Weather affects almost everyone every day. At least that is what a meteorologist will tell you.
Millersville University teaches students the science behind how to predict the weather, but predicting weather is merely scratching the surface of what many graduates have gone on to do.

Dr. Richard Clark, chairman of the Department of Earth Sciences and professor of meteorology, said the program is a rigorous and comprehensive one.

“The courses that are offered are unusual for most undergraduate programs in meteorology,” he said.

Two required undergraduate courses that help students excel are computer programming language and atmospheric motions. The computer programming language course helps students land internships that require the knowledge and the atmospheric motions teach the students to create small scale models of climates and how they relate to different climates and weather patterns.

“We teach one step above the fundamentals than what other undergraduate colleges do,” he said. “Our students are very prepared for graduate school.”

Christopher Sloop ’89 took his degree in physics with a computer engineering emphasis from Millersville University and helped create a company that allows weather forecasts to reach the public with ease.

Sloop is one of the founders of WeatherBug, a network of weather stations, schools and broadcast television. At the time his company was created in 1992, Sloop said, television news programs could only report current weather conditions from the nearest airport or from weather observers who called the stations with their information.

“WeatherBug allows the TV stations access to hundreds of weather stations at schools in their area. It was a win-win idea where schools had a great tool for learning about meteorology and the TV station was able to access the data and display it...
on TV in real time,” he said.

Sloop, chief technology officer for WeatherBug, said the network of weather stations has grown to 8,500 locations in the U.S., more than 500 in Canada and more across the world. Millersville recently installed one on campus with a “motioncam,” which allows the meteorology department to show current conditions and camera views right on campus.

“Our latest version of the weather station includes a new sensor we released in 2009, which detects the exact location of lightning strikes,” he said. “A single lightning flash generates an electromagnetic wave that can travel hundreds of miles. Since we have a network of hundreds of weather stations that detect lightning, we are able to measure the exact time within nanoseconds that the electromagnetic wave reached each weather station, and from there we can use Time-of-Arrival techniques to ‘triangulate’ where the location of the lightning flash was.”

The WeatherBug Total Lightning Network, Sloop said, “is unique in that we detect not only the cloud-to-ground strikes that other networks pick up, but the much smaller flashes that occur within a cloud. Our hope is to utilize this groundbreaking technology to improve severe weather warnings by 10 minutes or more.”

Sloop, married for 15 years, has four children. He hopes to someday grow WeatherBug to where it can launch a remote weather satellite of some sort. “How cool would that be!” he said. “Of course, that might not happen... So my ultimate goal is really just to teach my children about the important things in life and pray that they will grow up with an attitude of ‘doing great things’ by serving others.”

Jake Swick ’01 has spent the past several years forecasting the weather for PGA golf tournaments.

He found himself on tour with the professionals, to ensure the safety of the players on the course.

“I used a piece of equipment, the Thorguard, to predict when lightning would strike,” he said. The ability to predict, instead of detect, lightning gave Swick what he feels is a good measure for safety.

Swick, married to Jamie (Barbush) ’03, spent his first year with Mobile Weather Team forecasting for radio. He started working with the Golf Association of America in the spring of 2002, and Jamie joined him upon her graduation.

One of his most memorable times, he said, was forecasting at the Masters. “I mean, the Masters!” he said in awe.

He also worked a tournament near Birmingham, Ala., where there was a thunderstorm three-to-five miles away. It went on for 45 minutes and sounded like cannons going off, he said. “Using the Thorguard, I could tell the weather over the course was fine and told them they could keep playing.”

Swick emphasized that he gave advice only, never making the final decisions. “[The storm] drifted alongside the course, and you could see the lightning strikes a mile or so away.” While Swick said he knows how stressful playing in weather that close can be, he knew with his equipment the course was safe.

He did recommend a practice round at the U.S. Open in New York be postponed during a downpour. Swick said the lightning was all around, and, although it was cloud-to-cloud lightning, he felt it wasn’t safe.

Those first couple of years required constant travel, and while fun for the couple then, they knew they wanted to settle down and start a family. With that in mind, Jake joined the Thorguard team in 2005 as a programmer and networker.

“I continue to do weather forecasts for golf tournaments, but more locally now,” said the new father of baby Helios. “We always said we would name our children after the weather. Helios is Greek for god of the sun.”

Jamie, who now works for Hospice of Utah, forecasted for the LPGA tour in 2003 and 2004, but she didn’t like the stress of the job as much as he did.
Swick now spends a great deal of time putting together prediction grids. “We are finding that predicting lightning may or may not lead to predicting tornado development and paths,” he said. “We’re studying it right now.”

Dennis Staley ’93 is currently the executive officer for the National Centers for Environmental Prediction (NCEP), a component of the National Oceanic and Atmospheric Administration (NOAA). “Millersville played a great role in getting my career started in the National Weather Service (NWS),” he said.

“After graduation, I worked with my advisor, Dr. Clark, to develop a strategy to seek employment in the NWS and to take advantage of my veterans’ preference and eight years of government service in the U.S. Marine Corps.”

Staley said ideally, he wanted to use his skills from his administrative and financial background from the Marines along with his new science and meteorology skills. “Through Dr. Clark, I was able to solidify a summer internship with the chief financial officer of the NWS.”

Staley worked for the CFO for seven years performing analytical and administrative duties associated with planning, formulating, analyzing and justifying a multi-year budget.

“My unique, multi-disciplinary combination of skills in planning, financial management, and meteorology has been valuable to me over my career as I was able to use my science background to defend high priority budget proposals in the federal budget process.

“One of my most significant accomplishments during this time was my role in obtaining funding for the NWS modernization in the mid-1990s that has since revamped and improved the level of weather, water and climate services provided to the American public,” he said.

Staley has been executive officer for NCEP since 2002. “I work closely with NCEP director Dr. Louis Uccellini, winter weather expert and author of several East Coast snowstorm books, in running the day-to-day operations of NCEP.”

Staley found his interest in meteorology while stationed at Cherry Point, N.C., near the Outer Banks. He said witnessing severe coastal storms and hurricanes drew him to the weather. So when he was discharged from the Marine Corps, he used the Veterans’ Education Assistance Program to pursue a meteorology degree.

“It was quite a risk at the time as I was a nontraditional full-time student, married with two small children, living in a two-bedroom apartment. I was able to pick up part-time work at Millersville’s purchasing department and the Weather Information Center. Most of our family’s income through this period was through my devoted wife.”

Bob Van Dillen ’95, a meteorologist with HLN, fondly remembers his Millersville days with Clark, too.

“Dr. Clark would be teaching something, and if somebody in class would ask a dumb question, he would sometimes get angry,” the lighthearted Van Dillen said. “A couple of times, he would just yell, ‘Alright Van Dillen… let’s arm wrestle’ just to get his aggressions out. I’d move up to the front desk and I’d let him win because that was best for all of us. It wasn’t even me that asked the dumb questions—usually,” he said.

“It’s pretty funny how I got into the meteorology field,” he said. “I was a junior in high school in New Jersey and never gave much thought to a major in college. I played football, hockey and baseball, and it took up most of my time. My true love was surfing, though, and we had a small cottage down at the Jersey shore. I used to love watching the storms come in and a
“We have one of the best programs in the country.”

Professor Rich Clark
are also helping to improve data sets that researchers use to study the weather and climate."

Gregory Zarus ’88, a supervisory scientist for the Agency for Toxic Substances and Disease Registry’s (ATSDR) federal programs, said a knee injury led him to wrestle for Millersville instead of playing football for Penn State. That decision allowed him to meet the faculty in the earth sciences department, who, he said, helped him see learning as a personal matter.

“The knowledge I gained was enough to excel in grad school. Dynamics and physical meteorology made all the cloud microphysics a breeze. I remember having a conversation in the physics-based grad school atmospheric science classes while many others were trying to grasp the concepts,” he said.

Today, Zarus leads a team of geologists, toxicologists, health physicists, economists, physicians, epidemiologists, and other environmental or health scientists to investigate when other government departments pollute, to determine if people are going to be exposed or hurt.

“The job of my staff, and I used to be one of them, is more unique and exciting than mine; they visit communities and sites of pollution, collect data, and determine if chemicals have or are going to expose people, and if so, are people going to get sick as a result,” he said.

The job is unique, he said, because it is different from the Environmental Protection Agency that uses laws and sampling data to protect people or the environment.

“We use research and studies, which often are much less certain, and we have to draw conclusions based on science, not law,” he said.

“The health assessors”—the project managers on my staff—“have to defend their conclusions to a panel of peers, rather than just report data and compare it to a legal standard.”

Before joining ATSDR, the married father of two adopted sons—one from Nepal and one from Kazakhstan—was an air quality meteorologist for the EPA response contract. During the Olympics in Atlanta, he assisted the Centers for Disease Control with ensuring the air was safe for the athletes.

In addition to his job, Zarus is mayor of the small city of Pine Lake, Ga. He also serves as an advisor at a local college and is currently working on chartering an elementary school with an environmental focus.

Dr. Jose Fuentes ’84, professor of meteorology at Penn State University, attributes his success in the teaching field to his experience at Millersville.

“Millersville gave me an outstanding academic background to pursue almost anything I wanted to do in life. The academic training I had was appropriate to do well in graduate school and compete with others who originally came from more prestigious and larger institutions,” he said.

Fuentes, who was named one of the 2010 Fellows of the American Meteorological Society (AMS), takes the training he received at Millersville and passes it on to undergraduate and graduate students in Happy Valley.

“I have a job that permits me to interact with individuals whose average age does not change with time,” he said. “Teaching is a passion of mine. Another passion of my life is the integration of research results in teaching the younger generation about the atmospheric environment.”

Fuentes also enjoys being able to take his graduate students to faraway places such as the North Pole and the Amazonia regions of Brazil.

Fuentes visits school children in large cities to talk about opportunities education can offer.

Fuentes’ ultimate goal is “to let economically disadvantaged children know that one way to succeed in life is through education.”