



Adda Athanasopoulos-Zekkos: Civil Engineering “Touches our Lives”

Adda Athanasopoulos-Zekkos is an engineering professor with a penchant for pairs. She speaks and writes in two languages, Greek and English. She also has two principal and quite different research focuses: seismic effects on California’s coasts and levees, and effects of pile driving in urban environments in Michigan. She and her husband, Dimitrios Zekkos, have two sons, who are joining their parents in Greece during their current sabbatical at the National Technical University in Athens.

Athanasopoulos-Zekkos was born in Michigan when her father was working on his Ph.D. in engineering. She was only one year old when she and her parents returned to their native Greece, but Professor Richard Woods, then head of the University of Michigan’s civil and environmental engineering department, always stayed in touch with the family. She has now traveled full-circle back to the University of Michigan (U-M).

Career Shaping

During her time in Greece, Athanasopoulos-Zekkos earned a five-year degree in engineering from the University of Patras. She returned to the U.S. with a scholarship and earned her Ph.D. from the University of California, Berkeley.

According to Athanasopoulos-Zekkos, it is quite common for children in Europe to study English in school after “regular” classes, so her bilingual skills are not

surprising. She met her husband at Patras during their undergraduate studies, and they both earned M.Sc. and Ph.D. degrees in civil and environmental engineering at UC Berkeley. They decided to apply for academic positions, and both have been teaching and working on their research at U-M since 2008.

Athanasopoulos-Zekkos says she chose engineering as her academic concentration in part because in Greece one has to choose a major for university studies at graduation from high school. Looking back, she says she knew only that she was good at math, chemistry and physics. These talents, she says, tended to lead her to civil engineering. Furthermore, she saw civil engineers as “touching our lives.” The profession’s visible projects, such as bridges, dams and roads also help society.

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Engineering Challenges

When Athanasopoulos-Zekkos was exposed to various kinds of engineering in her classes, she concluded that “soils present a challenge: you can’t sample everywhere, you have to predict and extrapolate.” She went with that challenge. Her dual research reflects her undergraduate thoughts about “touching lives,” and her work has real-life significance. She points to her focus on seismic issues in California in the Sacramento-San Joaquin Delta where the potential for flooding is constant. Weak flood protection systems in a seismic area can be a critical issue. She received the 2015 ASCE Arthur Casagrande Professional Development Award for her contributions “in the seismic risk assessment of levee protection systems against flooding.”

Similarly, pile driving in sandy soils can cause settlement in urban environments and near bridge foundations. She and her team used data from buried sensors (geophones and accelerometers) that will have important consequences in damage detection for major bridges and highways. This project was originally supported by Michigan’s Department of Transportation, which is very interested in her work.

Professor Woods, once the head of the civil and environmental engineering department at Michigan, and now emeritus professor, notes Athanasopoulos-Zekkos’ interest in “tackling practical problems” regarding safety as well as “technical unknowns.” He offers examples of her supporting and encouraging female students doing their research at sites formerly populated only by male construction workers.

During her sabbatical, Athanasopoulos-Zekkos will be a visiting professor at the National Technical University in Athens. There she will work with the geotechnical group on geotechnical engineering research, particularly ongoing work on findings from the recent earthquake in Cephalonia, Greece, with respect to liquefaction of gravelly soils.

A Student Appraisal

Adam Lobbstaël, Ph.D. began his graduate degree at U-M with Professor Athanasopoulos-Zekkos as his advisor. Lobbstaël worked with her in both her areas of interest. On the seismic side, he helped Athanasopoulos-Zekkos investigate the feasibility of using a bendable fiber reinforced cementitious composite (called Engineered Cementitious Composites or ECC) for levees in seismic areas. Lobbstaël

also completed field work on pile-driving projects, with vibration measurements and geophysical testing.

Lobbestael says his former professor “stands out” among her peers as an excellent teacher, saying she has high standards and encouraged him to think independently. She gave him a sense of ownership of their research, not only as an “employee,” he says. Most important, Lobbestael says Athanasopoulos-Zekkos maintains a sense of “approachability.” Her students feel they can go to her when they have problems.

Passion for Teaching

Athanasopoulos-Zekkos offers her philosophy regarding teaching, saying that education at the undergraduate and post-graduate levels plays a major role in shaping an individual’s professional life. She is “passionate” about teaching, she says, and since joining U-M in 2008, she has enjoyed every class, and appreciates how unique each student is. She tries to respect the educational background of each student and to help each one to reach his or her full potential. She focuses on engineering practice and on case histories, using everyday examples of civil engineering applications to develop students’ engineering judgment and professional ethics.

Professor Athanasopoulos-Zekkos also spends a lot of time with her graduate students, and has weekly meetings to discuss their research findings. She especially enjoys seeing them “mature and become independent creative thinkers.”

As a scholar, Athanasopoulos-Zekkos has an impressive list of awards and honors, including the 2015 ASCE Thomas A.

Middlebrooks Award and the NSF CAREER Award. As a graduate student she received the NSF Graduate Research Fellowship and the 2004 Harry Bolton Seed Award from UC Berkeley. Her list of accomplishments includes scores of lectures, a long list of papers published in refereed journals and conference publications, and chapters in books. She has also overseen several doctoral dissertations.

Culture Comparison

Moving from Berkeley, Calif., to Ann Arbor, Mich., might seem like a culture collision. It was not, says Athanasopoulos: both communities have lively and diverse cultures. The couple thinks Ann Arbor has a “great downtown, diverse and family oriented, with an international flavor.” She pointed to a recent production of *Antigone* on the Michigan campus with the French actress Juliet Binoche. She says she and her husband can find anything they want for themselves and for their children on the U-M campus, including a large and prestigious medical school and competitive sports.

Athanasopoulos-Zekkos only recently joined DFI, but believes it is a “very important” organization, saying the technical committees handle important issues, and that DFI organizes many conferences and lectures, student and young engineer events, bringing academia and the deep foundations industry together. The family will be in Greece until August 2016, and she and her husband are excited about their sons becoming bilingual in Greek and English and completing that “full circle,” emulating their mother.

By Virginia Fairweather

