

**NOMINATION OF  
SHAHLA PETERMAN  
FOR THE  
CHANCELLOR'S AWARD FOR EXCELLENCE  
TO AN ACADEMIC NON-REGULAR**

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April 3, 2007

Committee for Chancellor's Award for Excellence to an Academic Non-Regular  
Office of the Senate  
University of Missouri-St. Louis

Subj.: Nomination of Shahla Peterman for Excellence as an Academic Non-Regular.

Dear Members of the Committee:

I am very pleased to put forward the name of Shahla Peterman in nomination for this award in 2007. Shahla has been with the department for many years and has always been one of our best teachers. Over the years, she has had a strong role to play in the teaching of Basic Calculus and the regular Calculus sequence as well as other courses. Her dependability, hard work and excellent teaching have already garnered her the Lecturer of the Year Award in the College of Arts and Sciences twice. While her teaching is no less impressive at this time, I would like to outline Shahla's rather extraordinary achievements in the last four years that have made an impact, not just on our department, but on the campus as a whole. She has brought a new vision to the teaching of mathematics to freshmen that will have long-lasting effects on this campus.

Back in 2002, College Algebra (Math 1030) was a course which had a formidable reputation. Students were not very successful in the course, even though the university was investing large amounts of money in extra instructional time for the course as well as in a tutoring lab designed solely for Math 1030 students. College Algebra, a three credit hour course, met four times a week. There was an elaborate set of homework problems that students had to turn in at the tutoring lab after being tutored on the problems by undergraduate peer tutors. One graduate teaching assistant had total responsibility just for posting grades and solutions. Despite all these resources infused into the course, students had a very low success rate. More than half of the students failed.

Starting from Winter 2004, Shahla, who had not had much to do with College Algebra, directed her attention to the course, with the strong expectation from the Department and the College that she turn the course around. She introduced pilot projects in Summer 2004 using course material that was accessible to students online. Students had to do all homework online, and they would be instantaneously graded on their homework. This was a new approach to an old problem: how to give quick feedback and positive reinforcement. Simultaneously she was working on how to reorganize the structure of not just the individual sections, but of the whole course.

College Algebra in the department was taught in multiple sections of thirty five students each. A coordinator would keep all the sections in line by organizing the shape of the syllabus and imposing common exams at various points in time. Shahla's new idea of using computers as part of the course had to be carefully weighed against the shortage of computerized classrooms. In the long term, the course would have to be reorganized structurally, with a different role for the tutorial lab and the tutors.

The College of Arts and Sciences and the department, with College Algebra as the focal point, contacted an organization called Roadmaps to Redesign (R2R), which is a consortium of colleges and universities that are interested in using new paradigms for freshman instruction. With administrative support, Shahla helped UM-St. Louis submit an application for a grant from R2R. In Summer 2004, she went to a workshop organized by R2R that analyzed the collective experience of departments that had tried to integrate software based teaching into courses like College Algebra. In Fall 2004, a formal grant application to R2R was submitted. The proposal exhaustively discussed earlier problems with College Algebra, the efficiencies and waste involved in the course, the issues of which software would be most suitable, and the reorganization of classroom time that proposed new teaching approaches would require.

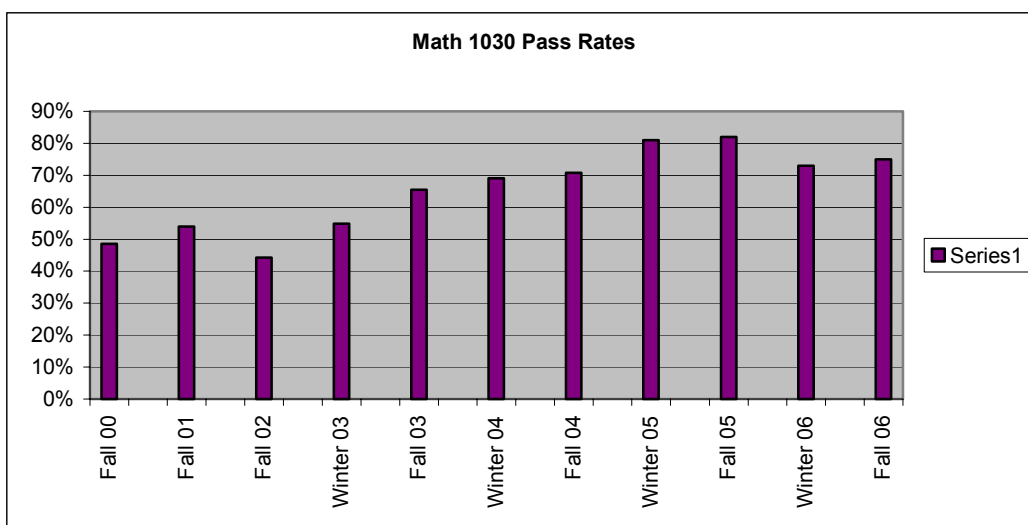
The R2R grant application was successful and UM-St. Louis is now one of a handful of campuses which are working towards being a model in the teaching of College Algebra using the principles enunciated by R2R. In Fall 2004 and Winter 2005, Shahla continued to experiment with different software and worked towards expanding from a pilot to full-fledged implementation. In Winter 2005, the first full-fledged implementation showed up the shortcomings of the classrooms available in the campus, especially the lack of suitable computerized instructional settings.

The College of Arts and Sciences sought to fix this problem by building a special instructional facility that would be used for this type of teaching. Shahla was asked to be part of the planning and design for the Mathematics Technology Learning Center, as it was to be called. She studied the layouts of similar facilities in Virginia Polytechnic and the University of Idaho, and she traveled to the University of Alabama to inspect their facility and discuss with them the design that would be best suited to UM-St. Louis' needs. She was then instrumental in creating, along with the designer Carolyn Kuo, the final specifications of the MTLC.

The MTLC was opened in August 2006. Shahla has been the *de facto* director of the MTLC. She schedules all the classes that use the facility. She has organized a schedule for undergraduate tutors to be in the lab and assist in instruction. This is a major change in the way our department has used peer tutoring by undergraduates. The student-tutors learn the online techniques and spend their time helping the students with both computerized and regular homework. Having the new center and this array of peer tutors has allowed us to change the size of our classes. Remarkably, even with section sizes doubled from 35 students per section to 70 students per section, student performance has improved.

Last but not least, Shahla has drawn in all of the other lecturers in the department into these new teaching methods. Using the framework that she has created, each of our lecturers is getting cycled through College Algebra and is being trained in this type of teaching. Some of them are looking towards expanding the use of such online techniques to other courses. While working on College Algebra, Shahla at the same time reorganized Trigonometry. This course is now taught by GTA's, again using the online methods that Shahla uses in College Algebra. Shahla supervises the GTA's and is the course coordinator of Trigonometry. The changes that Shahla has wrought are profoundly affecting the work of all of the lecturers and GTA's.

The effects on our students have also been profound. The pass rates for College Algebra have reached unprecedented levels. Part of the R2R framework is to make sure that student success is measured using reliable benchmarks. Shahla is making sure that every semester students take a final exam that is at the same level of difficulty as the finals from the years before online methods were introduced. This establishes the quality of what a passing grade means. The statistics for Math 1030 pass rates are listed below.



The short term effect of all of these changes has been a significant improvement in the quality of education for students in the course. Anecdotal evidence tells us that because of the new methods of teaching, there is more faculty/peer tutor contact with students, especially during the long lab sessions in the MTL. This is especially helpful for the weaker students. Students who have spoken with me have expressed their appreciation for how the course has become more accessible. Complaints from College Algebra students to the department are at a very low level. At the Math Lab which is part of CAD, the lab supervisor informs me that they now hardly get any College Algebra students coming to them for help. Lecturers in our department who were dubious about the efficacy of these teaching methods are now delighted that they can have a closer relationship with their students than they had in the previous teaching setups.

Shahla Peterman has made substantial improvements to the teaching of our freshman mathematics courses. She has significantly increased student success in College Algebra and she has influenced our lecturers to expand upon this to other courses. The courses that are involved here are of importance to the campus as a whole since most undergraduates at UM-St. Louis must take at least one of them to fulfill proficiency requirements. In light of her accomplishments, I am nominating her for the Chancellor's Award for Excellence to an Academic Non-Regular.

Respectfully submitted,

A. Prabhakar Rao, Chair  
Department of Mathematics and Computer Science

## **Statement of Teaching Philosophy**

### **Shahla Peterman**

My philosophy of teaching is easy to state, time-consuming to implement, and a joy to reflect upon: do whatever it takes to make each student learn. In the following paragraphs, I illustrate this philosophy as it applies to three key responsibilities of a teacher, teaching, preparing and learning.

Classroom teaching is challenging because students learn in so many different ways. They come carrying many years worth of learning baggage – some good and some bad. With my “whatever it takes” philosophy, it sometimes requires a considerable amount of time to remove burdensome baggage and/or to identify the best tools to employ in reaching a struggling student.

One tool that I use is group-problem-solving. When time allows, I use small groups to work on short problem sets. I find that it improves the quality of their work because they exchange ideas and help each other. It is also an ice-breaker for some of the students who feel a bit too intimidated to participate in class discussions or to ask questions. Some of the students in the groups work so well together that they exchange phone numbers and get together outside of class to work.

My “whatever it takes” philosophy includes dealing with students who do not want to learn. One way in which I do this is to prepare and grade in-class quizzes. Grading these quizzes is a key component of effective teaching because it forces students to attend class, encourages students to prepare for class, and provides the feedback that I need for timely intervention. By intervention, I mean taking the time to reach out to an underperforming student to make sure that he/she is aware of my willingness to help and of the many other avenues available for personalized help. While this approach to teaching is time consuming, it is also effective and rewarding.

Another aspect of my “whatever it takes” philosophy is that I do not limit my time with students to my stated office hours. I have an open door policy. This includes an open door when I am in school, and it includes checking and returning phone calls and e-mail messages when I am not

The second key responsibility of a teacher is preparing to teach. Course preparation includes identifying the material to be taught and identifying the proper resources to use in presenting that material. In the case of mathematics, identifying the material to be taught is often straight forward because, by the end of the course, the students must be prepared for the course which follows in a certain sequence. My philosophy leads me to be involved in decisions that involve teaching. That is, I want to be involved in textbook selection, software selection, and in basic course design. Simply being “on a committee” is not enough. My philosophy leads me to strive to make the right decisions and this means, for example, taking the time to critically compare various textbooks or software packages so that a decision in the best interest of my students is made. My admittedly compulsive examination of these materials has led to invitations to various meetings

sponsored by publishing companies to help them improve their products, and, in turn, help our students.

In the recent years my “whatever it takes” philosophy has led me to spearhead a major redesign of the way in which college algebra is taught at the University. The redesign consisted of replacing 2/3 of the previous lecture time with time in a lab environment. The computer assisted learning method allows students to more efficiently receive personalized instruction due to the interactive nature of the computer learning programs, the availability of teachers and teaching assistants, and the networking-presence of other students. This redesign was made possible by the dean’s office also doing “whatever it takes” by building and equipping the Mathematics Technology Learning Center (MTLC) and it was made possible by the dedicated mathematics faculty who were willing to learn a new way of teaching. This new way of teaching has been very effective – while maintaining our high standards, our college algebra students have a significantly increased passing rate (78% vs. 58 %). Our success story has been published in NCAT: Learning MarketSpace, July 2006 (<http://www.center.rpi.edu/Newsletters/Jul06.htm#4>). Furthermore, because of our successful implementation of MyMathLab, I was invited by Pearson Publishing to present our success to area colleges and universities a few times. After doing a presentation in Kansas City in March of 2006, I was invited by Prentice Hall to become a “faculty advocate” for MyMathLab (an invitation which I declined due to lack of time).

Key features of my philosophy of teaching were incorporated in the planning stages for college algebra. For example, computer assisted teaching allows instructors to more easily track student progress. This, in turn, provides the information required for early intervention. As course coordinator, I strongly encourage the other instructors to make that timely intervention. New technology and good planning must still be coupled with good teaching.

The need for coupling good teaching with good planning was quite evident in our interaction with the National Center for Transformation. UM-St. Louis was one of twenty universities selected to be a part of a course redesign. These twenty schools benefited through consultation with universities that had already gone through the process. However, of these twenty schools, several dropped due to lack of improvement. Last summer, when we presented our final report, many groups were interested in learning our approach to incorporating new technology into the classroom.

Lifelong learning is another key responsibility of a teacher. I have learned so much about teaching from my great mentors in the Math department, Dr. Andalaft, Ms. Raw, and Ms. Siegel. Now I am the most senior lecturer in the department and hopefully my example will also inspire good teaching. I continue my learning by keeping abreast of the latest teaching methods and tools. For example, in preparation for the course redesign, I networked with faculty at other universities through the National Center for Transformations and other conferences that I have attended in the last few years.

While I have presented my philosophy of teaching, I believe that it is ultimately a love of teaching that makes one a good teacher. Why else would one put in the time to do

“whatever it takes”? I consider my most important accomplishments to be the education of my students. I have met so many wonderful students over the years. I still feel such joy at the end of the semester when a student reports in the teacher evaluation that his or her success was due to my going the “extra mile”.

Syllabi for my courses can be found at <http://www.cs.umsl.edu/~peterman> .

## EVIDENCE OF IMPACT AT THE STATE OR REGIONAL LEVEL

I have presented information about our successful redesign of college algebra with educators locally, nationwide, and internationally. (See Presentations <http://www.cs.umsl.edu/~peterman/Vita.htm>)

- Modern College of Business, Gulf University in Kuwait via Tele-video, April 3, 2007.
- Focus on Teaching and Technology Conference, UMSL, November 2-3, 2006. UM-St. Louis.
- The Roadmap to Redesign (R2R) Workshop III. Final Progress Reports June 22-23, 2006. Baltimore, Maryland.
- Junior Science, Engineering and Humanities Symposium (JSEHS), March 2006 UM-St. Louis.
- Missouri Mathematical Association of Two Year Colleges, 2006 Spring Conference, March 31 - April 1, 2006. Kansas City, Missouri.
- The Roadmap to Redesign (R2R) Workshop II. Interim Progress Reports June 16, 2005 Baltimore, Maryland.
- “Replacement Model for Teaching College Algebra Using MyMathLab” March 2005, UM-St. Louis.
- “Supplementary Model for Teaching College Algebra Using iLrn” - April 2005, UM-St. Louis.

I met with the following to discuss the revisions made to College Algebra, Trigonometry, and Basic Calculus for future updates of their courses. Software products and the function of MTLC in our redesigned courses were also discussed. (See Service <http://www.cs.umsl.edu/~peterman/Vita.htm>)

- Dr. Howard N. Shapiro, Associate Vice President for Undergraduate Programs, Wayne State University, April 2007.
- Modern College of Business and Science in Muscat, Oman November 2006 UM-St. Louis.
- Dr. AlSharhan, Director of the e-learning center, Gulf University in Kuwait. Met with August 2005.

The results of our college algebra redesigns have published in the following:

- The Roadmap to Redesign (R2R)  
<http://www.center.rpi.edu/Newsletters/Jul06.htm#4>
- Dean & Provost, Volume 7, Issue 9 (May 2006)  
[http://www.cs.umsl.edu/~peterman/Dean\\_\\_Provost\\_first\\_4\\_pages.pdf](http://www.cs.umsl.edu/~peterman/Dean__Provost_first_4_pages.pdf)
- UM St. Louis Magazine  
<http://www.cs.umsl.edu/~peterman/algebra.pdf>
- Focus Magazine (Winter 2007 issue)  
[http://www.luminafoundation.org/publications/focus\\_archive/winter\\_2007/new-methods-in-missouri.html](http://www.luminafoundation.org/publications/focus_archive/winter_2007/new-methods-in-missouri.html)

The publishing companies have found out that the technology support only can answer how to use a software package. Faculty who successfully used the software for their courses are valuable to them since they not only can teach the software but more importantly guide them to a successful addition to their teaching. I have been invited to various meetings sponsored by the publishing companies to help them improve their products which as a result have influenced several textbooks and software packages that are used in the universities through out the United States.

- Participated in software summits, sponsored by publishing companies, aimed at helping universities successfully incorporate their products. Boston, Massachusetts, January 18-20, 2007.
- Math Zone Virtual Focus Group, McGraw Hill Publishing, October 19, 2006.
- Brooks/Cole Teaching Solutions Regional Workshop Series March 4-5, 2005 in Las Vegas, Nevada.
- Attended National Symposium on College Algebra (Sponsored by McGraw-Hill Higher Education) January 29 - February 1, 2004, Huntington Beach, California.