

# John C. Chrispell

## Teaching Statement

I have always been, and to some extent always will be, a student. As a student I have sought knowledge not only to further my personal and professional interest in mathematics, but also in recreational activities such as scouting and skiing. Each of these endeavors has eventually given me the opportunity to share my interests, and I have done so as a camp counselor, as a ski instructor, and more recently as a teacher of mathematics. My experiences as a student and as a teacher are what have most influenced my methods of teaching, and my desire to be an educator.

The first thing I notice in any learning environment is the instructor's enthusiasm for the material. If the teacher is excited about a class and the possibilities of its content, it will be infectious. When teaching, I try to set the tone by maintaining a general excitement for the material. An example is teaching knots in scouting: a bowline, square-knot, or lashing by itself is not all that useful; however, if you motivate your instruction with the possibility of building a tower or catapult, your audience is usually hooked. I try to generate enthusiasm for the study of mathematics in the same way. Mathematics is full of nice little results and techniques. These techniques by themselves are neat, yet they may be used as tools to answer practical questions. I feel that if a student has an idea about the role a given topic plays, (even if that is to develop more mathematical machinery) they will be more susceptible and excited to learn. I try whenever possible to motivate mathematical learning with concrete real world examples.

As a student I enjoy learning the most in environments where you have the opportunity to actively participate. In my classroom teaching I use questions as one method of achieving active participation. I encourage students to ask questions not only at the beginning or end of class, but also throughout the course of a lecture. I will often ask the class as a whole to tell me the next step to take when working problems. Through the use of questions I create an active classroom dialog. As a ski instructor it was easy for me to demonstrate concepts in front of students. Still, the students didn't really learn until they were given the opportunity to try ideas out for themselves. The same is true when teaching mathematics. In the classroom I use sample problems to actively engage students with course material. I will present a problem to the class on the board or with a handout and then allow the students a chance to work on it alone or in groups before presenting the solution. This gives me the opportunity to move throughout the class and see what aspects of the material are particularly troubling. Once the pitfalls are known I can present the material from several different angles in hopes of giving students better insight. Recently I have had the opportunity to observe the "Scale-Up" teaching method for a third semester calculus course, in which more emphasis is placed on group work and learning activities than on pure blackboard lecturing about course material. From what I have seen the Scale-Up method does a good job getting the students actively engaged, and I look forward to incorporating some of these techniques in my future classes.

No matter how great the classroom experience, mastery of any material comes with practice. In the mathematical sciences this is done by working problems outside of class. As a student my preference has always been for classes where homework and projects make up a significant portion of the graded material. I do my best to extend this preference to my students by carefully grading homework assignments. Homework serves not only as a way of giving feedback to the students, but also to myself as the instructor. Grading homework highlights the concepts I should be more careful when presenting, or review more closely with students. I look forward to teaching classes in the future where real world problems can be pursued through the use of class projects.

There are many mathematical concepts that are more easily expressed with the use of technol-

ogy. For example, when lecturing about parametric equations I have made use of web applets to show students how different functions interact. In other classes I have made use of graphing calculators to fit equations to real data sets. The equation found ultimately allows for the development of simple mathematical models that may analyzed. While observing the Scale-Up method I had the opportunity to aid students in the use of software tools like Maple. The software gave the students the ability to quickly visualize concepts, as well as the capability to solve computationally difficult problems in a short period of time. Being a student of numerical analysis, I especially enjoy the use of technology in the classroom, and plan to incorporate it whenever appropriate in my classroom teaching.

As my career in the field of mathematics progresses, my teaching philosophy will without doubt progress with me. I am continually learning and adapting in hopes of being a better educator, and look forward to the possibilities my mathematical career holds. I know that maintaining enthusiasm for the material and keeping the student an active participant in the learning process will always be somewhere at the center of my teaching philosophy. Teaching will always be a rewarding way to give back some of what the pursuit of mathematical interests have given me.