

## A Taste of MCM

This is the first year when teams from UW-Madison competed in the Mathematical Contest in Modeling (MCM). In this contest, two real-world problems are released worldwide at the same moment in late January. Teams of three undergraduates choose one of these problems and have only 96 hours to develop a mathematical model, derive and/or compute solutions, and present the results in a formal paper.

The problems are designed to be open ended, so clarity, analysis, and design are of critical importance. Competing in the MCM is a great opportunity and a real challenge: more than 4,000 teams from 17 countries participate in the contest each year! The contest results will be released in late April. Five teams of three undergraduate students represented the Badgers this year. Min Zhang, Yiding Xu, and Xinyun Rong worked on the problem of optimizing water treatment, storage, and conservation strategies for the projected needs of Saudi Arabia in 2025. Min Zhang shares her experience below.

### Endless Excitement

It was my first time competing in such a contest. None of my teammates had experience in modeling. Even though we knew we were facing dramatic challenges, we just took a second to decide we were all in, because we have passion in mathematics and are also interested in using math to solve real-life problems. From the moment we saw the problem, we became very excited. Without passion, we could not have finished a polished, 30-page paper in 96 hours. Without excitement, we could not have slept for less than five hours per day throughout the competition.

### Creative Brainstorming

The MCM was not only about using our knowledge to solve a problem, but was also about being creative. In this contest, we chose a problem about determining an effective and cost-efficient water strategy for Saudi Arabia to address water storage, movement, desalination, and conservation. Based on our knowledge and research, we designed models



COURTESY OF MIN ZHANG

From left: Yiding Xu, Xinyun Rong, and Min Zhang competed in the Mathematical Contest in Modeling (MCM).

in different areas, including economics, statistics, mathematics, geography, and computer science. It was challenging to dig out everything we know from various fields.

### Effective Cooperation

I understand better now how important cooperation can be. From the preparation stage to the action stage, we were focused on enhancing our effectiveness by cooperating well as a team. In preparation for the contest, we formed a clear plan about assigning different tasks to different people based on our backgrounds and strengths. I was our team's lead writer because I am a logical person, and I am good at explaining things clearly. During the competition, we were

constantly in contact to make sure we were all on the same page. In addition, my teammates and I established a profound friendship through such a great cooperation. Competing in the MCM gave me a great learning experience and offered me a picture of how math can be applied to every aspect of our lives. It is definitely a valuable contest for more college students at UW-Madison to experience. In the end, I want to thank Professor Spagnolie for informing us about the opportunity and supporting us in the contest. For more information, visit <http://go.wisc.edu/2wdy2w>.

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