The Mathematical Contest in Modeling (MCM) is a well-known and well-respected international undergraduate mathematics contest that takes place over the course of a long weekend in February of each year. This short presentation describes how one applied mathematics department, when faced with an ever-increasing number of graduating mathematics majors, rewrote its capstone course to be a writing-intensive experience, preparing senior-level students to compete in the MCM. Three major questions are addressed within the presentation: what are the design and implementation challenges while creating and piloting such a course? What are some of the issues encountered while working to get such a course designated as an official writing course at the institution level? How has the new course evolved, in terms of both form and content, over its first two years? (Received September 18, 2012)