

# Fareed Nader

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**FAREED W. NADER**  
Professor of Surveying Engineering

**F**areed Nader, professor of surveying engineering, originally planned to become a dentist. He quickly changed his mind when he went to enroll in the predoctoral program at the University of Arizona and found himself at the end of a seemingly infinite line of students. "I went around and looked at all the registration lines, and the shortest one was the engineering line. That's when I decided to become an engineer."

"My career choice really wasn't that flippant," Nader explains with a smile. "My grandfather was a building contractor, and two of my cousins were engineers, so I was familiar with the profession and I was just as inclined to become an engineer. I thought I would try engineering for one semester, and if I didn't like it, I could always switch to dentistry later. I was immediately hooked on engineering; it was and still is an exciting, creative, and very satisfying profession."

Nader is now the program coordinator for the Surveying Engineering Program at the university. CSU, Fresno has the distinction of being one of only four universities in the United States (and the only one west of the Mississippi River) that are approved by the Accreditation Board for Engineering and Technology to offer a Bachelor of Science degree in surveying engineering.

Nader, who is a distant cousin of consumer advocate Ralph Nader, earned his bachelor's degree in civil engineering in 1961 from the University of Arizona and in 1966 received his master's degree at Arizona State University. He earned his Ph.D. in surveying and mapping in 1973 from Purdue University, where he taught engineering measurements. It was at Purdue that Nader discovered that

"teaching was more enjoyable than being a student or anything else I had done."

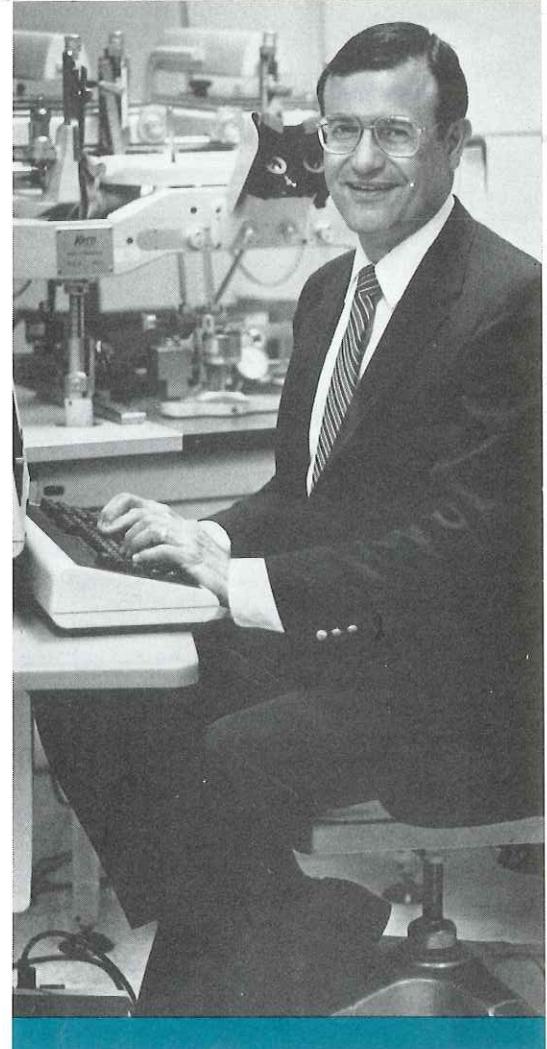
He began full-time teaching at the University of Hawaii but took a leave of absence after five years to be able to spend more time with his ailing father. On one of his trips to visit his father in Arizona, he heard about the surveying program at CSU, Fresno and decided to make a stopover in Fresno. "I met some of the professors, who gave me a tour of the facilities, and I was really impressed with the quality of the surveying and photogrammetry program," Nader explains. "Because the pay in Hawaii wasn't very good and the living expenses were high, I was ready to take a new job."

Nader also spent four years as a surveyor and construction supervisor for the Federal Aviation Agency, which helped him develop his practical approach to teaching. He says, "My students appreciate the fact that I have practical experience and am willing to work with them in field laboratories. Whether they're out climbing observation towers or in the mud pulling the measuring tape, I'm out there working with them."

## **What is surveying engineering?**

Surveying is a very old profession, but it is difficult to explain in a few words everything that a surveyor does.

Surveying is the science and art of making measurements that are needed to determine the relative positions of points near the earth's surface. We apply this definition in many different ways, but the oldest and perhaps the best-known application of surveying is finding the boundaries of a piece of property. The process would include the following steps: first, interpreting the property's legal description; second, searching for



evidence of old monuments (boundary markers); third, making field measurements of distances, angles, directions, and elevations; fourth, analyzing these measurements mathematically; and finally, displaying the results on a map. An example of a more complicated surveying task would be to design and locate the boundaries of a highway tunnel that makes both horizontal and vertical turns while passing through a mountain. In modern surveying, the surveyor can choose to use traditional methods of measurement, electronic satellite positioning systems, or photogrammetry.

## **How is photogrammetry different from surveying?**

Photogrammetry is the science of making measurements on photographs. Engineers became aware that by taking photographs of objects and knowing the internal structure of the camera, the geometry of the photograph, and the distortions of the camera lens, they could make precise measurements from those pictures. It was no longer necessary to actually go into the field and make the measurements before