

Faculty Development Plan

Blake Barker

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1 Self-Assessment

My greatest strengths include a successful research program that has aspects that are accessible to student research, student focused teaching, and enthusiasm for success of the Applied and Computational Mathematics Emphasis (ACME). I am skilled at numerical analysis and mathematical computation, as well as interacting respectfully with students. I am interested in developing a strong research program that will provide students with meaningful research experiences. As a math professor at BYU, I have the opportunity to be involved in furthering the success of the ACME emphasis. Building on these strengths, skills, and opportunities, I desire to develop an independent research program designed to give students significant research opportunities and become a spiritually and intellectually inspiring teacher.

2 Professional Goals

My big scope professional goals are to build a successful, independent research program geared toward supporting student research, develop teaching skills and materials that will lead to extraordinary teaching with the intent to provide students with the best learning opportunities possible, and to strengthen the ACME emphasis. To accomplish these big picture goals, I have the supporting goals of submitting at least three papers a year for publication, applying for at least one external grant each year, unless already funded, and mentoring 2-4 students each year. To improve my teaching, I have the goal of incorporating generational learning into my lectures, motivating the number theory content of Math 290 with cryptography, and seeking feedback on teaching through midcourse evaluations and classroom visits from other professors or the SCOTT program. To strengthen the ACME emphasis, I plan on continually improving my advising skills, developing lecture notes for Math 344 that include generational learning methods, and getting involved in some ACME activities outside of the classroom.

To build an independent research program, I will build on the success of my dissertation work involving computer assisted proof to study stability of traveling waves in important physical systems, such as multi-species reactive Navier Stokes, and multi-dimensional waves. I will develop methods for the rigorous verification of spectral stability properties. In developing these methods, I will look for ways to automate the process, and I will involve students in this research.

3 Department and University Needs

My goals in scholarship, teaching, and citizenship are aligned with the department and university goals. The math department is committed to providing our students with outstanding research experiences, quality teaching, and exceptional job preparation. My service to the department has primarily been to support the AMCE emphasis as an ACME adviser, and soon as a teacher of ACME courses.

4 Resources

To accomplish my goals, the main resource I need is time. The department and college have provided me with a startup package that provides for the monetary needs of hiring students and traveling for research. The main resource I need to accomplish my professional goals is time. The department has been careful to not overload the first year faculty with too many committee assignments or too many new class preps.

5 Current Progress on Goals

In my effort to achieve these goals, I have already submitted two papers for publication this year and attended the spring grant writing workshop at BYU to help me improve my grant proposal. I made concerted efforts to improve my teaching following the advice given by those who observed my class, and especially based on student comments. Consequently, my student rating score improved from 4.1 in Math 290 during Fall Semester 2016 to 4.5, slightly above the course average of 4.4, during Winter Semester 2017. I have studied a little from a book on salesmanship to improve my ability to influence students for good when advising them.

6 Measuring Success

To measure my success on achieving my goals, I suggest using Faculty Profile to track my success in submitting papers for publication and external grant proposals as well as to track student mentoring efforts. Student course evaluations and comments and letters from other teachers attending my class are the best way to measure the success of my teaching. Student comments and ratings from the Math 344 class I will teach will provide the best measure of my contribution to the ACME emphasis.

Signatures

A handwritten signature in cursive script, reading "Michael Dorff", written over a horizontal line.

Michael Dorff

Chair, Mathematics Department

A handwritten signature in cursive script, reading "Blake Barker", written over a horizontal line.

Blake Barker

Assistant Professor of Mathematics