Dr. Sadik Kucuksari, an Assistant Professor in Electrical Engineering Technology at the University of Northern Iowa, developed an interest in electrical engineering when he was a high school student.

“I found solving science and math problems more enjoyable,” he recalls. “I liked opening broken parts of radio, etc., and always wanted to fix them.”

In summer, he would help one of his father’s friends at his electrical shop, which helped him get familiar with circuits and schematics, and stoked his interest in electrical engineering even more.

However, selection of a college major is different in Turkey, where he is from, than in the United States, says Dr. Kucuksari.

“There is a nationwide university entrance exam that approximately 1.5 million high school graduates take to enter a university every year,” he explains.

“We had to make our major selections together with the universities before entering the exam. Based on the score that we got from the exam, we were assigned to a university and a major.”

The system has changed a little since, he adds. “Now, students make their selections after the exam, based on their exam score.”

His preferences for college major were mostly related to STEM (science, technology, engineering and mathematics).

“Science education, math education, medicine, engineering were the majors I selected,” he recalls. “However, my dream was to be a math or science teacher or an engineer when I (then a sophomore in high school) started preparing for the entrance exam.”

His elder brother, an electrical engineer, was also a major source of inspiration and support.

“He had already graduated with a degree in electrical engineering and started to work when I was taking the entrance exam,” Dr. Kucuksari says. “I got a lot of insight from him about the field.”

Subsequently, Dr. Kucuksari was enrolled in Yildiz Technical University in Istanbul as an Electrical Engineering major, and received both his B.S. and M.S. degrees there.

Then, he came to the U.S. for his Ph.D. “My Ph.D. advisor [at the Arizona State University] was a person with strong field experience,” he says. “He loved teaching and helping young people.”

After receiving his Ph.D., he joined the University of Arizona for his post-doctoral study in Systems and Industrial Engineering, which provided him with “a different insight and point of view to engineering problems.”

After a year and a half of post-doctoral study, Dr. Kucuksari joined Alabama A&M University in Huntsville as an Assistant Professor in Electrical Engineering. Two years later, he decided it was time to move on, and started to apply for different positions.

“I ended up accepting the offer from the Department of Technology at UNI,” he says. “I liked UNI EET program for its hands-on focus.”

Dr. Kucuksari’s research focuses on power and energy systems.

“I am working on how the existing power grid can better serve the increasing demand through additions of renewable and distributed energy sources such as solar panels and wind turbines,” he says.

“I am also working on how we can integrate the electrical vehicle charging systems into the electrical grid more efficiently,” he adds. “Overall, my research area focuses on grid modernization and efficient integration of renewable energy sources.

Dr. Kucuksari enjoys working with students.
“If students can understand what numbers mean by getting involved in hands-on experiments, they will appreciate why we have those numbers and how those formulas are constructed.”

Dr. Sadik Kucuksari

“It provides me with an opportunity to share my knowledge with them,” he says. “It makes me happy as I see them learning and achieving something.”

“You can see their progress all the time on a specific study,” he adds. “It also provides a good group study. Travelling with students to present the work is enjoyable since you share more with them outside the university environment.”

Dr. Kucuksari is currently advising a doctoral student in industrial technology on successful integration of photovoltaics (PV) to the existing distribution grid. “Our focus is on how we can utilize the PV systems for voltage control in the distribution grid,” he says.

He is also the advisor of the Solar Boat Club in the UNI Department of Technology.

“Undergraduate students (mostly EET students) work on a boat to run it through solar panels and batteries,” he explains. “They attend an international competition every year to promote clean energy and river/water cleanness. The group focuses on how solar energy source can be utilized efficiently to run a solar boat.”

Dr. Kucuksari believes numbers and formulas make students afraid of the STEM field. “If students can understand what numbers mean by getting involved in hands-on experiments, they will appreciate why we have those numbers and how those formulas are constructed,” he says.

“They [the numbers and formulas] come from nowhere but the real world,” he adds. “Hands-on work will provide you with greater insight to understand the concepts better.”

Dr. Kucuksari also believes students should be organized, focused, and passionate when learning new subjects. “This will provide you with step-by-step learning,” he says.

His other advice for students is to have good night’s sleep because “good sleep helps you digest your learning.”