vana Milanovic was looking forward to a long and fruitful teaching career at the University of Belgrade, Yugoslavia. Then, one day in 1994, her department head pointed at her and said, “You’re next.”

All the other professors in the Mechanical Engineering Department had gone abroad to earn their Ph.D.’s. Now it was her turn.

“I didn’t want to go,” she says. “I had a secure position and was happy in Belgrade. I grew up in a nurturing environment that provided me with a free education and medical care.”

Civil war had torn Yugoslavia apart in the early 1990s. The fighting was in Bosnia-Herzegovina and Croatia, to the south. Belgrade had escaped the violence, but the city was inundated by refugees, and the store shelves were virtually empty because of economic sanctions.

Still, it was home, and Milanovic wasn’t excited about an invitation to enter the Ph.D. program in mechanical engineering at Polytechnic University in Brooklyn, N.Y. When her department head strongly urged her to accept the opportunity, however, she left for New York in 1995.

After earning her Ph.D. and lecturing at Columbia University, she joined the University of Hartford in January 2001 as assistant professor of mechanical engineering technology in Ward College of Technology.

Today, her students are benefiting from her decision to leave her homeland and come to the United States. They are exploring experimental aeronautical technologies under her expert guidance.

In the Aero Laboratory wind tunnel in United Technologies (UT) Hall, they are studying the airflow pattern over aircraft wings. Their work is an extension of Milanovic’s doctoral research and her work in two NASA Faculty Fellowships at Glenn Research Center in Cleveland, Ohio.

Milanovic is continuing her laboratory work as one of the first recipients of a Greenberg Junior Faculty Research Grant (see page 18). At the same time, she is developing the educational program in thermo-fluids for the Department of Mechanical Engineering Technology at Ward College.

When she came to the United States, Polytechnic University was one of only five universities in the country with supersonic wind tunnels. This is where she began her experimental research into airflow over aircraft wings. She also lectured at Columbia University as well as at Polytechnic.

After arriving at the University of Hartford, she adapted her research from the supersonic wind tunnel at Polytechnic to the subsonic wind tunnel in UT Hall. Her students began recreating the models from her doctoral research and comparing the results from the low-speed experiments to her previous work in high-speed flow fields.

“No one had compared them in detail,” Milanovic says. “We began by visualizing air flow over a delta wing.” (This triangular wing design, used on the supersonic Concorde airliner, is being studied for next-generation aircraft including a proposed NASA space vehicle that would take off like an airplane.)

The students built an aircraft model to the required specifications, then painted it white and covered the wings with lampblack powder. The air flow in the wind tunnel left a swirling black-and-white pattern on the wing. This enabled the students to take measurements, compare these patterns with the supersonic visualizations, and draw conclusions.

Adam Sederholt, a sophomore from Ridgefield, Conn., majoring in mechanical engineering
technology, had other technical interests before working on the delta wing project.

“I came into the project for the machine design aspects, but I found fluid dynamics to be really interesting,” he says. “Working on this project has sparked my interest in further research. I’d like to do an independent project to study how the wake of an aircraft affects a following aircraft.”

The wind tunnel experiments set the tone for collaboration across departments and disciplines that characterizes Milanovic’s work. This cooperation began when she started using the wind tunnel located in the College of Engineering in UT Hall. It is a good example of the type of synergies envisioned by the Board of Regents that have evolved between Ward and Engineering since the decision was made nearly six years ago to manage the two colleges under a single dean.

Milanovic is also encouraging cooperation with the Audio Technology program headed by

Timothy Britt students

Sophomores Mark Read (left) and Adam Sederholt work with the delta wing model in the wind tunnel in United Technologies Hall.
in Milanovic’s program are collaborating on a senior project with students in the rapidly growing audio technology discipline. The cutting-edge project is focusing on propulsion and noise reduction issues for jet engines of the future.

Milanovic’s interdisciplinary approach also extends to the College of Education, Nursing and Health Professions.

“I was brought up to be an engineer,” she says. “No one taught me to be a teacher. It took years of experience and tons of mistakes to bring myself up to speed. What I learned can be supplemented by someone who can guide me and show me the leading-edge research in education itself.

“I want to nurture this connection between the two colleges. I want to become a better educator. I want to develop a teaching portfolio that will go beyond engineering to be in sync with current trends in education.

“When education students and faculty audit my classes, they can tell me how I’m doing from their perspective,” she says. “Meanwhile, they will be building a stronger foundation for their careers as science and math teachers.”

Milanovic’s approach is supported by a University grant that’s encouraging a greater use of technology in the classroom. For example, she uses video technology to tape students making presentations on their wind tunnel project.

“Engineering technology students are good at hands-on activity, but may need to develop their verbal presentation skills,” she says. “Making PowerPoint presentations and answering questions from their peers gives them a feeling of what it would be like to present their ideas in a business meeting.”

For Alan Hadad, dean of the College of Engineering and Ward College, Milanovic is “one of the rising faculty stars of the University. She embodies the quintessential teacher-scholar that the University has hired and mentored in that her research enhances her teaching,” he says.

“Dr. Milanovic brings a level of currency to the classroom that renders our students especially well prepared not only to enter the workforce immediately productive, but also provides them with the educational tools needed for upward mobility in their profession,” Hadad says.

Since coming to the United States, Milanovic has been struck by the dearth of women in the classes she has taught at Columbia University and the University of Hartford. When she was an undergraduate at the University of Belgrade, 40 percent of the mechanical engineering students were women—and eight of the top 10 students, including Milanovic, were women.

“I’ve had no more than one woman in any of my classes,” she says. “If we could do it in Belgrade, we can do it here.”

Seven years after leaving the familiarity of her hometown, Milanovic is happy that she made the move. “I love Belgrade, but this is my home now,” she says.

“Friends are most important in life, and I have so many friends from different cultures, races, and backgrounds whom I never would have known had I stayed in Belgrade. I was thrust into the melting pot, and it changed me for the better.”

GREENBERG GRANTS SUPPORT A DIVERSITY OF RESEARCH

Receiving a Greenberg Junior Faculty Research Grant enabled Assistant Prof. Ivana Milanovic to balance her teaching load while continuing her experimental research on airflow over aircraft wings.

The grants are funded by a $1 million gift to the University’s Campaign of Commitment from the chairman of the Board of Regents, Arnold C. Greenberg, and his wife, Beverly.

In 2001, Milanovic and Jacob Harney, assistant professor of biology in the College of Arts and Sciences, were the first recipients of the Greenberg grants. Harney’s research focuses on the effects of a high-fat, low-carbohydrate diet on susceptibility to seizure disorders. The diet has been used for some 80 years to treat epilepsy, especially in children, but how it prevents seizures is unknown. He is also looking at the effect of the diet, or different formulations of the diet, on blood glucose regulation in Type II diabetics.

In 2002, Mari Firkatian, assistant professor of history in Hillyer College, was awarded a Greenberg grant for her research on Nadejda Stancioff Muir, a diplomat, journalist, and producer for the BBC. Firkatian has exclusive access to the Stancioff family’s private letters. Her work in this area will contribute to several disciplines including European history, diplomacy, and women’s studies.

Also in 2002, Mark Blackwell, assistant professor of English in the College of Arts and Sciences, was awarded a Greenberg grant for his research on the late-18th-century “novel of circulation,” in which inanimate objects serve as the central characters. His research will contribute to our knowledge of the development of the novel as the preeminent literary genre in the West and will provide philosophical insights about the relationship between individuals and their property.