Meet the New Director of the AES Program

Jon Sticklen was appointed in December as the director of the Applied Engineering Sciences program. Sticklen has been an associate professor in the Department of Computer Science and Engineering and a special assistant to the dean on instructional technology and engineering education research. He came to MSU in 1987. Sticklen is enthusiastic and has a "can do" spirit that comes through in his personal story.

The path I have followed throughout my life has definitely not been a "straight line" to where I sit today. I come from a farm background — mid-sized grain and livestock farm in central Ohio — and a very small high school. After graduating from high school with 42 classmates, I entered The Ohio State University. My first goal there was to prepare myself for being a high school mathematics teacher. However, during my first term at OSU, I found my first real academic love — physics. I pursued a bachelor's degree in physics and graduated with honors in the subject. Along that path, I found I had a keen interest in the history of science, and for an honor's thesis I worked an interdisciplinary subject: the history of early twentieth-century physics. Both of my deep academic pursuits were influenced strongly by the help and encouragement of faculty. I know how important real engagement between faculty and students can be in helping undergrad students "find their way."

Between my junior and senior years at Ohio State, I was fortunate enough to apply for and be accepted to a NASA Summer Institute in Space Science, held at the Goddard Institute in New York City. That experience in and of itself shaped a lot of what the future held for me, both intellectually and personally. The six weeks at Goddard was a time of intense growth for me. As I went into my senior year in Columbus, I applied for grad school in astrophysics at Columbia University, and I was eventually accepted.

The astronomy/astrophysics department was small at Columbia when I entered in 1968 — only 10 other students. But the level of research and the engagement of graduate students in research set a tone that I carry with me today. My master's work at Columbia was on the correlations of quasars and radio galaxies — a topic that was very hot at the time. After graduation,

Wanted: Engineers with Business or Communications Background

The future is bright for MSU engineering graduates, especially students with a bachelor's degree in Applied Engineering Sciences (AES). It is the ticket leading to career success.

"Employers are desperate for engineers who understand the business side," says Garth Motschenbacher, director of employer relations for the college. He emphasizes and repeats the word "desperate." "The AES program is the only engineering major that allows students to go outside the college and get a base of information."

Some of the companies looking for employees with broad engineering skills and a business or communications background include General Electric, Dell, Caterpillar, Motorola, Texas Instruments, and Boeing, as well as numerous smaller IT companies. Job titles range from logistic engineer, materials control engineer, and district sales engineer to industrial market analyst and project manager. "There are jobs waiting and the salaries are competitive with other engineering positions," says Elaine Johnson, academic adviser to the AES program.

AES students earn a bachelor of science in engineering while specializing in an area outside of engineering. It gives students a broad-based background in engineering, coupled with an application area — or cognate — that can be
from Columbia, I accepted a position as the associate director of a large, public planetarium in Salt Lake City.

Although my stay in Utah was only two years, I learned a great deal from the experience, not about astronomy or physics, but about interacting with people. My job in the Hansen Planetarium included both writing and presenting public planetarium programs. Talking to 500 people in a dark room, and being responsible for holding their attention, is a great learning experience. As part of my duties in Salt Lake City, I taught introductory astronomy courses for the University of Utah.

After two years at the Hansen Planetarium, I moved on to accept a position as assistant professor of physics and planetarium director at a small college in the mountains of Maryland — Frostburg State College. My core duty at Frostburg was to foster connections between the college and the surrounding small town by holding public planetarium programs. My Frostburg experience helped me further develop the abilities I learned in Utah and overall was a time of substantial growth for me during the four years I remained on staff.

The next step in my path needs a little explanation. I have no siblings, yet I grew up with a very strong sense of family. When my father fell ill in 1973, I left Frostburg and returned to the family farm to operate it and get the burden off my parents. The six years I spent as a working farmer was a strong time of growth for me. I faced problems as an independent farmer that I could not have imagined, nor anticipated, but I learned to deal with whatever problem came my way. More than anything, I came to realize that people in walks of life like farming are some of the best problem solvers. Bottom line, I came to appreciate my own heritage. My father passed away in 1979, and by 1980, although farming remained of strong interest to me, I felt a strong pull back to university life.

By 1980, with the downhill trajectory of NASA over the decade preceding, the opportunities in astronomy were few and far between. While I was a grain farmer, I had a lot of time in the winters, and had used the time to self-learn computing. In 1980 I entered a master’s degree program in computer science at Ohio State. By my second term in the program, I took a course in artificial intelligence, and again I was just as hooked as I had been before on physics/astronomy and my choices were influenced strongly by interaction with faculty.

Eventually, I applied for and was accepted into the computer science PhD program at OSU, specializing in artificial intelligence (AI). During my PhD studies I was supported in part by working as a senior scientist at the Battelle Memorial Institute, which was adjacent to the OSU campus. My dissertation work was on developing AI methods of mimicking the reasoning medical doctors perform when diagnosing a patient. Coincidentally, some of the foundation work in medical AI was done at MSU in the 1970s.

When I was awarded my PhD in 1987, and started a job search, I ended up with many opportunities. It was a time that was very “hot” for AI. Although industry offers were very attractive, I set goals for myself that could be met only in a university environment. I interviewed at Michigan State among others, and was immediately attracted by the opportunity to build a new lab in AI at MSU. One of my strongest drives is to be a builder of programs. I started faculty life as an assistant professor at MSU in the fall of 1987.

My first 15 years at MSU were a time of focused work in AI, including research on diagnostic problem solving for high-performance aircraft, conceptual modeling of landscape-level ecological systems, and a strong thrust in developing intelligent software support for design and manufacture of structures made from polymer composites. With grant support from Boeing (then McDonnell Douglas), the National Science Foundation, and the Defense Advanced Research Projects Agency, the decade from 1990-2000 was very exciting for me — and extremely busy. One of the strongest lessons from my research work was not on the technical side at all. It was on the “people side.” AI research in general, but especially the type of AI research I engaged in — knowledge-based systems (better known as “expert systems”) — is highly collaborative. Without strong and persistent collaborators in the MSU Composite Materials and Structures Center, my research paths during the 90s would not have been possible. I learned that collaborative research is not only essential, but is, in fact, personally very enriching. And I enjoyed it.

In 1999, due to the retirement of a longtime instructor for CSE 131, the CSE department asked me to step in to take over the class on a short-term basis. The more deeply I studied the problems of early engineering education, the more deeply I became engaged. Over the five-year period 2000-2005 I embarked on a program of educational research aimed at learning more about what can be done to help early engineering education be more effective and more engaging for students. In 2003 I was one of the founding members of a study group on engineering education research. From that time, I have never looked back. By 2007, our group received a grant to study the relation between industrial needs and our college curricula on computational problem solving. In 2008, we competed for and were awarded a large five-year NSF grant aimed at increasing retention in the College of Engineering from its current value of roughly 65 percent up to a value of 75 percent.

The new grant is exciting, and dovetails strongly with my new duties as the director of the AES program. Although my path has been very non-linear, I believe that all that has gone before on my life’s journey has prepared me well to serve as the director of AES.

Over the years, one of my lasting hobbies has been developing computer programs — not for profit but just for fun. I enjoy the challenge and...
applied to business or telecommunications. The courses that are totally unique to AES students are EGR 300, “Technology, Society and Public Policy,” and EGR 410 “Systems Methodology,” which is the capstone course for AES seniors.

“The AES degree provides on-campus recruiters a unique opportunity,” says Rahul Menon with the Kohler Company in Kohler, Wisc., who is a 2008 graduate of the AES program. “Recruiters are given the chance to hire graduates with a strong technical background as well as skills in the supply chain/telecommunications field.”

Philip L. Fioravante, senior vice president at TMW Enterprises in Troy, Mich., agrees. “Employers are in need of employees who have a sense of business balance,” says Fioravante, who graduated from MSU in 1984 with a BS in manufacturing engineering. “I am referring to the ability to listen to constituents, whether a customer, a supplier, or a fellow employee, and formulate a solution from both an engineering and business perspective.” Fioravante looks for employees who have a high quality of education; a technical, critical-thinking skill set; and the ability to comprehend the business aspects of decision making. “And we need individuals who can think outside the box.”

In addition, potential students and their parents are learning about the interdisciplinary AES program. “Students may have an interest in math and science, but may not envision themselves as a design or research engineer. They want a different twist,” says Johnson. “The combination degree program in Applied Engineering Sciences has great appeal to this type of individual.” A large attendance at the AES presentations during the fall 2008 Future Engineers Open House is proof of the continuing interest.

Most AES students opt for the supply chain management cognate and, in an arrangement with the MSU College of Business, can take upper-level business courses, such as finance, business law, organizational psychology, and others during their junior and senior years. Those in the telecommunications cognate may take courses like network design and implementation, and data communications.

Kamela Webster knows what it is like to get an AES degree and get a job right away. “I graduated in the summer of 2008 and started...”

Elaine Johnson, academic adviser to the AES program, talks to potential students and their parents during the 2008 Future Engineers Open House.
Wanted: (continued from page 3)

my position at Whirlpool Corporation in St. Joseph, Mich., at the end of July, says Webster who is a supply chain analyst on the inventory management team at Whirlpool. “I had job offers that related to engineering and some that related to supply chain management. Now that the AES degree offered at MSU is becoming more known to major companies, they are very interested in hiring us.”

Daryl Flanigan, who received his AES degree in December 2007, says, “My first employer was so impressed with my knowledge and skills coming straight out of school that they began to recruit AES students for internships and full-time positions from that point on.” Flanigan now works for energy giant BP as the contracts manager in the state of Wyoming. He was hired after graduation by Schlumberger, a global oilfield and information services company with a major focus on energy, and prior to graduation had completed an internship with the company.

Ashley Seidl graduated in the spring of 2008. “Because of the unique education we receive as students in AES it allows us to pursue many different opportunities and fields when searching for a job,” says Seidl. She is a logistics coordinator at CHEP in Orlando, Fla. “I decided that research engineering wasn’t for me, so I chose to take the business path with my degree and found a job that was a perfect fit for what I was looking for once I graduated.” Seidl is in a leadership development program at CHEP, a leader in pallet and container pooling services with an emphasis on supply chain management. “I rotate positions every nine months to a different branch with CHEP, so I get to see the many aspects of the business.”

Menon is also getting an opportunity to rotate through different positions at Kohler. “While my current position with Kohler Company focuses on different areas in the field of supply chain management, my background education in engineering as well as general business leaves the door open to pursue various other career paths in the future,” says Menon. I believe the opportunity for career flexibility is the most exciting thing for AES graduates.”

– Jane L. DePriest

Feedback from a Former Student

Bill Wattson (BS ’78 engineering arts) recently wrote to Les Leone, former director of the AES program, about his experiences with the program and what his degree has meant over the years. Wattson is presently working for Metavante Corporation in Cedarburg, Wisc., as the director of Enterprise Storage Management. Here is what he had to say.

I just wanted to take a few minutes to drop you a note and thank you for the advice you gave me way back when, and let you know how it has worked out for me.

When I came to MSU back in 1975, I was sort of a lost soul not really knowing what I wanted to do and not very happy with the idea of being a mechanical engineer. I would probably have flunked out or just quit if it hadn’t been for your idea to switch to Engineering Arts. I really ended up liking the balance between engineering and business and went to work as a nuclear engineer for the U.S. Navy when I graduated.

Since I left MSU, I’ve really had a pretty amazing life. I worked on the decommissioning of the USS Nautilus to convert it into a museum. I was one of the people to perform the post-accident recovery of Three Mile Island, and I’ve owned and operated a successful consulting and engineering business in the nuclear power industry. As the nuclear industry entered its decline, I was able to transition to communications, working on the Motorola Iridium Satellite Phone project. I then worked on classified government intelligence community projects. I’ve built and operated data centers for multiple companies and made a very good and enjoyable living with the skills that started at MSU.

The business training that was part of my program has served me well and the blend of engineering and business positioned me to take on the start-up and operations of a number of businesses. Later in life when I went back to school, many of the challenges I faced were long gone because of the confidence I had built upon throughout my career. I know that the Engineering Arts program as it was back in my time doesn’t exist today, but I believe it was the best decision I could have made even if some employers did struggle a bit with not knowing what to make of it.

Thanks again for that help long ago. I have no idea how many folks ever give you this sort of feedback, but I thought you might be happy to know that it worked out really well for one of your students.

Students and AES alumni who have stories to share about their experiences related to internships or post-graduation — please contact us at editor@egr.msu.edu.
2008 AES Distinguished Alumni Award

Monte Falcoff (BS ’86) received the AES Distinguished Alumni Award at a College of Engineering banquet in May 2008. Established in 2004, this award honors an alumnus who has had a distinguished career with significant accomplishments, has high standards of integrity, is recognized for leadership in the community, and demonstrates support of the Applied Engineering Sciences Program (formerly Engineering Arts).

Falcoff has had an illustrious career in engineering and law. He is a principal and registered patent attorney at Harness, Dickey & Pierce, PLC in Troy, Mich. Falcoff is also an adjunct professor at the MSU College of Law, where he teaches intellectual property law. His primary areas of legal practice include intellectual property portfolio management, client counseling and opinion preparation, preparation and prosecution of patent applications, trademark prosecution, intellectual property litigation, and licensing. He does a significant amount of patent work for MSU.

Falcoff received a juris doctorate from Wayne State University in 1992. While a student there, he served as a note and comment editor for the Wayne Law Review. Early in his career (1986-88), he worked at Modern Engineering Service Co. as a senior project engineer. He joined United Technologies Automotive (1988-92) as a systems engineer for the modular headliner programs, from which he had 10 U.S. patents issued. He was also the patent and trademark coordinator for the business unit and, later, a manager of marketing program development.

Falcoff is currently the vice chairperson of the Applied Engineering Sciences Alumni Advisory Board for the MSU College of Engineering. He enthusiastically follows MSU sports and says he has had season football tickets “for way too long.” While a student at MSU, Falcoff immersed himself in the full experience. He played trumpet in the Spartan Marching Band for five years and received a varsity letter for participation on MSU’s fencing team. He thanks his parents for discovering the Engineering Arts program at MSU.

His wife, Janet, is a preschool teacher (BA MSU 1987, elementary/early childhood education). They live in Oakland County, Mich., with their children, Rebecca and Tyler. Falcoff is an assistant scoutmaster for Tyler’s troop. Tyler is on his middle school’s swim team and plays trumpet in the band. Janet and Rebecca (but not Monte) enjoy the family’s two horses, and Rebecca plays viola in her high school orchestra.

Applied Engineering Sciences Alumni Advisory Board

The AES Alumni Advisory Board is made up of 12 members who are graduates of the major. Its purpose is to facilitate the exchange of ideas between board members and the faculty and students of the AES program and to help keep the program current and relevant. Typical issues include curricular matters, mentorship to current students, development of activities with alumni, assistance with corporate relations, and program promotion.

Steve Trecha (strecha@sourcing.com) with Integrated Strategies is chairperson of the board. Monte L. Falcoff (mlfalcoff@hdp.com) with Harness, Dickey & Pierce, PLC and adjunct professor at the MSU College of Law is vice chairperson. The other board members include:

- Holly D. Aikens, Ford Motor Company
- Julie Bowers, AFL Telecommunications LLC
- Monica Braman, Boeing
- Jeff Brown, IBM Global Business Services
- Sehansheel Shelly Chawla, Eastern Michigan University
- Nathan Harrison, IBM
- Charles Kosmas, Chrysler LLC
- Robert Laug, Eaton Corporation
- Kenneth Rossman, Linamar Corporation
Social Networking Resources Help Students and Alumni

New AES Program Web Site

Have you checked out the new AES Web site? It is designed to be used for marketing and promotion of the program to current and prospective students and families as well as employers and alumni. In addition to a broad description of the program and cognates, the site provides links and tabs to the latest AES brochure, degree requirements, news, events, job opportunities, and a special section for alumni. We encourage you to visit the site at www.egr.msu.edu/aes.

Facebook Comes to AES

There is now an additional way to connect with the AES program. Through the work of the Society of Applied Engineering Sciences (SAES) and the AES Alumni Advisory Board, there is now a Facebook community for the AES program. Named the MSU AES/EA Community, this site is open to all friends, students, alumni, and MSU faculty and staff as another way to connect and network.

If you are a Facebook user, visit the MSU AES/EA Community and post your profile. If you are not a registered Facebook user, go to www.facebook.com and sign up as a new user.

Connect with Old Friends and Classmates

Have you tried the College of Engineering alumni networking site — Alum-Net? This online service allows registered alumni to create and edit a profile, as well as to search for other alumni profiles. We hope that many alums will become part of this growing network and community among MSU EGR alumni. We encourage you to participate and get involved in the MSU EGR alumni community. For your protection, all entries posted to the Web site will be screened prior to activation.

To register, visit https://www.egr.msu.edu/alum-net. After your profile is approved, you will be able to connect with former classmates and MSU engineering alumni.

Spartan Engineers. Built Better.

Tom Hertzog, an AES junior and member of the Honors College, is also on the MSU men’s basketball team. He is one of several engineering student athletes who are featured in ads, developed by the College of Engineering, that appear in MSU sports programs. The theme of the ads is “Spartan Engineers. Built Better.” The idea is to show parents, future students, alumni, and others that engineering students can balance academics, internships, grad school, and sports. Hertzog’s ad is featured at left. He is the son of Tom and Cheryl Herzog and is from Flint, Mich.

Carly Wilberding, a freshman AES student, works on a project for EGR 100 (Introduction to Engineering Design). This is now a required course for all freshman engineering students. Engineering 100 has two parts — a lecture that gives an overview of how engineers design products and processes, and a lab that offers hands-on projects geared toward team building. Wilberding worked with other team members to build a car out of healthy foods that also would roll down an incline. The course gave Wilberding a new perspective on what engineering is all about. “It’s not all book work,” says Wilberding. “It’s hands-on. The lab experiments are neat.”
Students are sharing in the fun of belonging to MSU’s Society of Applied Engineering Sciences (SAES). This student organization, founded at MSU, fosters interest and promotion of the AES major. There were numerous activities in the fall of 2008 and the group has plans to involve even more AES students during the spring semester.

There were 12 general membership meetings in 2008, and the group increased meeting attendance by 26 percent from fall 2007 to fall 2008. Membership in SAES increased by 72 percent during the same time period.

Congratulations to the 2008 SAES Executive Board on a job well done. The board included:
- Ross Scott, president
- Lisa Dabkowski, vice president
- Jessie Schmansky, treasurer
- Brad Zonca, administrative assistant
- Ross Ricelli, webmaster
- Kelsey Johnson and Jon Wiita, community involvement

The 2009 executive board has already swung into action. Members include:
- Jon Wiita, president
- Kelsey Johnson, vice president
- Brett Neumann, treasurer
- Luke Kosnik, administrative assistant
- Craig Maser, historian/webmaster
- Kevin Bowen, community involvement
- Jamie Clavette, fundraising

“This year is an exciting year for SAES,” say Jon Wiita, the 2009 president. “We have a new E-board that is really focused on continuing the great accomplishments and successes we have had in the past year. We plan to continue to raise participation, go on company tours, provide leadership development for the entire society, and continue to be a servant leader in our community.” The group’s new slogan is “Technically Sound – Business Bound.”

During the fall of 2008, SAES members worked on a Habitat for Humanity house in Williamston, Mich. There were 17 volunteers who worked over two weekends. Student members of the group also were actively involved in the fall 2008 Future Engineers Open House. The AES presentations had standing room only for three sessions.

More information about the group and how to join is available at www.msusaes.org. AES alumni and industry representatives are also invited to get involved with the organization.

Strong Leadership Guides Society of Applied Engineering Sciences

Homecoming Tailgate – October 4, 2008
E-mail Addresses Needed

The Outreach Committee of the AES Alumni Advisory Board wants to increase electronic communications with AES alumni. The committee, with help from Mary Mertz-Smith, assistant director for alumni relations, is working on getting current e-mail addresses for more AES alumni, so you will be able to get updates and more quickly learn about current AES activities.

In order to make this work successfully, current e-mail addresses are needed. Please complete the “Keeping in Touch” portion of the form at left and be sure to provide your e-mail address.

Improving communications is one of the goals of the AES program for 2009. Please be a part of this.