When James Meindl began his career, his life was in order, and he was calling the shots. Or so he thought. After receiving his degrees (BS, MS, Ph.D., 1958) in Electrical Engineering from Carnegie Tech, he, like many fellow grads, accepted a position at Westinghouse in Pittsburgh. “When I got up in the morning, I wanted to go to work. I worked on semiconductors that were used to control nuclear reactors. I liked what I did,” says Meindl. Ironically, his great job lasted less than a year. The Army called him to active duty.

What began as an undesired turn in his luck, Meindl claims led to “the two best things in my life.” He was assigned to the U.S. Army Signal Corps Research and Development Laboratory in New Jersey. It was there he met his wife, Frederica, and he discovered integrated circuits, which had just been invented. It was at this point, he entered into an area of engineering which would anchor his life’s work.

Meindl is a pioneer in microelectronics in every sense of the word. In late 1959, he was assigned responsibility, as the technical representative of the Signal Corps, to guide efforts at Texas Instruments Inc. to develop integrated circuits for portable Army electronics. In this capacity he worked with Jack Kilby, who won the 2000 Nobel Prize in Physics for his invention of the integrated circuit in 1958. Inspired by the company he kept, he applied his newfound knowledge to an area of research that few people (except the military) were interested in: low-power circuits. Today our world runs on electronic devices that depend on low power consumption, i.e., laptops, cell phones. But in the 1960s, it took a visionary to see the need for low-power circuits and sensors. By the mid 1960s, Meindl was invited to join Stanford, where he continued his work on low-power devices for biomedical applications. It was then that he discovered a second calling: teaching.

“It gives me pleasure to work with graduate students, who have no research experience, and guide them as they pursue their Ph.D.s. By the time they leave school, they know that they have contributed to knowledge in a significant way. They can stand up in front of an audience and discuss their research as an expert.” The Semiconductor Research Corporation (SRC) presented him with the Aristotle Award in 2004 for mentoring students. In 2006 he received the IEEE Medal of Honor.

Meindl’s passion for research and education has led him to accept a number of influential positions: Founding Director of the Integrated Circuits Lab and the Center for Integrated Systems at Stanford, Provost of Rensselaer Polytechnic Institute—the list goes on. Today, Meindl is at Georgia Tech, where he is the Director of the Joseph M. Pettit Microelectronics Research Center and the Founding Director of the Marcus Nanoelectronics Research Center. Maintaining ties with Carnegie Mellon, he serves on Electrical and Computer Engineering’s Advisory Board. He believes that when he’s on a board, he is in a position “to point out opportunities. When you are from the outside, you see things in a different light, and you can offer both positive and constructive ideas.”

Pointing toward the future, Meindl urges engineers to seek opportunities for mentoring college, high school and even middle school students. “When I look at the engineering profession in the U.S. today and compare it to when I went to school, there is a big difference. When I was a student, many of the best people in the country were entering the profession. Today, the number of U.S. citizens who enter graduate engineering programs is declining. Our own citizens are not interested in high tech careers. Ultimately, this will affect our quality of life and economy.”

The way Meindl sees it is like this: “In the future, our world will be high, high tech. We must inspire the current generation of students to pursue careers in engineering, science and math. This is vital for the future of our country.”
Jerry Pauly: How Failures Lead to Success

When Eden Fisher, the executive director of the Engineering and Technology Innovation Management (E&TIM) program, asked Jerry Pauly (MS E&TIM, 2007) to speak to her students, he was happy to oblige. Pauly, who works as a project manager/senior engineer at Nokomis, in Charleroi, Pa., says, “When I was a student, a core component of the E&TIM program was the guest lectures on Wednesday nights. I found these lectures to be one of the most rewarding and educational parts of my program.”

The speakers, who offer their perspectives on managing innovation, represent various industries from around the country. This past September, Pauly, who worked in robotics and automotive manufacturing before entering the E&TIM program, spoke to students about the differences between academia and the real world. His presentation, “The Opportunity of Failure,” prepped students on how to address failures. “You will fail, so don’t throw up your hands and cry,” says Pauly, adding, “Failures can lead to success if you deal with them. You must learn how to properly interpret what you experienced.” He also reminded students to not lose sight of the broad picture. “A scientist will understand a fact. But in E&TIM, I learned to think strategically. “OK, this is a neat fact, but how do I make money with this information. Is there a business reason to pursue this knowledge?”

Joseph Belechak: Fueling the Future of Nuclear Power

Joseph G. Belechak (BS CEE, 1981), the Senior Vice President of Westinghouse Nuclear Fuel, believes that in order for “a university to be relevant, it needs perspective from business to help shape its research and curriculum.” This is one of the reasons he agreed to deliver a student lecture for the Carnegie Mellon Electricity Industry Center. In his presentation called “Fueling the Future of Nuclear Power,” Belechak called attention to the challenges inherent to improving the viability, profitability and performance of the nuclear industry in the U.S.

As a guest speaker, he, of course, sees himself as an advocate for his company, but he also believes it is his duty to educate people about nuclear power. Given the concerns about global warming, emissions, and the need for safe, secure, low-cost power, “nuclear energy is becoming more important in a broad portfolio of energy sources,” he says. Yet, he has discovered that “young people have opinions about nuclear power that have been shaped by events that happened 25 years ago—Chernobyl and Three Mile Island. And as an industry, we have not done a good job communicating about how safe and efficient nuclear plants are.” By coming to campus, Belechak can address the misconceptions surrounding nuclear power and raise awareness of the role nuclear power can play in the U.S.