My name is Mark Kanonik, PE, and I taught CIVL 6961, Masonry Design, during the Fall 2013 semester at Rensselaer Polytechnic Institute in Troy, NY. (I also teach Advanced Steel Design in the spring semesters, and I previously taught structures courses in the School of Architecture @ RPI in the past.) The course is officially a graduate-level course in the Civil and Environmental Engineering department, although most of the students were co-terminal students pursuing their combined bachelors and masters degrees in civil (structural) engineering. A total of 10 students (9 civil engineering students and 1 architecture student with a minor in civil engineering) enrolled in the course, and we met once a week on Monday nights from 6:00 p.m. to 8:50 p.m. I specifically asked for the course to be held once a week in the evening since I am employed full time as a senior structural engineer / senior associate with EYP Architecture & Engineering, P.C., in Albany NY.

We used the *2011 Masonry Course Notes* published by The Masonry Society which are based on the 2011 MSJC. Although the class notes included both working stress design and ultimate strength design, we did not cover working stress design. All of the other structural engineering classes @ RPI (2 concrete and 2 steel) are based on ultimate strength principles. Furthermore, the equations for ultimate strength design of masonry are very similar to those of reinforced concrete. Any student enrolled in the course was required to take a concrete design course as a prerequisite for acceptance into the class, so the format of the masonry equations was familiar to the students.

As a practicing structural engineer first and an adjunct college professor second, I specifically tailored the course to be as practical as possible. Practical aspects of the course include:

- I brought to the class conceptual floorplans and building sections for a small, 4-story apartment building and then asked the students to locate bearing walls based on reasonable span lengths for precast hollowcore plank flooring. The floor plans were “real” floor plans prepared by co-worker architects at EYP for a “real” project that is currently under construction. Many of the homeworks that followed were based on these floorplans, so the students could quickly and clearly see the application of classroom theory to a “real” project.

- We toured Zappala Block of Rensselaer, NY, where we saw first-hand the production of CMU. While at Zappala block, the students had the opportunity to construct a grouted CMU wall. Zappala Block donated several CMUs and some “training” mortar - a lime-rich mortar without cement; after the mortar cures, it is still soft enough that it can easily be removed from the CMU without damaging the CMU so that the CMU can be reused later; also, the International Masonry Institute sent a training instructor, and Local 2 of the Brick and Allied Craftworkers Union sent 2 masons as well. Each of the students was asked to lay a couple of units and to tool the mortar joints. Afterwards, some of the students commented that they had no idea of the effort and craftsmanship needed to construct a quality CMU wall.
• Keith Lashway, PE, of the International Masonry Institute gave a presentation, approved by the New York State as continuing education for licensed architects and engineers, on flashing and controlling moisture infiltration into buildings.

The Masonry Design Course is tentatively scheduled to be offered as an elective in the Fall semesters of odd-numbered years (with a Wood Design Course tentatively scheduled to be offered as an elective in the Fall semesters of even-numbered years).

Overall, I was very impressed with the Masonry Course Notes published by The Masonry Society, and I will use the class notes again in future classes. However, there was more material in the class notes than I could effectively cover in the 15 weeks of class, so I did not cover working stress design since all of the other structural engineering courses are based on ultimate strength design. Also, we only briefly touched on the Course Notes dealing with calculating seismic and/or wind loads since the students were familiar with these from other classes.

There are a couple of things that I will change for the Fall 2015 semester, including:

• I will schedule the tour of Zappala Block much earlier in the semester. Most of the students had very little hands-on experience with masonry of any kind, but actually building a wall helped the students to really understand masonry construction. Powerpoint slides of masonry construction just don't compare with actually building a wall. I firmly believe that engineers can’t properly design a building without first knowing how the building will be built.

• I will discuss unreinforced masonry only in passing, just to let the students know that unreinforced masonry is an option. While unreinforced masonry is permitted by the Building Code, my own experience is such that unreinforced masonry is very uncommon.

• I will spend more time on partially-grouted walls, whether they are gravity walls or shear walls. Unfortunately, the Masonry Course Notes don’t adequately discuss partially-grouted walls.

**A short update for the e-News:**
This past fall semester saw the return of Reinforced Masonry Design as an elective in the Civil and Environmental Engineering curriculum at Rensselaer Polytechnic Institute in Troy NY. A total of 9 civil engineering students and 1 architecture student completed the course, which is tentatively scheduled to be offered as an elective in the Fall semesters of odd-numbered years. Mark Kanonik, PE, a senior structural engineer at EYP Architecture & Engineering PC in Albany NY, taught the course using the 2011 Masonry Course Notes published by The Masonry Society. The students also toured Zappala Block of Rensselaer NY, where they built a reinforced CMU wall with the guidance of a training instructor from the International Masonry Institute.