt to solve all homework problems to find out on their own what they would like to ask me during office hours or help sessions. As a bonus, I ask them to come up with interesting problems from their major area of study where we can apply the concepts presented in class.

As far as my qualities as an instructor are concerned, I pay particular attention to being both a knowledgeable instructor and one who cares about students' needs. I am always trying to stimulate both rigorous and creative ways of thinking in the classroom, and to find better forms for presentation and/or discussion of the course material. In my teaching, I prefer to explore beyond the textbook, providing examples from different areas of art and science as well as from the history of mathematics, as I believe this helps students to better understand the material. I always try to establish an open line of communication with my students, making myself available and approachable for help when they need it. My "open door policy", which allows students to come for help not only during my office hours but also any time my door is open, works well for me and my students. It gives me pleasure to see a student gain confidence and make good progress as the course continues.

By identifying the goals for each course, showing the students how the knowledge applies to them, and teaching them to think for themselves, I feel that I am contributing to the development of better mathematical citizens – whether they are math majors or not – and also encouraging my students to question and to participate. Teaching mathematics fills me with joy; seeing the students overcoming their fear of mathematics, watching the smiles on their faces when a problem is solved, laughing with them, learning from them, nourishing their success, and standing by them at graduation provides me with regular reminders of how happy I am to have found a profession I find so rewarding.