Lawrence Tech®

LAWRENCE TECHNOLOGICAL UNIVERSITY MAGAZINE | Winter 2016/17

New laboratories, new possibilities

Taubman Complex formally opens | A history of computing at Lawrence Tech
The man who built the Arsenal of Democracy | Football returning
Alumni News & Notes | Report to Investors | and more

Lawrence Tech®

LAWRENCE TECHNOLOGICAL UNIVERSITY MAGAZINE

ABOUT THIS ISSUE

Virinder K. Moudgil

Enjoy a trip back to campus with this issue of the *Lawrence Technological University Magazine*. It's been an eventful past few months here at LTU, and we're hoping you find the stories in these pages interesting and useful.

This issue kicks off with a look at the newest addition to the Lawrence Tech campus – the A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex. This 36,700-square-foot educational showplace offers plenty of new learning and research opportunities for students and faculty – and we give you a lab-by-lab tour.

Then, we take a look at the history of the computing revolution at Lawrence Tech, starting with the University's very first computer, installed in 1961. Those of you here in the intervening years surely recall advancing through the eras of punch cards, mainframes with tape drives, to client-server computing. And we honor the far-sightedness of prior LTU administrations that gave us one of the nation's first fiber-optic-connected campuses, a pioneering student laptop distribution program, and an equally unique wireless internet access system – more than 15 years ago!

Lawrence Tech has always been about anticipating the future while also preserving the best of the past. We examine the personal library of architectural giant Albert Kahn, meticulously catalogued and preserved in LTU's library. We're planning major Kahn events this year, so stay tuned.

Sibrina Collins, the inaugural director of LTU's Marburger STEM Center, talks about the exciting activities planned for Lawrence Tech's effort to extend our educational outreach in the science, technology, engineering, and mathematics (STEM) disciplines, along with architecture and design (also called STEAM) to younger and younger students, right down to elementary school.
And finally we examine the University's latest academic addition, a Bachelor of Science degree in nursing. The nursing shortage is real, in Michigan and across the nation, and LTU is doing its part to address this challenge.

The rest of this issue includes details on Lawrence Tech's latest high rankings by national polls, new plans to add football and to start playing games in 2018, stories about graduates, and our Report to Investors about the University's 2015–16 academic and financial year.

Go Blue Devils!

President and CEO

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On the cover: Renowned architectural photographer Nic Lehoux captured this image of the A. Alfred Taubman Engineering, Architecture, and Life Science Complex during a campus visit last fall.

For the latest about Lawrence Tech, visit **www.ltu.edu/news**

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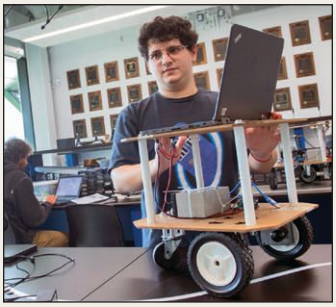

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Mateusz Gibiec, LTU Student Government executive vice president; President Virinder Moudgil; William Taubman; Robert Taubman; and Douglas Ebert, chair of LTU's Board of Trustees, officially cut the ribbon on the Taubman Complex.

It was standing room only at the Taubman Complex dedication.

Taubman Complex boosts LTU's research, academic

Hundreds of Lawrence Technological University supporters, students, alumni, faculty, and staff gathered on the final day of summer, September 21, to dedicate the A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex.

The $16.9 million, 36,700-square-foot building gives Lawrence Tech much-needed laboratory and collaboration spaces for the kinds of cross-disciplinary projects increasingly common in the world of engineering and science.

Included are new laboratories for robotics, biomechanics, embedded software, and more.

It's also home to the Marburger STEM Center, named after Richard Marburger, LTU president, 1977–93, who is still active in his sixth decade of service to the University, now as president emeritus. The Marburger STEM Center is the focal point of the University's expanded efforts to improve science, technology, engineering, and math education, as well as design, for students in grades K–12 through college. It was made possible by a $20 million gift from former Microsoft CEO Steve Ballmer, who took mathematics courses at LTU as a high schooler and later received an honorary LTU doctorate. His gift was the single largest in school history.

The building is named to honor A. Alfred Taubman (1924–2015), the pioneering shopping center developer, who studied architecture at Lawrence Tech in the 1940s. He provided the

lead gift of $11 million for the building and was a longtime supporter of the University. Taubman's sons, Robert and William, attended the dedication.

Robert Taubman addressed the audience, saying, "Our father was an amazing person who believed in constantly giving back to the community that supported him. He was a lifelong learner who believed deeply that education can change people's lives. And he had deep affinity for Lawrence Tech, because it allowed him to continue his education, usually at night, as he worked full time and raised his family.

"He considered himself first and foremost a planner and programmer of space. That all goes back to his training as an architect here at Lawrence Tech."

Taubman also said the company his father built, Taubman Co. LLC, has about a dozen Lawrence Tech alumni among its employees.

Moudgil noted that the new building was funded through the University's "Proud Heritage, Bold Future" capital campaign, which concluded June 30 and raised more than $125 million for facilities, programs, endowment, and scholarships.

The building was designed by Pritzker Prize-winning architect Thom Mayne, director of Morphosis, a California and New York-based architectural firm known for unique educational and civic buildings. The architect of record is Detroit-based Albert Kahn Associates. DeMaria Building Company of Detroit and Novi is the general contractor.

capabilities

The first floor of the Taubman Complex features a 60-foot-long, 20-foot-wide lab for the research of LTU's Eric G. Meyer, associate professor in biomedical engineering. It houses Meyer's research into biomechanics, orthopedic sports medicine, injury mechanisms, joint function, gait analysis, artificial limbs, and more. That floor also contains an embedded software laboratory and a robotics lab that is more than twice the size of its former home.

On the second floor is more robotics space for C.J. Chung, professor of mathematics and computer science and founder of Robofest, the global youth robotics competition. The second floor also has engineering research "studios" for the design and fabrication of student projects. These spaces are high bay rooms that are open to the top of the third floor – the ceiling is more than 20 feet above the floor.

The new robotics lab was a key stop on the Taubman Complex tour. Robotics instructor Jim Kerns (center) explains the science to Robert and William Taubman (second and third from right).

On the third floor is a biomedical engineering laboratory that blends the chemical and physical sciences. Nearby is a microfabrication "clean room," a lab for biology-based micro-electro-mechanical systems (MEMS), a bioinstrumentation lab, a biosensor lab, and cell culture and cell biology labs. The biosensors being worked on in the lab range from cancer detection to food-borne illness.

LTU President Virinder Moudgil presents Robert (left) and William Taubman with framed photographs of the Taubman Complex – a picture taken at night, as their father, legendary developer A. Alfred Taubman, might have seen it, back when he was an evening student at Lawrence Tech.

Taubman Complex CONTINUED

The third floor also houses offices of the Marburger STEM Center, which is led by Sibrina Collins, who started at the University July 1. (See *LTU Magazine*, fall 2016.)

Educational areas supported by the Marburger STEM Center include robotics; software engineering; modeling, simulation, and visualization; nanotechnology; medical simulation and informatics; computer-assisted molecular modeling; synthetic biology; "green" chemistry; and design thinking. The center also supports academic programming in sustainable design, energy systems, architectural engineering, game art and design, media communication, transportation and industrial design, digital humanities, digital marketing, and mathematics.

Visitors check out the refreshments and the high technology inside the Taubman Complex.

The north end of the new building features an outdoor atrium on the first and second floors. And on the west side of the building is a staircase enclosed by a three-story-tall matte gray "orb" made of carbon-reinforced fiber. Composites industry officials say it's a groundbreaking use of carbon-reinforced fiber as a structural material. The bottom of the orb floats just above a one-foot-deep reflecting pool.

The new building was designed for LEED certification and meets the most recent building energy codes. Joe Veryser, Lawrence Tech's university architect, said that was "particularly challenging given all of the exhaust air coming out of the laboratories on the third floor. So, there is a huge heat recovery system in the building."

The building's heating, ventilation, air conditioning, and energy controls systems are highly advanced, with four digital HVAC control centers in the building – required because its heating and cooling are run by no less than 42 heat pumps.

The building also features occupancy sensors that turn off not only the lights but also half the electrical outlets if a room is vacant. (Those interruptible outlets are color coded so that building users don't plug a clock – or equipment running a laboratory experiment – into them.)

Also, the building is designed to capture all rainwater falling on its roof and feed it into an underground storage tank, where it will be used for lawn watering. The restrooms also include showers, intended to encourage employees to exercise during the work day and consider commuting by bicycle. ☐*MR*

The Taubman brothers and LTU Board of Trustees Chair Douglas Ebert check out the latest in video technology at the Taubman Complex.

New laboratories… *new possibilities*

The labs of the new Taubman Complex will produce innovations to improve our world

Longer, healthier human lives. Better buildings. A cleaner planet. Engineered devices and software that will surprise and delight.

From the ground-floor robotics lab to the top-floor engineering labs, that's the aim of Lawrence Technological University's new A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex.

Robotics studio

The spaces are shared by Lawrence Tech's Colleges of Architecture and Design, Arts and Sciences, and Engineering. And they're intended to foster the kind of interdisciplinary research that is increasingly common in industry.

Let's see what's inside… laboratory by laboratory.

New laboratories... CONTINUED

Up on the second floor is another robotics space, where Professor of Mathematics and Computer Science C.J. Chung (right) works with students and LTU's world championship Intelligent Ground Vehicle Competition teams.

Cell culture laboratory

This lab on the third floor at the end of the Taubman Complex nearest the Science Building features "lots of equipment to keep cells happy," says Jeffrey Morissette, chair of the Department of Natural Sciences in LTU's College of Arts and Sciences. "This is the place where our senior capstone students in molecular and cell biology and chemical biology will do their work – moving DNA and genes around." The lab features incubators at blood temperature (37 degrees Celsius, 98 degrees Fahrenheit) and lots of hooded areas to prevent the cross-contamination of cell cultures.

Cell biology laboratory

Next door, this multipurpose biology lab accommodates chemical and cell experiments. The hoods are heavier here, because of the chemical reactions that are performed. A variety of classes in several disciplines share the space.

Biomaterials/histology laboratory

The third laboratory in this three-lab interconnected cluster is outfitted for work on living tissues. Histology is the study of the microscopic structure of tissues, so it's no surprise there are plenty of microscopes here. Students in a variety of disciplines learn about how living tissue is constructed and operates.

BioMEMS laboratory

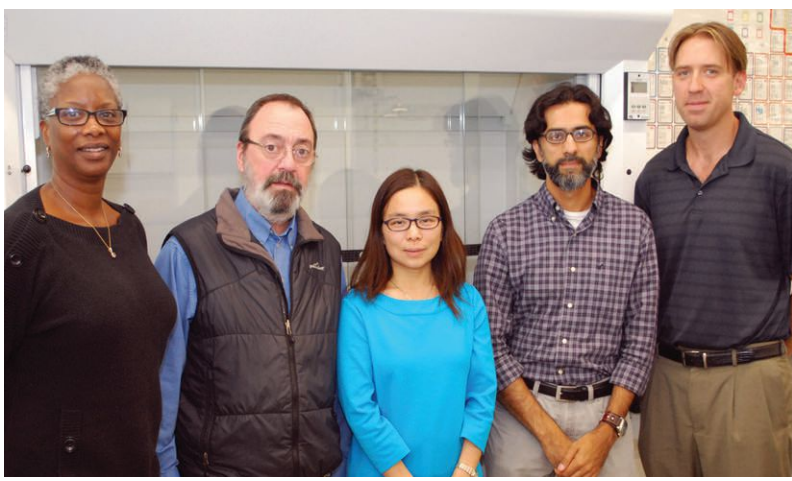
Down the hall from these labs, Lawrence Tech students research and develop miniaturized medical devices. MEMS stands for micro-electro-mechanical systems. Included are "lab on a chip" devices that offer quick, cheap analysis of biological samples. These miniaturized "labs" operate with much smaller samples than traditional laboratory analysis requires, offer quicker results, and are disposable, portable, and cheap. The bioMEMS laboratory also includes a cleanroom for the fabrication of bioMEMS products.

Bioinstrumentation laboratory

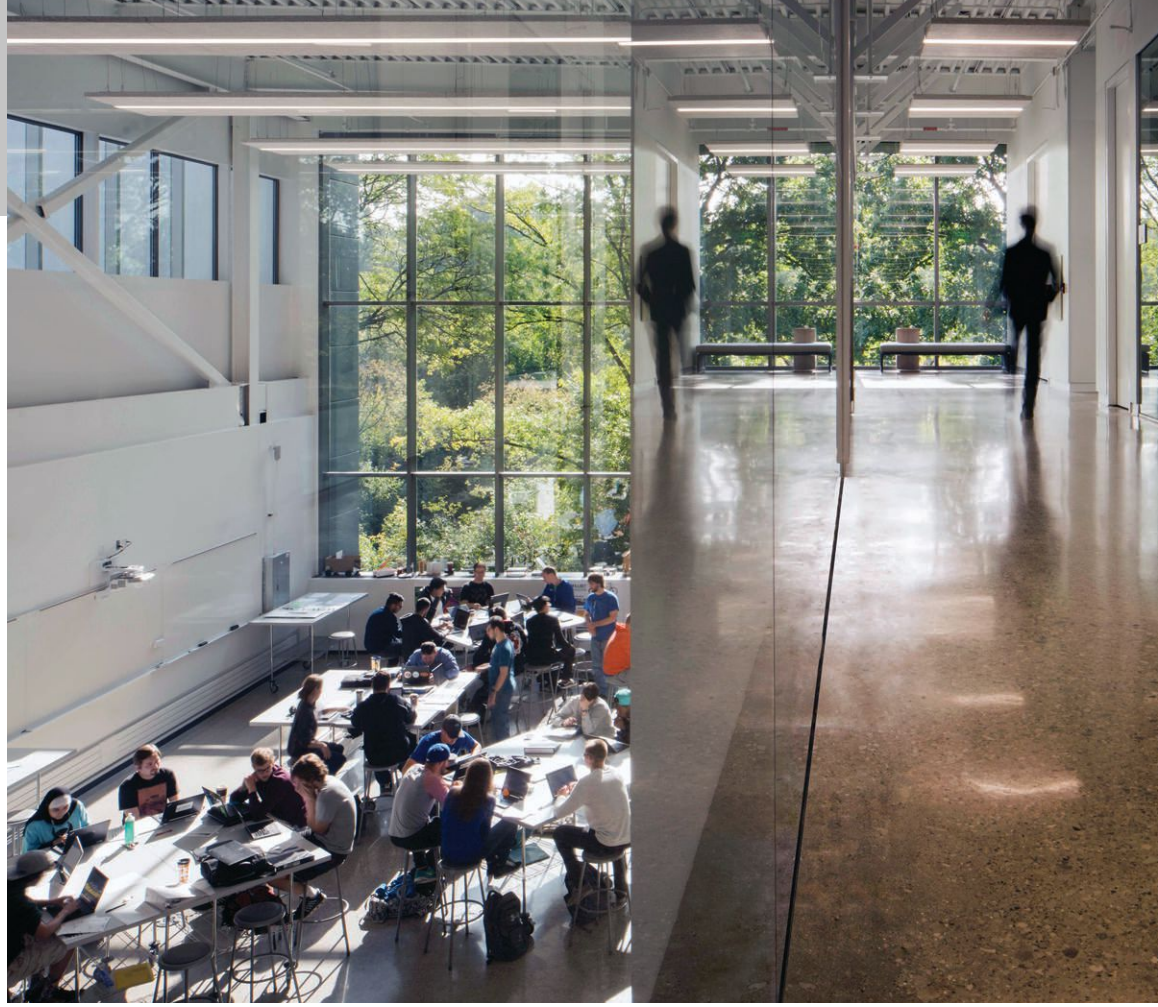
Down the hall of the Taubman Complex's third floor is this large laboratory, with seating and bench space for more than 30 students. LTU's anatomy and physiology classes are taught here. Students conduct research into bioelectric signals – heart signals, brain waves, muscle activity markers, nerve conduction, respiratory and pulmonary function indicators, and more. "We'll be developing a course on wearable health devices in this lab," said Jerry LeCarpentier, director of LTU's biomedical engineering program. This room also features a spacious, adjoining biosensors laboratory for the fabrication of sensors.

Experimental biomechanics laboratory

We're on the first floor now. Yes, that's a batting cage along one wall. And a set of golf clubs along another. This large, 60-foot-long, 24-foot-wide space houses the research of Eric



LTU's biomedical engineering staff and faculty in the new histology laboratory. Left to right: Bridgett Bailiff, administrative assistant; Gerald LeCarpentier, department chair; and assistant professors Yawen Li, Mansoor Nasir, and Eric Meyer.



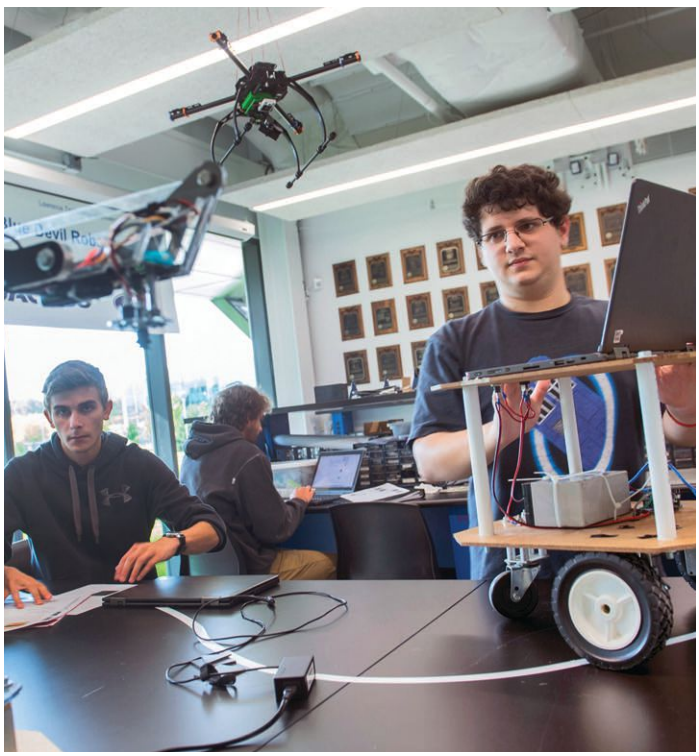
Engineering studio: Flexible, modular engineering studios are on the second floor of the Taubman Complex. The high bay space stretches upward to the ceiling of the third floor, allowing a wide variety of projects and construction activities to take place.

Meyer, assistant professor of biomedical engineering. It's equipped with infrared motion detection cameras overhead and force sensors in the floor. Meyer uses this gear to study injury mechanisms, both during sports competition and in everyday life. He researches everything from athletic apparel to sports equipment to gait – how one walks and runs – in an effort to keep athletes in better shape, whether professionals or weekend duffers, and to keep all of us on our feet longer.

Robotics engineering laboratory

Across the hallway from biomechanics is LTU's large new robotics lab, another 60-by-24-foot space. "It's huge," said Jim Kerns, college instructor in robotics. "We were actually fortunate at the old lab that the program was new, and we were still building enrollment. Now we have more students – and

A hospital-quality ultrasound machine is one of the key pieces of equipment in LTU's new biomed engineering lab.

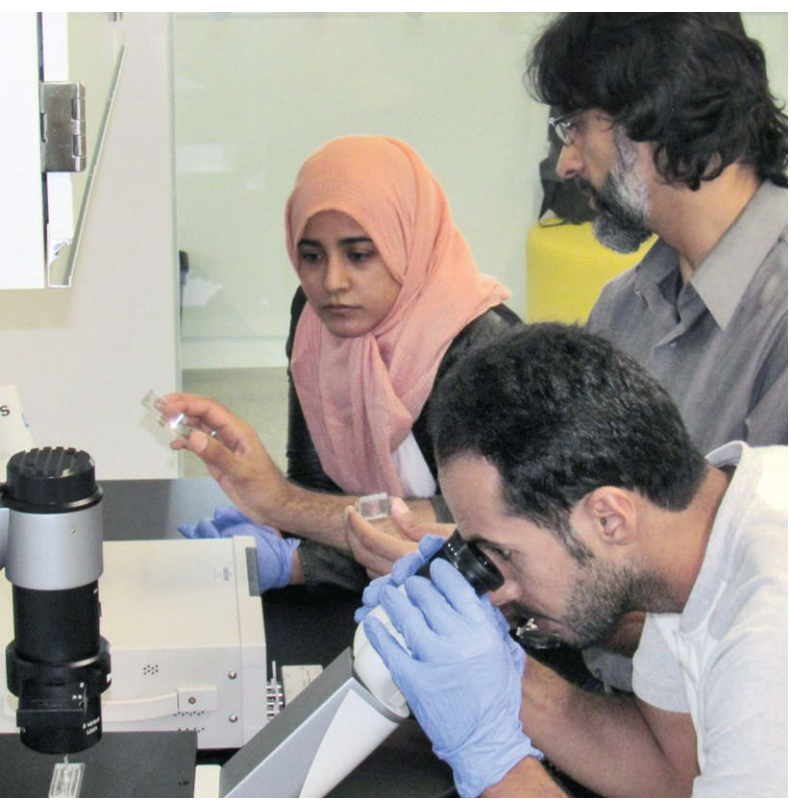


Students at work in the new robotics engineering laboratory.

the space to fit them in." The robotics engineering lab features student storage lockers, a track for autonomous vehicles, and precise control of room lighting – which is important when you're teaching students about machine vision. There are also two separate small rooms for robot fabrication, equipped with a Gigabot 3D printer, a CNC lathe, and other tools.

Kerns and other LTU faculty members say the future is bright for graduates in all of the disciplines that are represented in the Taubman Complex. LTU robotics engineers are being hired into the auto industry at a rapid clip. Morissette said biomechanical engineering graduates are too. He added: "In the sciences, we see our students go three different directions, and it's about a third for each. First, some go to professional schools – medical, pharmacy, or graduate school in other health professions. Others become researchers and move on to graduate school. The other third goes into industry as medical and biological technicians at places like hospital clinics." ☐*MR*

"LTU faculty members say the future is bright for graduates in all of the disciplines that are represented in the Taubman Complex."



Under the watchful eye of expert professors, LTU students use the latest in laboratory equipment.

What's the difference between regular software and embedded software? *Richard Chase says it's all a matter of level.*

Richard Chase

High-level software – say, a word-processing program – transfers keystrokes to symbols on the computer screen. But embedded software controls the hardware that is the guts of any computer – controlling how a processor talks to memory, how a joystick connects to a microcontroller, how an image is processed.

Write high-level software like a cute app and you may have a hit, although you probably won't, since millions of apps are being written. But write embedded software and you control the technology itself.

That's why Lawrence Tech added an embedded software laboratory to the Taubman Complex. It's a brand new playground for Richard Chase, assistant professor of electrical and computer engineering, and his students in LTU's embedded software program.

"You can do a lot of cool things with embedded software, like integrate sensors and manage human-machine interface," he said.

And Chase said he has several new tools in the new lab – most importantly, the Canalyzer, an industry-standard tool to monitor the CAN bus networks that are inside vehicles. "That network controls how the headlights talk to switches on your dashboard, how the transmission talks to the body control module."

Chase said there's strong demand for embedded software engineers in the automotive and other industries.

"These graduates will get picked up by car companies, or anything from appliance manufacturers to space exploration," he said. "Industry wants these students a lot. Embedded software can be used to control a washing machine, or control an antenna on a spaceship. The software running the Mars rovers is all embedded."

Chase joined LTU in August 2015 from TARDEC, the U.S. Army's Tank-Automotive Research, Development and Engineering Command, where he was a research scientist in microelectronics and embedded systems. He has bachelor's and PhD degrees from Wayne State University and a master's degree from the University of Michigan, all in electrical engineering. He said he moved to LTU for the challenge of building a new program from the ground up.

Chase said high school students interested in studying embedded software in college should pick up all the programming and hardware experience they can.

From a few bits to virtual reality

Lawrence Tech at the forefront of educational computing technology since the '60s

The year was 1961. John F. Kennedy was inaugurated as the 35th president of the United States. Soviet cosmonaut Yuri Gagarin became the first human in space. Motown Records signed The Supremes to their first recording contract. Elvis Presley crooned "Are You Lonesome Tonight?" over the airwaves, and "101 Dalmatians" ruled the box office. A gallon of gas cost 27 cents.

And Lawrence Technological University got its first computer.

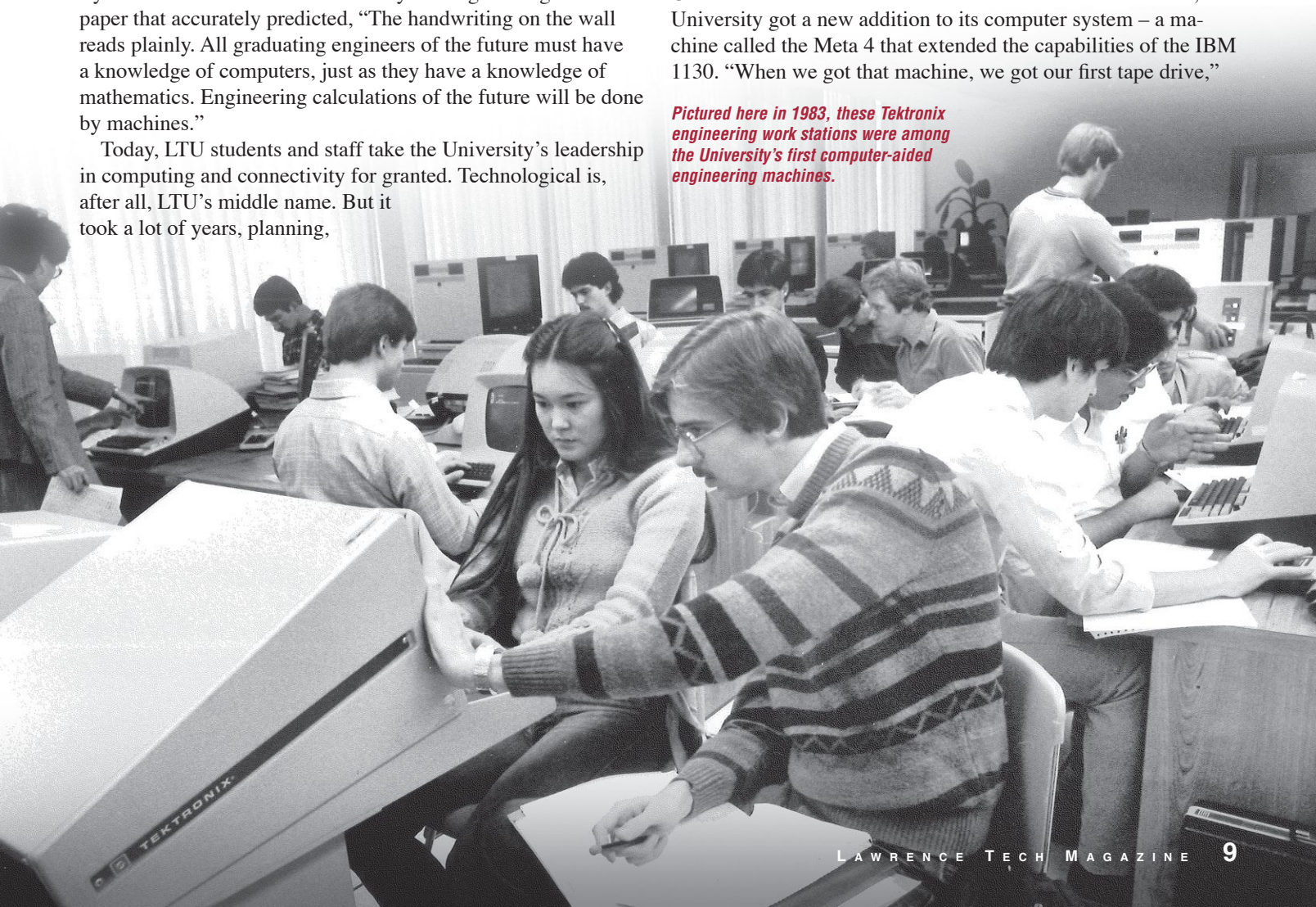
The Jan. 19, 1961, *Tech News* student newspaper reported that a Burroughs Model E102 had been delivered during the first week of the new year, and a course would be added in computer programming using the new machine. The size of an automobile, the computer had a grand total of 2,500 bits of capacity.

"It is hoped that the computer will permanently become an integral part of the engineering program," the story said. Mordica Ryan, dean of academic affairs, reported plans to launch a short non-credit course for seniors so that before graduating they were at least fundamentally familiar with a computer's capabilities. Ryan cited a recent American Society for Engineering Education paper that accurately predicted, "The handwriting on the wall reads plainly. All graduating engineers of the future must have a knowledge of computers, just as they have a knowledge of mathematics. Engineering calculations of the future will be done by machines."

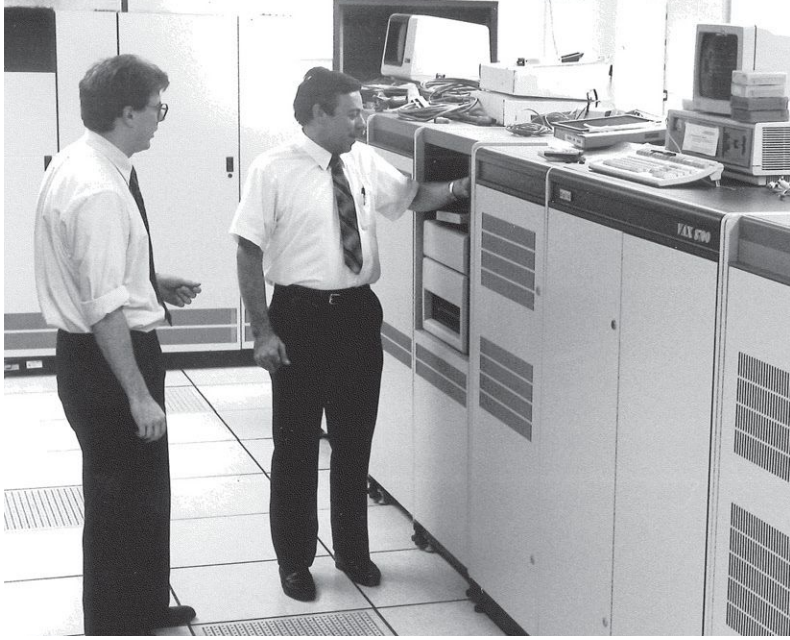
Today, LTU students and staff take the University's leadership in computing and connectivity for granted. Technological is, after all, LTU's middle name. But it took a lot of years, planning, toil, philanthropy, and foresight to get the campus from 2,500 bits of data capacity to wireless connectivity that tops 100 megabits per second.

John Grden, BSEE'77, started at the University in the fall of 1970 as an electrical engineering student and became a full-time employee in 1973. The first computer he remembers was an IBM 1130. "That machine rented for $1,000 a month, and that was low cost for IBM," he said. "It ran punch cards in batches, and its primary language was Fortran." At least the memory was an upgrade from the 1961 machine – all the way up to 16K. The University used this basic, workhorse machine for registration, and the printing of class rolls, grade sheets, and report cards, along with financial functions like accounts payable records and payroll. "Everything was keyed in onto punch cards and run as a batch," Grden said. "What we think of as a hard drive didn't even exist."

In 1973, the University split off its Computer Center from the Office of the Registrar. And in 1974, the University Computer Center was moved to its current location. In the fall of 1974, the University got a new addition to its computer system – a machine called the Meta 4 that extended the capabilities of the IBM 1130. "When we got that machine, we got our first tape drive,"



Pictured here in 1983, these Tektronix engineering work stations were among the University's first computer-aided engineering machines.



Grden said. Not to mention eight primitive computer terminals – essentially typewriters on which the computer could type back the results of programs.

In the summer of 1982, the University upgraded to Digital Equipment Corp. VAX machines, workhorse computers introduced in 1977 that were popular through the 1980s. LTU President Emeritus Richard Marburger recalls the excitement when the first far more capable machine arrived. "That was the first machine we had that had the capability of getting the whole campus community on email, so we could all communicate," Marburger said. "Email was the great advantage of that machine."

Also during that time, Marburger said, the University used the copper wires between buildings that had been abandoned by the Bell System during its antitrust breakup to provide data connectivity between campus buildings. And the University installed a lead-acid battery stack to create an uninterruptible power supply to its computer systems.

Steve Heleski, senior systems analyst in IT service delivery at LTU, remembers starting as a student in 1982 and working on the Digital VAX system using punch cards. One assignment stuck in his memory – calculating wind chill values at different wind speeds – with the results coming back on that old-fashioned green-and-white striped computer paper.

The first video monitors would turn up on LTU's campus in Heleski's senior year. Students could input their programs and run their calculations on monochrome TV screens and get their work back a lot faster. Heleski would later work as a programmer for the University from 1986 to 1999 and return to the University Computer Center in 2001.

Despite the primitiveness of the machines, LTU was a pioneer in connecting its computers to the outside world. As early as the 1970s, Grden said, Lawrence Tech's IBM 1130 was able to communicate over a phone line to Wayne State University's bigger IBM machine. "It was called remote job entry," he said. "You'd get your output back on a printer."

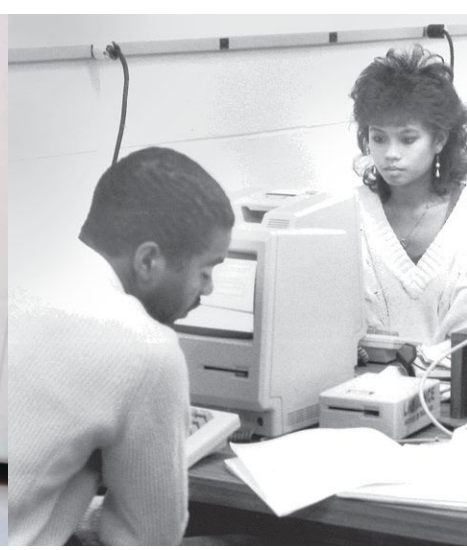
That communication continued with both Wayne State and the University of Michigan, Grden said, after the Computer Center's move and the acquisition of the Digital Equipment machines.

And so it wasn't a big leap in the early 1980s for Lawrence Tech to become one of the earliest adopters of BITNET, a cooperative U.S. university computer network founded in 1981 by computer scientists at the City University of New York and Yale University. (According to Wikipedia, the name is an acronym for "Because It's There Network.") Lawrence Tech faculty got email accounts for the first time and could communicate electronically with their peers at other schools. The system also included people important to LTU who were off-campus – such as leadership of the Engineering Society of Detroit and LTU alumnus and board member Ed Donley, who was then chairman and CEO of Air Products and Chemicals in Allentown, Pa.

Through the '80s, LTU would add computer labs featuring Apple Mac and IBM 286 and 486 equipment, alongside the venerable VAX machines.

The University also added its first computer-aided design (CAD) lab in 1982, a donated unit worth $230,000 from General Motors Corp.'s Truck and Coach Division. It had all of three video terminals and a "digitizer-plotter," better known as a printer. That same summer, copper connections were made between the Science and Architecture buildings for terminals connected

In this photo, dated 1986, students are still using dot matrix printers and large floppy drives.



In this April 1999 photo, students work on PCs that are primitive by today's standards.

John Grden, right, with the University's longtime workhorse mainframe, a Digital Equipment Corp. VAX machine. The photo is dated "circa 1985."

"Now you save all your assignments and homework to the cloud and you can get them anywhere."

Some of the University's earliest PCs are shown in this photo, also dated "circa 1985."

to those VAX computers. Another CAD lab was added in the former registrar's office space in the Engineering Building. By 1984, it boasted 10 work stations, each with a 19-inch color monitor, and LTU was offering three computer-aided engineering courses. And by 1985, LTU's library was connected to a global database of books and other materials. (The *LTU Magazine* article about the advance even paused to explain what a "database" was – "a collection of information on the same subject … filed into a computer system and is accessible by using a computer terminal.") The service wasn't cheap – $10 to $15 a search, paid by students, which is $22 to $33 in today's dollars! The library also began using the University's VAX computer to catalog its own collection.

LTU's computer connections to the outside world also got faster in the 1980s, when the University connected to Merit Network Inc. – the pioneering nonprofit connectivity provider established in 1966 by Michigan State University, the University of Michigan, and Wayne State University. When that happened, LTU no longer had to pay stiff phone charges – upward of $1,500 a month, Grden recalls – in order to share data with the outside world. "The Merit connection let us be up all the time and eliminate the leased line cost," he said. "And we got more capacity, a T1."

The gold standard of connections at the time, a T1 passed its data along at a then-blistering 1.5 megabits per second. Accounts vary depending on the source, but some longtime LTU computer staffers put the Merit connection as early as 1982, while others place it as late as 1988. Merit, for its part, says it has no record of any formal relationship with LTU before the University became a full Merit member in 1994.

Lawrence Tech would take another big step in IT leadership in the late '80s. Thanks to a connection through Ed Donley, Digital Equipment CEO and cofounder Kenneth Olsen visited campus. Grden said that while Olsen was impressed with Lawrence Tech's computer technology, he told campus officials they should give up on connecting buildings with copper wires, and in the future, connect their buildings only with fiber optics. Well, fiber optic lines were expensive, so Digital Equipment came through with a grant – part of which was used to dig a fiber optic data connection from the Science Building to the Engineering Building.

Within a few years, all the buildings on campus were connected with fiber optics in a network ring, so a cut in one place didn't kill the whole system. Thanks to the foresight of Marburger and Grden, those lines are still being used today – lines that run through steel conduit big enough to handle years of further expansion. All that's changed is the data transmission and reception equipment, which keeps getting faster and more sophisticated, on either end of the fiber optics.

By 1990, LTU was operating a cluster of DEC VAX machines that could accommodate 500 users at once. It operated at a then-speedy 7 million instructions per second with storage of 20 gigabytes. (That was big for its day, but today's typical PCs run 3 billion instructions a second and offer storage of 1 terabyte, or 1,000 gigabytes.) Off-campus access was available by calling in to one of 40 available modem phone lines.

Then the internet came and changed everything. Starting with Tim Berners-Lee's 1989–90 invention of the software behind the World Wide Web – what we know today as the commercial internet – and the decision to put it into the public domain, royalty-free, in 1993 – the

This July 2001 photo shows students enjoying LTU's state-first wireless internet access throughout campus.

online medium exploded as a popular place for news, entertainment, and the exchange of business information. Documents that were once sent by everything from mail to bicycle courier to fax machine began being exchanged online.

Rising alongside the web was computing power – which drove virtually all engineering and design to the virtual world. Suddenly, hundreds of possible versions of parts for products could be designed, compared, and tested, for everything from their beauty to their durability, almost instantly. So it was no longer "computer-aided engineering" – it was just how engineering was done. And art, design, and architecture, too.

Not only that, but internet access was no longer something limited to a computer center. Technological advances in wireless access continued to drive down the price and drive up the speed of internet access over short-range radio – today known as WiFi.

LTU saw this coming. In August 2000, Lawrence Tech became one of the nation's first universities to distribute high-end laptop computers to all incoming students. The laptops, then as now, were loaded with software that can handle advanced engineering tasks, multimedia simulations, and large database analyses. (LTU's Help Desk now estimates the value of that software, if purchased off the shelf by an individual, at up to $116,000.) A laptop isn't much good without connectivity, so LTU began a project to offer free wireless everywhere on campus. And by July 2001, with a $600,000 investment, the University provided wireless internet in all academic buildings, complete with full library access.

Today, the Edward Donley Computer Center is home to racks of servers – beefed-up PCs that do the lion's share of computing on campus. But the number of racks, Heleski noted, is falling "because the technology has gotten so good."

Marc Hoedeman, senior network operations engineer in IT service delivery, came to LTU as a student in 1993 and became an employee in 1995. He says that when he gives tours of the Donley Computer Center, he tells people that when it opened, "this room was full of refrigerator-sized boxes that had less capacity than your smartphone." (Hoedeman also designed the first version of LTU's website, which went live in late 1997.)

One famous computer problem LTU avoided completely? The much-feared Y2K bug. Early computer coders in the 20th century saved space in date-dependent applications by just using the last two numbers of a year – say, 79 for 1979 or 90 for 1990. Many computer experts worried that systems would crash on Jan. 1, 2000, when the year rolled over to 00 and programs started putting the end of operations before their beginnings. Coders worked furiously in the late 1990s to convert two-digit year designations to four digits. But Marburger said LTU coders always had enough foresight to use four digits for the year, right from the beginning of LTU's systems.

Today, the University uses Google Mail to handle its email and Google Drive to handle much of its document storage. "It's a wonderful system," Heleski said. "Used to be, if you weren't on campus you couldn't access your information. Now you save all your assignments and homework to the cloud and you can get them anywhere."

This July 2001 shows the fruits of LTU's pioneering every-student-gets-a-laptop program.

Heleski helped implement the University's BannerWeb system. Today, BannerWeb runs functions like recruitment, admissions, registration, financial aid, finance, and human resources for the University. "The big bonus with Banner is that you can check on your information from anywhere on the web," he said. "You don't have to come to the University or call the registrar's office to check on a class."

The University's connections continue to get faster and faster. LTU CIO Tim Chavis said that when he arrived on campus in 2009, "We had a 30-megabit connection for the entire campus. That's basically what most people have in their houses now." Today, the University has a 10-gigabit connection to Merit. And every day, Chavis said, about 2,200 laptops, phones, tablets, gaming consoles, and other devices connect to the LTU data network.

"Each student has six or seven devices," Chavis said. "Games, phones, smart TVs. And if you happen to be talking about computer science majors, you'll have servers and a whole lot of other stuff going on."

The peak time for connectivity on campus, Chavis said, is between 10 p.m. and 2 a.m. And, he said, "Only a very small part of our traffic has anything to do with LTU schoolwork or operations."

Chavis said improvements to the campus networks are in the works that will boost wireless speeds well past 100 megabits a second.

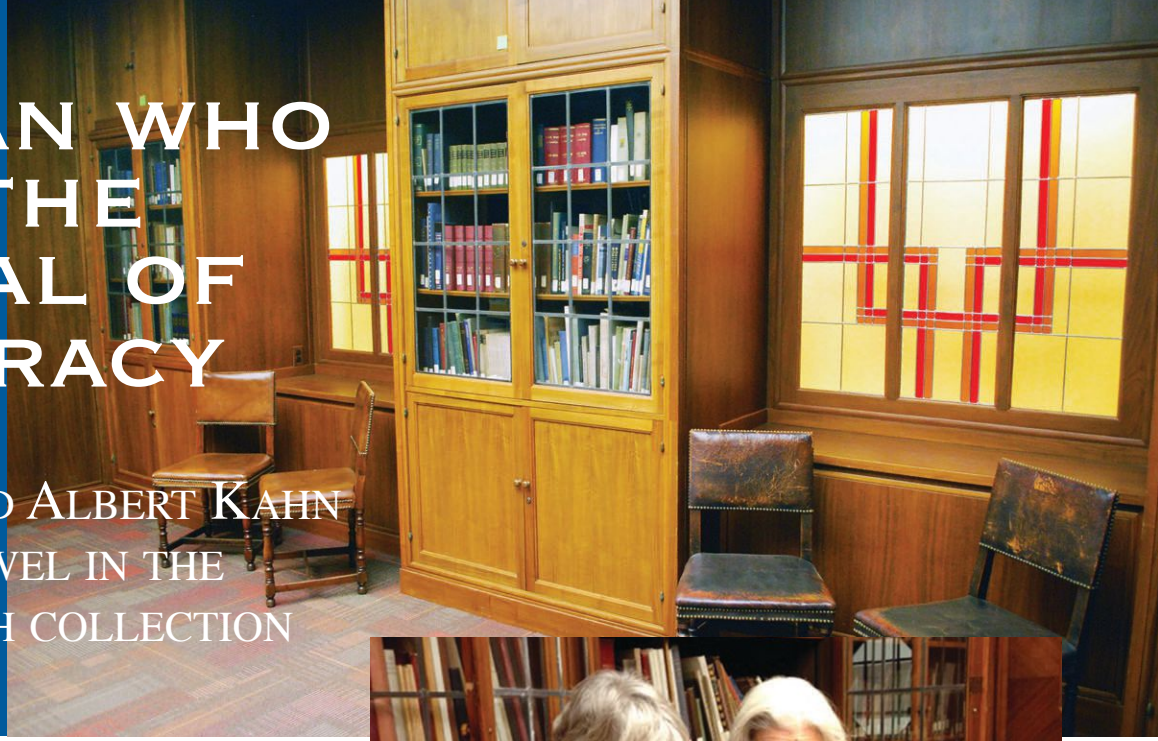
And that's important to the University's future. "It's a really important student satisfaction issue," Chavis said. "The number one thing young people want is fast access."

Marburger credited Grden, retired LTU computer science professor Tom Lackey, and former LTU Registrar Ann Liska for giving Lawrence Tech the foundation for today's computer system success.

"This is so important, because it illustrates the point that we have always had people on campus who are superbly capable," Marburger said. ☐*MR*

The man who built the Arsenal of Democracy

Reconstructed Albert Kahn library is a jewel in the Lawrence Tech collection



A visitor wandering behind the book and journal stacks in Lawrence Technological University's library will come across several inlaid wooden doors.

They look considerably older than the rest of the library, which opened in 1982.

That's because they are.

Those doors open to rooms that invite the visitor back in time to a long-gone era, a younger America, when the smoke of industry created sooty skylines pierced by Art Deco buildings reminiscent of The Wizard of Oz's Emerald City.

This was the heyday of the legendary architect Albert Kahn, 1869–1942, who designed much of commercial and industrial Detroit – not to mention much of the rest of the industrial Midwest, including many of the factories that would become the Arsenal of Democracy and help the Allies win World War II. Kahn's iconic Fisher Building has been hailed as the state's largest art object. The General Motors office building, Ford's Highland Park and Rouge manufacturing facilities, and high-end residences like Edsel Ford's grand mansion set new standards. And in LTU's two beautiful walnut-paneled rooms, whose materials date back as far as the late 19th century, Kahn's heyday lives on.

The University's Kahn Collection came about more or less by chance, in the late 1970s, when Karl Greimel, then LTU's dean of architecture, visited Albert Kahn Associates' Detroit headquarters. The architectural firm was remodeling its offices and needed to find a home for some of its historic materials. At that point, LTU was building a new library as part of the construction of the Buell Management Building.

> *"They offered to give us their entire library, both books and cabinets, enabling us to re-create Kahn's library in a new space."*

"They offered to give us their entire library, both books and cabinets, enabling us to re-create Kahn's library in a new space," LTU Library Director Gary Cocozzoli said. "They brought it to us in pieces, and our Department of Campus Facilities refinished the wood and reconstructed it here."

Historian Grace Shackman (left) and Carol Rose Kahn, Albert's granddaughter, examining a book in the Kahn library at LTU.

The Kahn rooms opened in 1983. The materials, Cocozzoli said, "are on permanent loan, which means we keep the collection intact – not that we would ever sell or dispose of any of it."

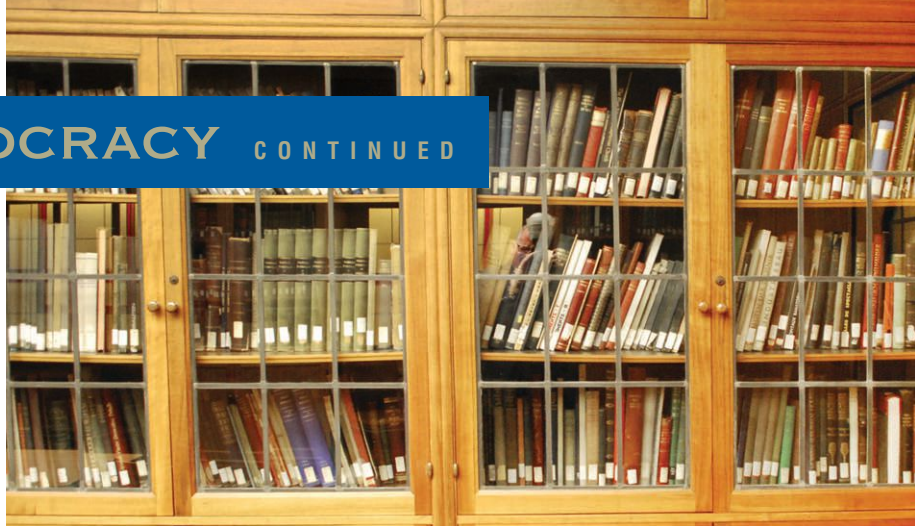
The collection consists of Kahn's reconstructed library, complete with walnut paneling, built-in bookcases, shelves, and about 3,000 titles. It shows Kahn was every bit as widely read and eclectic in taste as his designs would suggest.

"This is Kahn's personal, working library," Cocozzoli said. "Here you'll find the things that were his sources of inspiration. He was a world traveler and it shows."

The library includes everything from the auction book for the estate of actor Henry Fonda's first wife to books on educational philosophy to books on gardens and landscaping. And, of course, the majority of the books he collected are on art and architecture.

According to Cathy Phillips, reference librarian and head of the University's Archival Task Force, LTU staff has unearthed plenty of previously uncatalogued items in the collection.

Arsenal of Democracy continued



"We've been discovering gems," she said. Adrienne Aluzzo, LTU digital projects librarian, has had to catalog those items one by one, since they were not yet represented in the worldwide database of books.

There are simply amazing period pieces in the collection, like a set of broadside Soviet journals that show a Kahn-designed tractor factory in Chelyabinsk in 1930. The glowing prose, praising the glories of communism, and photographs of earnest factory workers and farmers fill the pages. These factories would soon play a part in the Soviet resistance to the Axis forces, its own version of Detroit's Arsenal.

Lawrence Tech is one of three places in the U.S. with major Kahn collections. Many of Kahn's personal papers and letters now reside in the Smithsonian Institution in Washington, D.C., while other personal papers, correspondence, publications, architectural drawings, and photographs are held at the University of Michigan's Bentley Historical Library.

But it is at Lawrence Tech where his personal library rests, where one can imagine Kahn, seeking inspiration, plucking a book or two off the shelf and sitting down at a big conference table to recharge his creative batteries.

Lawrence Tech received a grant from the National Endowment for the Humanities to assist in the organization and conservation of the materials and is hoping for more grant funding. Librarian Cynthia Simpson, co-administrator of the NEH grant, has been assisted by Albert Kahn's granddaughter, Carol Rose Kahn, who provided unique perspective on this important collection.

The University is also organizing an exhibition exploring Albert Kahn's genius and legacy. LTU, along with area partner institutions, has formed the Albert Kahn Research Coalition and plans to offer annual programming honoring the legacy of Albert Kahn.

And Albert Kahn Associates continues its relationship with Lawrence Tech right up to the present day. A number of alumni work for the firm, which was architect of record for the spectacular new A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex. ☐*MR*

The Kahn library is a window into the mind of one of America's greatest architects.

What is the Marburger STEM Center*?*

A question and answer session with Executive Director Sibrina Nichelle Collins

STEM is often a buzzword today, but STEM has been in the DNA of LTU since the University was established in 1932, right next to Henry Ford's Model T factory. The Marburger STEM Center is essentially the intellectual home or focal point of all of the STE(A)M initiatives and programs taking place on the LTU campus. The "A" represents the fields of art and design.

What is the purpose of the STEM Center?

The center provides support and much needed space (laboratories, studios, and collaborative, flexible learning spaces) for faculty, students, and staff and also focuses on K–12 outreach programming. Central to our work is to expose young people to these fields, get them to understand how STEM shapes their everyday experiences, and teaching these subjects in interesting and exciting ways.

What programs at the K–12 level does LTU have now to encourage students to consider STEM education and careers?

We have many exciting programs to encourage students at the K–12 level. Extreme Science Saturdays are fun, hands-on programs led by LTU faculty. This academic year, we have included virtual reality, augmented reality, and mathematics.

We also have the Marburger STEM Center Summer Camps, which are really important for the recruitment of students to LTU. Nearly 50 percent of students who participate in the summer camps, which are also led by our faculty, enroll here at LTU. We offer some 25 camps that cover a variety of topics, including game art, industrial design, business and entrepreneurship, building an android app, and molecules and medicine. Robofest is an international outreach program and competition that teaches students in the junior grades 5–8, senior grades 9–12, and college students to program robots. Since 1999 more than 20,000 students from several countries and states have participated in Robofest.

We also have a new partnership with the Detroit Public Schools Community District entitled the Blue Devils Scholars Program, which focuses on enhancing the STE(A)M curriculum in Detroit schools. When students graduate from high school, they will graduate with a diploma and a STE(A)M certificate representing 12–15 college credits that they can use at LTU toward a STE(A)M degree, with scholarship support.

What additional programs would you like to see added? When?

We are exploring the possibility of establishing a Marburger STEM Ambassadors program in which current LTU students support K–12 teachers in the classroom to deliver cutting-edge and innovative STE(A)M curriculum. Furthermore, we have also established the Marburger STEM Seminar Series, which not only celebrates the legacy of Dr. Richard Marburger, LTU's fourth president, but brings to campus leaders in STE(A)M education and cutting-edge research.

What attracted you to LTU?

This position is my dream and allows me to focus on the promotion of STE(A)M education and diversity in STE(A)M, which are my passions. My previous experiences as a chemistry faculty member, administrator, and museum executive have played an important role for me as the first executive director.

What's been your impression of LTU in the time you've been here?

I love being at a small college, where the faculty, staff, and students really get to know each other and support each other. This is really a family, and I am thrilled to be a member of the LTU family.

What would you like the world to know about LTU that it doesn't now know?

LTU is one of the premier STEM and design-focused institutions in the nation. We are Michigan's best-kept secret.

What is it about STEM that gets a bad rap?

I don't necessarily know if STEM gets a bad rap, but I do think for some youth a STEM career just does not seem to be as exciting as being an entertainer, celebrity, or professional athlete. As educators, we have to do a better job of showing young people that STEM can be just as exciting and rewarding. Some young people think you have to be a genius to pursue a successful STEM career pathway, which is completely untrue.

We've heard a lot of predictions about a STEM worker shortage. Do you agree? What fields does your experience tell you will be most in demand? How can LTU help ease that shortage?

There is a STEM worker shortage. I also think we have to do a better job of encouraging more women and people of color to enter STEM fields. The Blue Devil Scholars Program is a great example of helping to ease the shortage. The fields that are in highest demand with high salaries are computer science, information technology, civil engineering, and mechanical engineering. ☐*MR*

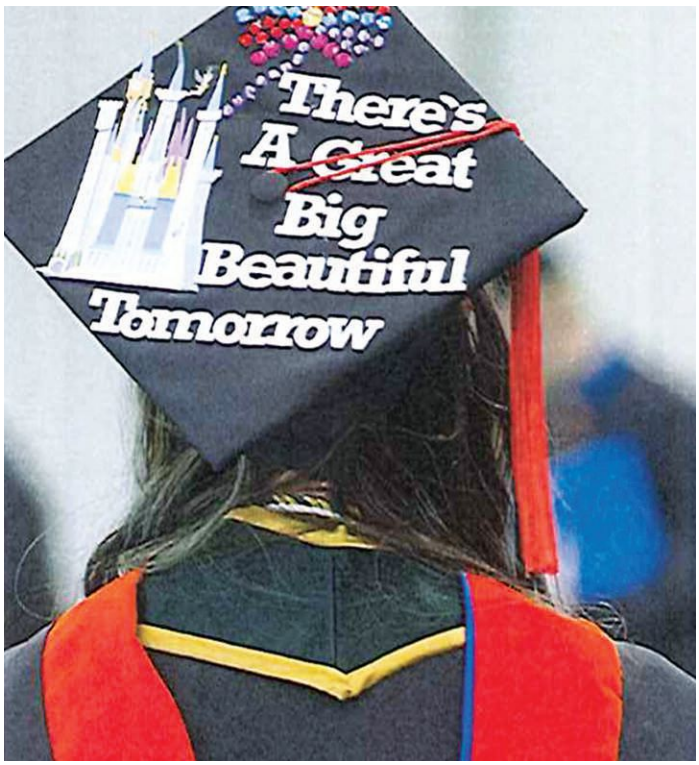
Salaries of grads are among best, says *Wall Street Journal*

Lawrence Technological University ranks in the top four of Michigan colleges and universities in the average salaries of its graduates 10 years after completing their education, according to a new ranking of more than 1,000 colleges and universities published by the *Wall Street Journal* and *Times Higher Education*, the United Kingdom's top publication on higher education.

The rankings, based on responses from more than 100,000 college students and schools' internal data, showed the average LTU graduate's salary after 10 years at $53,700. In Michigan, that was good for fourth place among 31 schools listed.

"This new college ranking from business experts at the *Wall Street Journal* and a leading British publication provides further evidence of what Lawrence Tech alumni and employers have known for a long time – that an education at LTU is a sound investment," Lawrence Tech President Virinder Moudgil said. "We are happy to see the efforts of our faculty, staff, and corporate partners validated by this recognition."

Overall, LTU was listed 325th in the nation, in the upper third of the more than 1,000 schools ranked. ☐*MR*



LTU moves up in *U.S. News* rankings, Princeton Review calls University one of the 'Best in the Midwest'

Lawrence Technological University has moved up in the rankings of "Midwest Regional Universities" according to the annual *U.S. News & World Report* survey of best colleges for 2017.

Lawrence Tech was also once again named one of the best colleges in the Midwest by the Princeton Review, one of only 156 colleges in 12 Midwestern states so designated for 2017.

U.S. News said Lawrence Tech was tied for 40th among 171 listed Midwest regional universities, in the top quarter of the rankings of schools in 12 states. That's up from 54th last year.

"The strong performance of our overall academic program in this prestigious national survey reflects our ongoing commitment to enhance the value of a Lawrence Tech degree," said LTU President Virinder Moudgil. "It is gratifying that LTU's efforts are being recognized."

U.S. News also ranked Lawrence Tech No. 26 on its list of best colleges for veterans. It was the highest ranking of any university in Michigan on this list. The ranking shows schools that fully participate in federal initiatives helping veterans and active duty service members pay for their degrees.

Lawrence Tech was also ranked 44th in the nation among all universities in the strength of its online graduate engineering program. More than 80 schools were ranked in this category.

The Princeton Review, also listed LTU among the "2017 Best Colleges: Region by Region."

"We chose Lawrence Tech and the other outstanding institutions on this list primarily for their excellent academics," said Robert Franek, Princeton Review's senior vice president and publisher.

"We also give careful consideration to what students enrolled at the schools reported to us about their campus experiences on our student survey for this project."

The Princeton Review's list is based on 143,000 student surveys, input from college administrators and advisors, parents, and the independent company's National College Counselor Advisory Board.

The survey's 80-question student survey included questions that prospective applicants might ask on a campus visit. Colleges had to allow their students to be surveyed in order to be considered.

The Princeton Review survey asks students to rate their colleges on several issues – from the accessibility of their professors to the quality of their science laboratories – and answer questions about themselves, their fellow students, and their campus life.

The Princeton Review also ranks Lawrence Tech as one of the nation's top Green Schools for its environmental programs and focus. It's also ranked No. 17 in the country for top undergraduate programs in game design.

The Princeton Review's "regional best" lists constitute about 25 percent of the nation's 2,500 four-year colleges. ☐*MR*

LTU focuses on autonomous vehicle research

Lawrence Technological University is working hard on the automatic-driving autonomous cars of tomorrow. And it gives you a pretty good headstart on all of that when you're the world champion in autonomous vehicles.

LTU's Bigfoot 2 team won the grand award, called the Lescoe Cup, in the 24th annual Intelligent Ground Vehicle Competition (IGVC), held at Oakland University, besting 35 other college teams.

But Lawrence Tech's work on autonomous vehicles goes well beyond a funny-looking rolling robot that won a world championship.

Kun Hua, associate professor of electrical engineering, is deep into research on cars that talk to each other and the environment around them, in a true ecosystem of communication.

"An autonomous car is not enough," Hua said. "True autonomy is not just a car that drives itself. It's not just about your car keeping its distance from the car ahead of you. It's about your car talking to the car behind you if you stop suddenly because of an accident. In the future, cars will be collaborative and operate in a system. We're researching an entire network of cars."

LTU has received grants from both Ford Motor Co. and DENSO North America on such projects as advancing the state of the art in software that juggles the multiple minicomputers now in various automotive systems and creating an autonomous vehicle navigation laboratory, with a virtual road and GPS system that teaches model vehicles to navigate a specific route.

"The number one question is always, 'Is it safe?'" Hua said. "We cannot think about one car or two cars, but about the entire environment."

Michigan, where the U.S. auto industry was born, is a natural location for much of this research. A variety of industry partners broke ground in November for the American Center for Mobility, a 311-acre chunk of the former Willow Run plant in Ypsilanti Township. The first phase of the facility will see $60 million in construction to build new centers for testing cars, connected technologies, vehicle communications, and more. State legislators have also approved four bills that allow for testing driverless cars on 122 miles of Michigan roadways.

Hua said Lawrence Tech will be ready to supply the American Center for Mobility with qualified graduates who are already experts in vehicle-to-vehicle and vehicle-to-infrastructure systems.

But back to the IGVC, co-hosted by Oakland University, the Association for Unmanned Vehicle Systems International Great Lakes, and the U.S. Army's Tank Automotive Research, Development and Engineering Center in Warren.

Congratulations to Mathematics and Computer Science Professor and faculty advisor CJ Chung and team members Gordon Stein, MSCS'16, of Oak Park; Yuan Li and Fan Wei of China, master's degree students in computer science; Devson Butani of India, an undergraduate in mechanical engineering; Mirmit Changani of India, an undergraduate in robotics engineering; and Nithin Reddy, MSME'16.

Sponsors of LTU's IGVC team included LTU's Department of Mathematics and Computer Science, Robofest, DENSO, Realtime Technologies Inc., Clearpath, Sparton Corp., Omnistar, and the LTU Bookstore. ☐*MR*

LTU's team wins top prize in the 24th annual Intelligent Ground Vehicle Competition. Left to right: Professor CJ Chung, Fan Wei, Gordon Stein, and Yuan Li. Not pictured are Devson Butani, Mirmit Changani, and Nithin Reddy.

Business incubation boosted by $100,000 state grant

The Michigan Strategic Fund approved a $100,000 grant to Lawrence Technological University to provide support and business advice to early-stage technology companies in Southfield and Troy.

This is the second year that LTU has received a state Gatekeeper Grant to assist entrepreneurs and innovators. LTU provides services through the LTU Collaboratory and its Customer to Cash program.

The LTU Collaboratory is a hands-on resource center providing education, networking, mentoring, and connections to funding. The Customer to Cash program helps companies take product ideas to market through innovative design thinking and the lean start-up method. See more about the programs at www.ltucollaboratory.com.

LTU has partnered with the City of Southfield to foster economic development through the city's SmartZone. Based on the results from the Gatekeeper Grant, Southfield has provided the LTU Collaboratory additional support over the past year to help foster small business success.

Through the Gatekeeper Grant, the LTU Collaboratory has also strengthened its collaboration and working relationships with agencies such as the Michigan Small Business Development Center, Automation Alley, and SCORE Detroit.

The new Gatekeeper Grant will continue the momentum created by the first year's award to assist the growth of early-stage technology companies, especially those focused on product design, engineering, prototyping, and manufacturing. Terms of the grant contract are still being finalized.

For further information, contact Mark Brucki, executive director of corporate and community partnerships, at mbrucki@ltu.edu. ☐*MR*

Grant has LTU prof organizing 'green infrastructure' for Great Lakes

Civil Engineering Professor Donald Carpenter is working with government officials to make stormwater management systems greener and more sustainable for communities across the Great Lakes. He explains that "green infrastructure" is using nature to manage rainfall instead of traditional "gray infrastructure" – concrete and pipes.

With the support of a $120,000 grant from the Fred A. and Barbara M. Erb Family Foundation, Carpenter is working with the Great Lakes Commission on a "Great Lakes Stormwater Technology Transfer" project. An advisory group comprised of stormwater and green infrastructure experts met for the first time Sept. 29 in Ann Arbor to launch the effort.

The aim of the project is to spread stormwater management best practices and technologies across all governments in the Great Lakes basin, with emphasis on financially struggling, small, or rural jurisdictions that may face barriers to implementing those technologies.

A sister project of the Great Lakes Commission, the Green Infrastructure Champions Pilot Program, also supported by the Erb Family Foundation, will create a mentoring network of "green infrastructure champions" and emerging communities across the Great Lakes. The two efforts will work in tandem to reduce physical and institutional barriers to a greener approach to stormwater management.

Carpenter's green infrastructure vision uses natural stormwater runoff treatment technologies like "bioswales" – essentially, man-made wetlands – green roofs, permeable pavements, and more, to reduce the amount of runoff going into storm sewer systems.

Green infrastructure is also a way to make existing storm sewer systems stretch farther in an era of heavier rainfall events brought on by climate change.

"We've fractured the water cycle with our pavement and our heavily engineered water systems," said Jon Allan, director of Michigan's Office of the Great Lakes and chair of the Great Lakes Commission. Through both projects, he said, "We'll be accelerating technologies and practices that re-create what nature does – slowly filter the bad stuff out of water that's going to go into the Great Lakes, rivers, and streams, while also helping to prevent flooding and reduce risks to property."

Added Carpenter: "We need to be smarter about how we manage water, and the tech transfer project aims to do just that. Lawrence Tech and our partners at the Great Lakes Commission will work on technologies and techniques that will lead to cleaner water in our streams, our rivers, and the Great Lakes."

Donald Carpenter

The team plans on presenting the technology transfer plan at the Great Lakes and St. Lawrence Green Infrastructure Conference, to be held May 31–June 2, 2017, in Detroit. The conference will draw up to 1,000 engineers, landscape architects, water quality professionals, government officials, developers, planners, academics, and nonprofit organization executives to focus on green infrastructure in the Great Lakes. ☐*MR*

Three students named national University Innovation Fellows

Three Lawrence Technological University students have been named among 169 University Innovation Fellows (IUF), a National Science Foundation project led by Stanford University's design program.

The global UIF program trains student leaders to create new opportunities for their peers to engage with innovation, entrepreneurship, design thinking, and creativity as part of their college experience.

The LTU students, all sophomores, are Steven Graczyk, Ashley Jordan, and Sarah Makki. Graczyk is majoring in mechanical engineering with a Certificate in Entrepreneurial Skills. Jordan is also a mechanical engineering major, while Makki is majoring in robotics engineering. They are LTU's second cohort of Innovation Fellows.

University Innovation Fellows are a national community of students leading a movement to ensure that all students gain the necessary attitudes, skills, and knowledge required to compete in the economy of the future. They create new opportunities that help their peers develop an entrepreneurial mindset, build creative confidence, seize opportunities, define problems, and address global challenges.

The students said they were attracted to the program for the off-campus experiences it offers. "It's an experience you couldn't get in any classroom," said Makki. Added Graczyk: "This program teaches you many unconventional ways of thinking that I can apply both inside and outside the classroom." Jordan said she liked how the program inspired students to put their ideas on innovation into practice.

The program was created by Stanford under a five-year National Science Foundation grant. It is managed by Stanford's Hasso Plattner Institute of Design (dschool.stanford.edu). With the addition of the latest cohort, the program has now trained 776 students at 164 colleges and universities. UIF program leaders train candidate fellows during an intensive six-week period to conduct in-depth analyses of their campuses' innovation status and provide them with tools and resources.

After training, the fellows receive year-round mentorship, connect with one another online, and attend national conferences and events. ☐*MR*

Follow alumni on social media

For all the latest information on upcoming alumni events, follow the LTU Alumni Association on Facebook and Twitter:

facebook.com/LTUalumni

@LTUalumni or twitter.com/LTUalumni

Universities show off student automotive expertise at LTU Grand Prix

Eight teams competed with Formula SAE cars in early October as Lawrence Tech hosted its annual Blue Devil Motorsports Grand Prix.

Besides LTU, competitors included the University of Michigan, the University of Toledo, Western Michigan University, Wayne State University, Ferris State University, Kettering University, and Hope College. Grand Valley State University also sent team members to network and observe.

The event is intended as a fun day of good-natured competition and networking during the "off season" for Formula SAE racing, which has its formal competitions in late spring and summer.

"Many of these teams don't have a lot of chance to interact during the competitions in the spring," said Steven Rehak, a senior in mechanical engineering at LTU who is business manager of the University's Formula SAE team. "The idea here was to give the students a chance to meet and start building a professional network now, because a lot of these students from the different universities will wind up working with each other."

Sponsors of the event included the auto supplier Brembo North America, the city of Southfield, LTU's Blue Devil Motorsports, the Colleges of Architecture and Design and Management, the A. Leon Linton Department of Mechanical Engineering, and Office of Student Engagement. Providing food and drink for the event were Absopure, Better Made potato chips, Fuddruckers, and U.S. Ice.

Formula SAE is a student design competition organized by SAE International. The competition started in 1978. Student teams design and build a small Formula-style race car judged on design, cost, manufacturability, acceleration, handling, fuel economy, and endurance.

SAE International has since launched spinoffs into other types of vehicles – Baja for off-road vehicles, Formula Hybrid for hybrid gasoline-electric vehicles, Aero Design for large model airplanes, and Supermileage for ultra-high-mileage cars. ☐*MR*

LTU's Formula SAE racer takes a sharp turn on the Grand Prix course.

LTU's Formula SAE, Baja SAE, and Formula Hybrid teams pose with their cars.

Great Lakes area colleges and universities showed off their SAE competition vehicles in October at LTU's annual Grand Prix.

LTU has keen KEEN finish

Lawrence Technological University took second place in the 2016 Innovation Encounter, a program of the Kern Entrepreneurial Engineering Network (KEEN).

Five schools involved in the KEEN program, which seeks to incorporate entrepreneurial thinking into engineering curricula, participated this year. Besides Lawrence Tech, they were Worcester Polytechnic Institute, which finished in first place; Ohio Northern University, which finished in third place; Kettering University; and the University of New Haven, Conn.

This year's Innovation Encounter was sponsored by Ford Motor Co. Ford representatives at the two-day event on Oct. 21–22 were Eric Levine, manager of autonomous vehicle planning; Lon Zaback, manager of global design planning and strategy; James Carlu, BSEE'02, manager of global design planning and strategy; Elizaveta Bodarenko, BSTD'16; and Andrew Dawson, BSTD'16.

Andrew Gerhart, LTU professor of mechanical engineering, delivered a workshop on creativity and problem-solving development. Ford presented the students with an industry problem involving autonomous vehicles.The teams worked on developing a solution to the problem and presented it to a panel of judges from Ford. The judges used a rubric to determine the winners.

Each team that placed was presented with a trophy that was designed and built by the students from the makeLab in LTU's College of Architecture and Design. They also received a cash award. This is the seventh year the Innovation Encounter has been held.

LTU faculty and staff participating in the event included Ahad Ali, LTU mechanical engineering associate professor and director of the bachelor's and master's degree programs in industrial engineering; Cristi Bell-Huff, director of the LTU Studio for Entrepreneurial Engineering Design (SEED); Katie Jolly, entrepreneurship coordinator in LTU's Office of the Provost; Heidi Morano, project engineer of the SEED; and Donald Reimer, LTU mechanical engineering college professor. Also participating were members of LTU's EMpwr student entrepreneurial group.

The next Innovation Encounter will be held at LTU Oct. 20–21, 2017. ☐*MR*

Ford C3 grant to LTU aims to cut affordable housing cost in half

Lawrence Technological University has received a $25,000 Ford College Community Challenge grant that could revolutionize the production of affordable housing – starting with one new home in Pontiac.

The grant will help fund the construction of HOUSE02, a proof of concept home that will use the techniques developed over the past two years by LTU architecture professors Scott Shall, Jim Stevens, Ayodh Kamath, and Brian Oltrogge, and LTU architecture graduate students.

The goal is to build a home at a cost of $50 to $65 per square foot. That would put the cost of a modest, 1,000-square-foot home at $50,000 to $65,000 – not the $110,000 to $150,000 achieved through traditional construction methods, Shall said.

The techniques will make it more likely for affordable housing to attract financing on a large scale, as well.

The LTU professors and students worked with Habitat for Humanity of Oakland County on the research.

In addition to the Ford grant, an anonymous philanthropist has donated $6,000 and a city lot in Pontiac for the construction of HOUSE02.

"We've been working with students and professionals to figure out how digital fabrication can more rigorously inform the building delivery process used to make affordable housing," Shall said. "Through our research, we have found ways to use computer simulation, digital fabrication, and products such as structural insulating panels and reclaimed material to reduce the cost and environmental footprint of housing, as well as the time required to build the home."

The Ford College Community Challenge (Ford C3) is a grant competition launched in 2008 when the Ford Motor Company Fund reached out to its national network of colleges and universities and invited them to compete for grants based on local sustainability projects. Ford C3 works with partners in higher education that are focused on the critical areas of business, design, and engineering.

Ford C3 is designed to use school and company resources in creative ways, challenging schools and students to design projects that address pressing community needs and make more relevant connections with students. Ford C3 differs from many traditional college grant programs by requiring significant student input, involvement, and leadership from beginning to end. As a result, winning proposals have a distinct student perspective on what it means to have a sustainable community.

Ford C3 is an educational initiative of the Ford Motor Company Fund, the philanthropic arm of Ford Motor Company. ☐*MR*

Illustration by MArch students Salvatore Asaro and Rachel Kowalczyk.

A revolutionary approach to construction could make housing much more affordable, according to a team of LTU students and professors.

Consul general of Canada receives Global Citizen Award at Convocation

Lawrence Technological University welcomed some 500 new students and their families at the annual Convocation ceremony held in August.

Convocation included a processional of the University's top officials in full academic regalia, along with the Lawrence Tech Pep Band playing inspiring music, and addresses by LTU President Virinder Moudgil and Student Government President Alyssa Melotnik.

Moudgil mentioned LTU's roots in Henry Ford's Highland Park manufacturing complex, part of the vision shared by Ford and LTU's founding Lawrence brothers to turn tradesmen into engineers, executives, and scientists – leaders and innovators for whom anything is possible.

He also recognized LTU faculty who help undergraduates participate in leading-edge research – a distinction not typically found elsewhere – contributing to advances ranging from new medical cures to energy conservation to online security. And he recognized LTU students involved in honor societies, sports, advanced research, and career-building internships.

Convocation also was the conclusion of LTU's 2016 Global Village Project, in which 125 of the new students participated. This year's third annual Global Citizen Award went to Douglas George, the consul general of Canada in Detroit.

Moudgil established the award in 2014 to recognize individuals who have shown great character and leadership in addressing global issues and promoting international and social understanding.

George is a career diplomat with more than 30 years of experience and before taking his position in Detroit was Canada's ambassador to Kuwait. He is responsible for Canadian affairs in the states of Michigan, Ohio, Indiana, and Kentucky.

Abroad, George has directed trade policy issues at the Canadian Mission to the European Union, as well as serving as a negotiator at the Canadian Mission to the GATT/World Trade Organization.

In his remarks George pointed out that he didn't intend to go into the diplomatic corps – he was originally a zoology major intent on solving the problems of the Great Lakes. But he chose to live in an international residence hall in college, where he met students from many other countries, developing his interest in foreign service.

Staying open to new experiences was also the theme of Melotnik's presentation. She said a unique advantage of Lawrence Tech is that students are "innovators and creators and explorers. That's why LTU is a perfect fit for people like you and me." She said she's changed majors three times and "could easily do it five more times," because the University offers so many interesting academic programs. ☐*MR*

Douglas George, consul general of Canada in Detroit, speaking after receiving the LTU Global Citizen Award at Convocation 2016.

The Class of 2020 gathers at Convocation 2016 in the Don Ridler Field House to start the fall semester.

Survey of grads shows power of a Lawrence Tech degree

Even as they graduated, members of Lawrence Technological University's Class of 2016 were already making their marks in science, engineering, architecture, design, and business.

A survey from the University's Office of Career Services showed that as of commencement on May 7, nearly 88 percent of graduates had found employment or were headed for more advanced degrees.

The overall "success rate" – defined as graduates who had found employment, or were starting their own businesses, going to graduate school, or into government service, such as the armed forces or the Peace Corps – was 87.7 percent for the 415 eligible graduates surveyed. That's up from an 82.3 percent success rate for the Class of 2015.

The undergraduate success rate for 2016 was 84.4 percent, while the graduate student success rate was 91.2 percent.

LTU's survey also asked what salary those who had found employment would receive. The mean overall salary in the survey was $56.560. For those receiving undergraduate degrees, the mean salary was $48.986; for those receiving graduate degrees, it was $63,548. The Brookings Institution recently ranked LTU fifth in the nation for providing the most value added in preparing graduates for well-paying jobs.

"Employers really value our graduates," said Margaret "Peg" Pierce, LTU's director of Career Services. "We hear it from employers all the time; that when they hire someone from Lawrence Tech, it's someone they can really get behind. It's also a good economy right now, we know that, and our students have a lot of opportunity in engineering. But construction, design, architecture, and business are all growing, and our students are very much in demand in those industries as well."

LTU President Virinder Moudgil added: "A college education is a major investment for families, and these numbers show that prospective students and parents can be confident that when it comes to Lawrence Tech, their investment is a sound one." ☐*MR*

Today's national security challenges rival the Cold War

Although the presidential elections were still several weeks in the future, on October 20 LTU's 2016 Hotelling lecturer provided a timely roadmap of the complex tangle of international challenges facing the new administration that rank right up there with the worst of World War II or the Cold War.

Julianne Smith, senior fellow and director of the Strategy and Statecraft Program at the Center for a New American Security in Washington, D.C., and former deputy and acting national security advisor to former Vice President Joe Biden, said that it's true that "no single challenge the United States faces today is equal to the challenges of Nazi Germany, Imperial Japan, or the Soviet Union." But, she said, "What we can argue is that we face a complex set of challenges… that are interrelated and present a very dangerous, fluid, and fast-paced situation."

Smith, delivering the seventh annual Harold Hotelling Memorial Lecture at LTU, broke the challenges down into five categories:

• A growing diversity of actors challenging the United States. During the Cold War, she said, the U.S. was focused on nation-states – and one in particular, the Soviet Union. Now, the U.S. faces challenges from ethnic conflicts, failed states, emerging powers like India and Indonesia, rogue nations like North Korea, and an increasingly belligerent Russia under Vladimir Putin, as well as global terrorist and criminal organizations.

• Adversaries using "asymmetrical" strategies for which the U.S. is unprepared. Included are non-military attacks like cyberwar, propaganda, and advanced military technologies falling into the wrong hands.

• Erosion of the foundation of the post-World War II order. Organizations like NATO, the United Nations, and the World Trade Organization, as well as the very idea of democracy and free-market capitalism, are under attack.

President Virinder Moudgil, left, and Julianne Smith, senior fellow and director of the Strategy and Statecraft Program at the Center for a New American Security.

• Alliances under strain. Smith said organizations like NATO are not equipped to handle modern challenges. She said NATO "knows exactly what it would do if Russian tanks rolled into the Baltic states." But what about a massive cyberattack on the Baltics? Or "energy coercion," where Russia turns off the natural gas pipeline to a European country in the middle of a bitter winter? NATO has no clear plan for those attacks.

• Blurred lines between domestic and foreign policy. Forget about politics ending at our shores – domestic disputes have in recent years had major impact on our actions overseas.

Some respond to these challenges by saying the U.S. should walk away from foreign concerns and no longer be world cop, Smith said. But she said the U.S. retains some unique strengths that will serve it well in meeting these challenges. Included are the world's most innovative and dynamic economy, unrivaled military strength, and the ability to forge coalitions among nations.

In the question and answer session that followed her presentation, Smith had these observations:

• Social media put just as much pressure on policymakers to react quickly as they do to businesses and individuals, and that's not always a good thing.

• Where did we go wrong with Russia? Smith said policymakers assumed the country would naturally turn to the West and seek to become a European nation. "That all came crashing down when Putin came back into office in 2012," Smith said.

• U.S. presidential transitions too often boil down to "whatever the last guy did, I'm not doing," Smith said. But often presidents "learn that there were reasons the last guy had some of those policies… The lessons of Iraq could have applied to Libya."

• Relations with Turkey and the Philippines are at an all-time low and must be addressed by the next president. In Turkey's case, President Recep Tayyip Erdogan thinks a cleric living in Pennsylvania was behind the recent coup attempt against him, and seeks his extradition. The U.S. wants more evidence. And meanwhile, Erdogan is acting more and more like a dictator, leading to a crisis in a country where the U.S. has important military bases. In the Philippines' case, President Rodrigo Duterte is cozying up to China and announcing a "separation" from the U.S. Earlier Filipino presidents feared China and sought U.S. backing.

• Climate change will be another foreign policy headache going forward, leading to a long list of problems – refugee flows, armed conflict, and resource scarcity – for which the U.S. must prepare.

• Unmanned aerial vehicles, or drones, will be a vital part of U.S. intelligence-gathering. The fact that it's the 'Wild West' out there, with little international law governing their use, may actually be good for U.S. interests, since the U.S. leads the world in drone technology.

Smith's appearance was sponsored by the Colleges of Arts and Sciences and Management.

The Harold Hotelling Memorial Lecture Series was founded to honor an esteemed scholar and colleague. Harold Hotelling (1945–2009) joined Lawrence Tech as an associate professor of economics in 1989 and prior to his untimely death taught courses in business law, business ethics, constitutional law, urban social issues, and law and economics. ☐*MR*

President Moudgil gets Real McCoy Award from DAPCEP

Lawrence Technological University President Virinder Moudgil was among the honorees in the fifth annual Real McCoy Awards ceremony presented by the Detroit Area Pre-College Engineering Program (DAPCEP), a nonprofit organization that provides historically underrepresented youth with innovative educational programming in science, technology, engineering, mathematics, and science.

Moudgil received the Award for Excellence in Science, which was among several awards presented to leaders and students in STEM fields. The awards are named after Detroiter Elijah McCoy, a mechanical engineer whose inventions revolutionized steam engines, and who was the inspiration for the term "the real McCoy."

This year, DAPCEP celebrated 40 years of providing STEM education to students in and around Detroit. To learn more, visit www.dapcep.org. ☐*MR*

LTU President Virinder Moudgil, wearing the lab coat presented to him, received the Real McCoy Award from Michelle Reaves, DAPCEP interim executive director, and Johnny Lunsford, of Global Strategic Supply Solutions, a Livonia manufacturer and supply chain management provider.

Wooden bridge team a force to be reckoned with

Lawrence Technological University earned several top ratings in the National Timber Bridge Design Competition, held on college campuses around the country in late summer.

The competition, open to all student chapters of the Forest Products Society and the American Society of Civil Engineers, is in its 24th year.

LTU's bridge held up better under weight than others, with a small net deflection of just 4.1 percent of the amount allowed, and a net deck deflection of just 2 percent. And that was under 20 kilonewtons of force – more than 4,400 pounds – for 60 minutes.

LTU won second place among the seven teams competing for best support structure, and third place for most practical design.

The bridge was a box girder beam enclosed around a structural frame. It featured carbon fiber reinforcement through the center of the box girder beam. And it used reclaimed wood for its strength and beauty.

Student London Jocham led the project. The faculty advisor was Mena Bebawy, assistant professor of civil and architectural engineering. Other team members were seniors Johnathan Harden and Johnathan Leclerc and freshmen Scott Pangburn and Andrew Yarbrough. ☐*MR*

Timber bridge team members (left to right) Andrew Yarbrough, London Jocham, Jonathan Harden, and Scott Pangburn. Not pictured: Johnathan Leclerc.

The completed LTU timber bridge.

Fall sports update

Women's Soccer
Under the leadership of first-year head coach Andy Richards, the Blue Devils accomplished a plethora of program firsts, rewriting the history of LTU soccer. For the first time, the women's soccer team ended the season with a winning record, going 11-7, 5-5 in the WHAC, a significant increase from 2015's 4-13, 1-9 year.

A program-best 36 goals were scored this season and only 32 were conceded, the least amount to date. The Blue Devils defeated Cornerstone University, Marygrove College, Indiana Tech, and Lourdes (Ohio) College. LTU finished the season sixth in the WHAC standings and was seeded seventh going into their first WHAC tournament appearance. They were faced with the daunting task of tackling No. 2 seed University of Northwestern Ohio, eventually falling 6-0 on Nov. 2.

Earning WHAC All-Academic Team honors were senior defender/forward Sarah Britain, senior goalkeeper Heather Derstine, senior goalkeeper Megan Dixon, and senior forward Nicole Propst. Freshman Tia Lamie was named to the All-Conference First Team and sophomore defender/midfielder Jordan Messing was selected for the Champions of Character Team.

As a team, the Blue Devils ranked third in the WHAC in goals per game with 2.06, third in assists per game with 1.56, third in saves per game, and fourth in shots on goal per game, recording 8.28.

Men's Soccer
The men's soccer team wrapped up their season going 10-6-2, 5-4-2 WHAC. They recorded wins against WHAC opponents University of Michigan-Dearborn, Siena Heights University, Concordia University, Lourdes (Ohio) University, and Aquinas College. The men also logged several firsts in 2016, including finishing a season with double-digit wins and earning a WHAC quarterfinal berth. The Blue Devils were given a seventh seed in their inaugural WHAC tournament, drawing second seed 16-1-2 Davenport University. LTU fell to the Panthers 6-0 on Nov. 5, concluding an impressive season.

Receiving WHAC All-Academic honors were senior forward Ryan Fernandez, senior forward Chris Lange, senior defender Tyler Winningham, junior forward Mateusz Gibiec, junior midfielder Pablo Ripodas, and junior defender Austin Sanders. Nicolas Rodriquez-Bermejo, Santiago Amigo, and Winningham were selected for the All-Conference Second Team. Rodriquez-Bermejo led the team with 9 goals and 8 assists for 26 points while Amigo added five goals. Winningham contributed a solid year, starting all 16 games to tally two goals and four assists. Ripodas took home a Champions of Character award. Gibiec finished the season ranked fourth in the WHAC for game-winning goals with 0.2, scoring three through 15 games. Freshman Max Jewett was in net for the Blue Devils, finishing with 46 saves and 20 allowed goals for a 69.7 save percentage.

Volleyball
The women's volleyball team ended their season with a winning record of 18-17, 8-8 in the WHAC, a dramatic improvement from last year's 9-28, 6-15 season. For the first time in program history the Blue Devils continued post-season play, earning the seventh seed in the 2016 WHAC tournament, where they faced Siena Heights University. LTU fell to the Saints in three sets 25-16, 25-19, 25-21. Perhaps Lawrence Tech's biggest game of the year came on Oct. 12 when they defeated Indiana Tech, something that hadn't been done since October 2014. The Blue Devils took down the Warriors in four sets, winning 25-19, 25-20 and 25-21.

Earning WHAC All-Academic honors were senior middle hitter Kristen Johns, senior setter Macee Logerstedt, senior setter Josie Queary, and junior outside hitter Alisha Stidam. Queary was also named to the WHAC Champions of Character Team. Making the Second Team All-Conference was junior outside hitter Briana Reum, who maintained 2.8 kills per set. Named to the All-Freshman Team was setter/right-side hitter Kristi Doherty. Doherty amassed 50 aces in 109 serving attempts, giving her the top spot in service aces per set in the WHAC. The Blue Devils finished their season ranked fourth in Division 1 in total service aces with 259, 1.99 per game, as well as fourth overall in digs totaling 1,996. They finished fifth in kills per set with 11.2 through 130 sets, and fifth in assists per game with 10.

The LTU women's soccer team scores against the University of Cincinnati-Clermont on Sept. 9.

The LTU women's soccer team defeated Cornerstone University 2-1 at Homecoming Sept. 24, sending a big crowd home happy.

LTU's men's soccer team continued its climb this season.

Lawrence Tech's volleyballers enjoyed plenty of success this fall.

Men's Cross Country
The men's cross country team turned in a notable season, notching four top-10 finishes. At the Calvin College Invitational they placed ninth of 16, at the University of Detroit Invitational seventh of 13, sixth of 17 at the Lansing Invitational, and seventh of 10 at the WHAC Conference Championships.

Senior Dillion Ross and junior Quinn Williamson were named to the WHAC All-Academic team and junior Tanner Flint earned the Champions of Character honor.

Women's Cross Country
The women's cross country team participated in six invitationals, claiming a top-10 spot in three of them. At the University of Detroit Invitational they finished ninth, at the Carnegie Mellon Invitational eighth, and ninth at the WHAC Conference Championships. Earning WHAC All-Academic Team honors was senior Janie Roberts. Sophomore Monica Ellicott was named a Champion of Character. ☐*JN*

Industrial engineering conference attracts 300

Hundreds of experts in improving manufacturing gathered at Lawrence Tech in September to exchange best practices in the growing field of industrial engineering.

The Industrial Engineering and Operations Management Society's Detroit 2016 conference drew attendees to campus from 42 countries.

The event was co-chaired by Ahad Ali, associate professor in mechanical engineering at LTU, and Steven Sibrel, senior supplier quality engineer at Harman International, a Novi-based supplier of connected vehicle technology.

LTU President Virinder Moudgil gave the welcoming address. Carlo Materazzo, head of global world-class manufacturing at Fiat Chrysler Automobiles, provided the opening keynote, outlining his company's efforts to boost quality through Kaizen continuous improvement techniques.

Materazzo cited the many achievements of the automaker resulting from these efforts: nine straight years of reduced incidence and severity of workplace injuries; a massive waste and loss reduction program; redesign of systems to eliminate places where machine operators could make mistakes; and reducing the impact of operations on the environment through reduced waste and resource consumption. FCA reduced the amount of water it takes to produce a car by 38 percent between 2010 and 2015.

Other keynotes were presented by executives from Ford Motor Co., General Motors, Airbus, Eaton Corp., Siemens, and Accuride Corp., and researchers from the University of Iowa and the University of Johannesburg in South Africa. There were also a wide variety of breakout sessions – engineering education, lean operations, energy conservation, construction management, modeling and simulation, sustainable manufacturing, project management, data analytics, and more.

Industrial engineering deals with the optimization of complex processes or systems. Industrial engineers work to eliminate wasted time, money, materials, energy, and other resources, eliminating parts of processes that do not generate value.

Ali, director of LTU's bachelor's and master's degree programs in industrial engineering, reports that enrollment is rising in the program – from 50 students last fall to 75 this fall. ☐*MR*

LTU President Virinder Moudgil welcomes the IEOM conference attendees to campus.

Hundreds of operations management and industrial engineering professionals gathered at Lawrence Tech in September for a global conference.

Architecture prof gets grants for book on Yamasaki

Lawrence Tech Architecture Professor Dale Allen Gyure has received two grants to support his work on a new book on the architecture of Minoru Yamasaki. *Serenity and Delight: The Architecture of Minoru Yamasaki* is to be published in 2017 by Yale University Press.

The book is an examination of the work of Yamasaki, whose designs included the doomed World Trade Center towers in New York City, as well as several landmarks in Detroit, including One Woodward Avenue, originally the headquarters of Michigan Consolidated Gas Co., and the McGregor Memorial Conference Center at Wayne State University.

Yamasaki moved to Detroit in 1945 to join Smith, Hinchman & Grylls as chief designer and practiced in the city for more than 40 years. He was known for mixing modern materials and functional touches with historical elements, and was a vital – and occasionally controversial – figure in mid-century architecture. He received an honorary degree from LTU in 1984.

Gyure received a $7,500 Wyeth Foundation for American Art Publication Grant from the College Art Association, as well as a $7,500 grant from the Chicago-based Graham Foundation.

Gyure joined LTU in 2001. His research focuses on American and modern architecture of the 19th and 20th centuries. He has published two books: *Frank Lloyd Wright's Florida Southern College* (2010) and the Graham Foundation-supported *The Chicago Schoolhouse, 1856–2006: High School Architecture and Educational Reform* (2011), as well as numerous articles, book chapters, and reviews. He has served on the boards of directors for the Society of Architectural Historians and the Frank Lloyd Wright Building Conservancy, and is a member of the Michigan Historic Preservation Review Board. ☐*MR*

Homecoming spirit draws alumni, students, others

Lawrence Tech alumni from around the world enjoyed several days of Homecoming Week festivities leading up to the official Homecoming Day celebration on Sept. 24. For students, the week included fun and games outside and serious stuff like a Career Services Company Crawl to Fortune 500 companies in Southfield.

On Wednesday, Sept. 21, hundreds attended the grand opening of the A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex, home of the Marburger STEM Center. It was standing room only as LTU students, alumni, local community leaders, and area business leaders toured the spectacular new laboratories and collaboration spaces in the $16.9 million, 36,700-square-foot building. The complex is an architectural gem – besides its high-tech labs, it features a spectacular glass atrium and what might be Michigan's most interesting staircase – a three-story-high black orb made of carbon reinforced fiber. Industry officials say it's a groundbreaking use of composites as building materials.

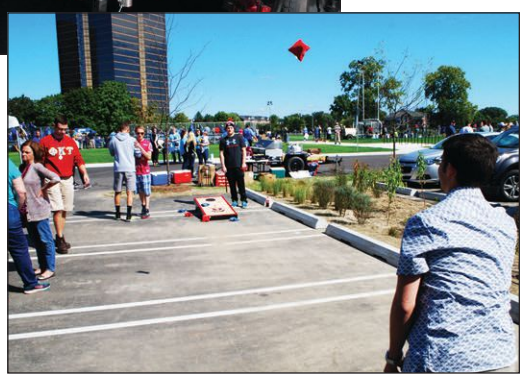
That evening, more students, faculty, and community members enjoyed a lively discussion on the North American Free Trade Agreement, as the annual President's Symposium tackled "NAFTA Revisited: The Way Forward in the 21st-Century Global Economy." The truth behind the controversial trade deal was gleaned by moderator Tom Marx, director, Center for Leadership, LTU College of Management, with distinguished panelists Douglas George, consul general of Canada; Juan Manuel Solana Morales, consul of Mexico; and Paul Traub, senior business economist, Federal Reserve Bank of Chicago. This year's program was sponsored and coordinated by the College of Management.

Thursday's activities featured a student open house at the Taubman Complex, with a faculty vs. student flag football game, a powder puff football game, and a Homecoming bonfire warming the spirits.

Friday, Sept. 23, featured the Night of Champions student-athlete dinner, a hockey tilt vs. Ferris State University, and the seventh annual Homecoming Concert, featuring rapper Lil Dicky. Homecoming wrapped up Saturday, Sept. 24, with a service project cleaning up Belle Isle State Park, the True Blue Reunion Brunch, a Homecoming tailgate, and men's and women's soccer games on Lawrence Tech's spectacular new AstroTurf athletic field. ☐*MR*

Old friends get reacquainted in the Alumni tent.

Dean of Students Kevin Finn cooks up the goodies for alumni and students.



Several student groups enjoyed the flawless weather.

Painting on that Blue Devil spirit.

True Blue Reunion Brunch attendees receive a University update from President Virinder Moudgil.

The LTU Blue Devil Band led the cheer for the men's and women's soccer teams.

Employees, alumni, receive excellence awards

Lawrence Technological University honored six of its employees and a distinguished alumnus Oct. 12 during its annual Lawrence Excellence Awards program.

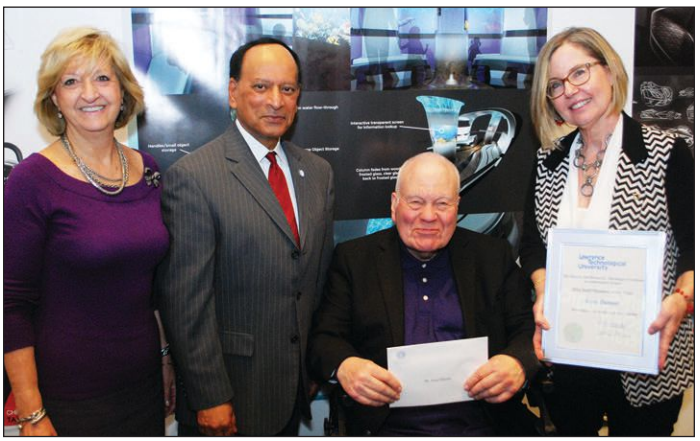
The two winners of the Mary Ann Marcum Customer Service Award were Tracy Kash, administrative assistant to the dean of the College of Arts and Sciences, and Chevette White, graduation and scheduling coordinator in the Office of the Registrar. Both were praised for going above and beyond the norms for customer service in their respective roles and maintaining precise work and a positive outlook while dealing with demanding schedules.

Winning the 2016 Henry B. and Barbara J. Horldt Excellence in Teaching Award was Mark Farlow, BSAr'81, BAr'82, MAr'09, an adjunct faculty member in the College of Architecture and Design.

Farlow is director of design at Hamilton Anderson Associates in Detroit. He has been an adjunct professor at LTU since 1995. Earlier this year, he was also selected to receive the 2016 Distinguished Architecture Alumni Award by the Architecture and Design Alumni Cabinet of the Lawrence Technological University Alumni Association. (See story on page 31.)

Three LTU employees received the 2016 Mary E. and Richard E. Marburger Fund for Excellence in Achievement Awards.

Winning the Marburger Staff Person of the Year Award was Anne Dandar, administrative assistant for the transportation and industrial design programs in the College of Architecture and Design. She spent 15 years in design, development, and manufacturing at Ford Motor Co., then worked as a consultant in business planning, project development, human resources, and fundraising. She joined Lawrence Tech in 2014 and has since earned rave reviews for her work with the program's students.



From left to right, Vice President for Academic Affairs and Provost Maria Vaz, President Virinder Moudgil, and President Emeritus Richard Marburger congratulate Staff Person of the Year Anne Dandar.

Winning the Marburger Faculty Member of the Year Award was Andrew Gerhart, professor of mechanical engineering. Gerhart teaches fluid mechanics, thermal sciences, engineering design, and creative problem-solving. He serves on numerous LTU committees, as faculty advisor to the SAE Aero Design team and the American Institute of Aeronautics and Astronautics Student Chapter, and facilitates workshops worldwide on active, collaborative, problem-based, and entrepreneurially minded learning.

Winning the Marburger Administrator of the Year Award was Elin Jensen, associate dean of graduate studies and research in the College of Engineering. Jensen joined the LTU faculty in 2003. She became associate dean in 2010. She has served as thesis advisor to 19 master's degree students and has published some 40 journal and conference papers. As a researcher, she has secured $720,000 in research awards, including a $400,000 National Science Foundation CAREER award, given to promising young researchers. She has been recognized by her peers for her work ethic, dedication, and warm human touch with students and fellow faculty members.

The Marburger Champion for Institutional Excellence and Preeminence was bestowed upon Kirk T. Steudle, BSCE'87, director of the Michigan Department of Transportation. Steudle has served as state transportation director under Republican and Democratic administrations. He is a national expert on connected vehicle technologies and has received several national awards from transportation organizations. He has been generous in providing time and counsel supporting LTU students and programs. ☐*MR*

Profs win grant to advance fluid power education

Four professors in the A. Leon Linton Department of Mechanical Engineering have won a $25,000 grant from the National Fluid Power Association (NFPA) to bring problem-based and entrepreneurial-minded learning to fluid mechanics and thermodynamics education.

The team is led by principal investigator, Assistant Professor Liping Liu. Other members are Professors Robert Fletcher and Andrew Gerhart and Assistant Professor James Mynderse.

"The NFPA wants students to know more about fluid power," Liu said. "Some of the elements are covered in our current fluid mechanics classes, but they want more students engaged in this area and to make students more aware of fluid power applications, including pneumatics and hydraulics."

Liu said Lawrence Tech's existing involvement with engineering programs emphasizing entrepreneurship and innovation – such as KEEN, the Kern Entrepreneurial Engineering Network – establishes a strong foundation for the entrepreneurial-minded course modules to be developed under the grant.

Liu said she, Mynderse, Fletcher, and Gerhart are already at work developing fluid power-based modules for LTU fluid mechanics and thermodynamics courses, which are taught to mechanical engineering majors in their junior year. Those modules will be shared with the engineering education community.

Founded in 1953 and based in Milwaukee, the National Fluid Power Association brings fluid power industry partners together to advance fluid power technology and foster members' success. NFPA's members include fluid power manufacturers, distributors, educators, and researchers. ☐*MR*

Shinola's Lewand tells students: 'Don't be afraid to fail'

The new CEO of the watch, bicycle, and leather goods manufacturer Shinola Detroit LLC told a largely student audience at Lawrence Technological University to aim high and be unafraid of failure.

Tom Lewand, who spent 20 years with the Detroit Lions, was named CEO of Shinola in June. His appearance at LTU was part of the University's Entrepreneurial Lecture Series, presented by the University and EMpwr, LTU's student entrepreneurship organization.

Lewand's remarks came in a one-on-one interview conducted by LTU student Justin Becker, a senior majoring in civil engineering. Becker co-chairs EMpwr.

Lewand said he was attracted to Shinola because of "the mission – to celebrate the skills and talent that American workers have, particularly those here in Detroit. It was a daring idea, a big idea, a crazy idea, that our founder Tom Kartsotis had, to come from Dallas, where he had founded a company 30 years ago called Fossil that also made watches, but had sold. Tom decided he wanted to do something with those proceeds that would have some greater social impact and pursue his most deep-rooted entrepreneurial ideas. He convinced a Swiss manufacturing partner to go into a venture with him here in Detroit and bring back a long-dormant industry and do some of the world's most complicated manufacturing and compete at a global level."

Shinola has grown from zero to $100 million in revenue in just three years.

And the company continues to branch out into other products. First into leather goods, and now the company has announced an expansion into audio equipment – turntables, speakers, and headphones – as well as a line of jewelry. It's also in a new partnership with Quicken Loans founder Dan Gilbert on a downtown hotel.

Lewand said that's part of the entrepreneurial talent of Kartsotis, to make unexpected moves and break into other industries. "We look for skill, experience, and authenticity in whatever space we're in."

Lewand also told the LTU audience that in addition to management and manufacturing talent, Shinola is now on the hunt for engineers and people with technical skill for the audio equipment line.

Tom Lewand was interviewed by LTU student Justin Becker.

And he praised Detroit as a center of entrepreneurial talent. He said Kartsotis "could have built Shinola anywhere in the country. But one of the things that attracted him to Detroit was how fertile the environment here is for startups. The barriers to entry are low, you see a lot of people getting funding from a lot of sources. It seems like there's a new venture fund popping up every day. Technology, mobility, transportation are all huge here, but you also see things like apparel and fashion starting up downtown and in Midtown." ☐*MR*

Service awards presented to faculty and staff

President Virinder Moudgil (center) with 25-year service award winners (left to right) Anthony Sky, Lisa Anneberg, and Abolhass Khosrovaneh.

President Moudgil with Joyce McKissen, recognized for 30 years of service. Not pictured: Joseph Dubrosky.

President Moudgil with Gayle Schaeff, recognized for 35 years of service.

President Moudgil (left) with Marilyn Rands and Bruce Annett, Jr., recognized for 40 years of service.

GlobalHack team makes finals

LTU's computer science team at the GlobalHack VI software competition, held in October in St. Louis, Mo., finished in the top 20 percent of more than 150 teams.

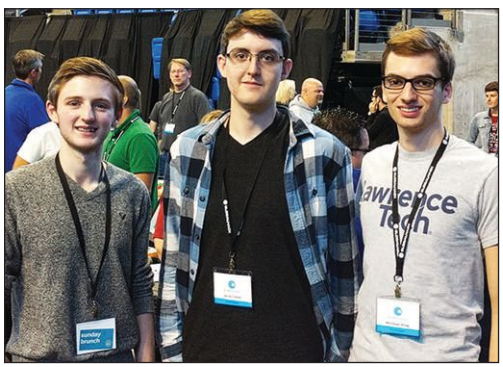
In GlobalHack, teams compete to develop software from the ground up over the course of one weekend. This year's competition drew more than 1,000 participants, developing software around the theme of preventing or ending homelessness.

The team designed a system using Google Maps to allow shelters to quickly direct homeless people to shelters with empty beds. It also provides a way for homeless people to communicate with shelters.

Team members were Nicholas Paul, captain, a senior in computer science; Nick Virag, a senior in computer science; and Jacob Crane, a sophomore in mathematics and computer science.

The team received the project Friday night and completed it by Saturday night. Faculty advisor C.J. Chung, professor of mathematics and computer science, said the team worked on the system for 17 hours, averaging one line of code per team member per minute.

Chung said the team plans on publishing the source code for the application with a free, open source license so that anyone can use it. The project submission is publicly available at devpost.com/software/global-hack. ☐*MR*



From left to right, Nicholas Paul, team captain, and members Jacob Crane and Nick Virag.

Blue Devils returning to the gridiron

After a hiatus of 70 years, Lawrence Technological University will again field a football team and has hired a coach, Jeff Duvendeck, who will lead efforts to build a team that will begin competing in the 2018 season.

LTU expects to attract students with strong scholastic aptitude who also enjoy the competition, discipline, and camaraderie of intercollegiate athletics. The University reinstituted athletics in 2011 and now fields 24 men's and women's teams in basketball, soccer, lacrosse, hockey, golf, tennis, bowling, baseball, softball, volleyball, and cross country.

LTU is a member of the National Association of Intercollegiate Athletics (NAIA), the Wolverine-Hoosier Athletic Conference (WHAC), and the Michigan Collegiate Hockey Conference (MCHC). LTU intends to compete in football as an independent program in 2018, and join the Mid-States Football Association of the NAIA in fall 2019.

"We anticipate that we will continue to attract strong scholars to our new football program," said President Virinder K. Moudgil. "Indeed, when we examine the GPAs earned by our current student athletes, they are consistently higher than the GPAs of our overall student population."

Moudgil added that the University's Strategic Plan, adopted last year, with input from the entire campus community, calls for LTU's continued transition to a more residential environment. "As a result we need to provide more opportunities for an active student life and recreation," he said.

Southfield Mayor Ken Siver was enthusiastic about LTU's move, which both he and the University expect to bring a substantial and steady stream of new athletes, their families, friends, alumni, and other guests to the city.

Coach Duvendeck spent six seasons as head coach at Culver-Stockton College in Canton, Mo. Prior to that, he spent two years as offensive graduate assistant under Mark Dantonio at Michigan State University. In 2006-09, he was offensive coordinator and offensive line coach at Northern Michigan University. Earlier posts included offensive line coach and recruiting coordinator at Michigan Technological University, graduate assistant at Grand Valley State University, and graduate assistant at Tiffin (Ohio) University.

A native of Flushing, Duvendeck played running back at Central Michigan University, where he earned a bachelor's degree in health promotion and rehabilitation in 2001. He earned a master's degree in kinesiology from Michigan State University in 2016.

This past summer, Lawrence Tech added a $1 million AstroTurf multi-sport playing field, the gift of an anonymous donor. Adding stadium and player amenities are expected to be part of a new capital campaign, planning for which is under way.

Coach Jeff Duvendeck

Lawrence Tech offered football when it was founded in 1932 and fielded teams until World War II, when most students and faculty left to fight. A football team reformed after the war for a year but student interest had waned, and the sport was discontinued.

At a time when some higher education institutions are engaged in conversations about football's costs and health-related concerns, LTU expects to address these issues and build a successful program.

"The NAIA members are much more diligent in containing costs and stressing scholarship," said Kevin Finn, LTU's dean of students. "And it is our intention to meet or exceed all applicable safety and conditioning procedures to insure the health and well-being of our players." ☐*MR*

Alumna for alumni: 2012 grad is now director of alumni relations

In her new role as director of alumni relations, Krysta Coleman knows a thing or two about what it's like to be an LTU alumna.

That's because she is one.

Coleman, BSBM'12, took over as the University's alumni relations director effective Jan. 1. She was previously at Michigan State University, where she was assistant director of student life, overseeing student government.

After graduation, Coleman worked for a year as a graduate assistant in LTU's Office of Student Engagement. She then joined Western Michigan University (WMU), where she worked as a graduate assistant, graduate intern, and interim assistant director of campus programming and registered student organization development. She also continued her education, earning a Master of Arts in Educational Leadership from WMU in 2015.

"To say that LTU helped to form the person I am today would be an understatement," Coleman said. "Besides receiving an outstanding education, I also met some of my best friends through organizations like Students Planning Activities Monthly (SPAM) and Delta Phi Epsilon Sorority, and had the opportunity to travel across the country to numerous conferences as well as to China with the Leadership study abroad program. I even met and got engaged to my husband on campus! I am looking forward to meeting other LTU alumni in the months and years to come and to hear about how LTU impacted their lives in the same way that it did mine."

Krysta Coleman

Coleman's achievements while a student at LTU include the Senior Legacy Award and the Ed Donley Distinguished Graduate Award. At WMU, she earned the Donna Talbot Award for Excellence in Student Affairs in 2014. And at Michigan State, she won the New Advisor of the Year – Spartan Silver Award and the Walter Adams Advisor of the Year – Spartan Silver Award, both in 2016.

ESD honors Lawrence Tech alumni, staff

Several LTU alumni and staff received awards from the Engineering Society of Detroit (ESD) at the organization's annual dinner in June.

Kirk T. Steudle, BSCE'87, received ESD's highest honor, the Horace H. Rackham Humanitarian Award. This award is given to an ESD member for outstanding humanitarian achievements as exemplified by meritorious technical accomplishments for the benefit of mankind or by recognition on either a local, national, or international level for extraordinary achievements in civic, business, public-spirited, or humanitarian endeavors.

Steudle is director of the Michigan Department of Transportation. He has also received several awards, including LTU's Alumni Achievement Award in 2008 and the W. N. Carey, Jr., Distinguished Service Award from the Transportation Research Board in 2015. He was named to the LTU College of Engineering Hall of Fame in 2012 and is a College of Engineering Advisory Board member.

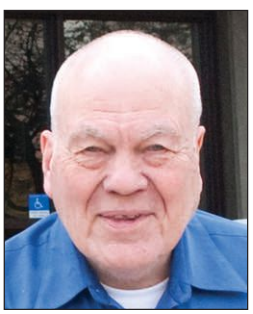
Harold A. Ladouceur, BSME'63, was inducted into the ESD College of Fellows. The rank of ESD Fellow is reserved for ESD members of unusual distinction, conferred by invitation for outstanding and extraordinary qualifications and experience in their professions. Unfortunately, Ladouceur died at the age of 89, just months after being honored.

Two LTU alumni and an employee were among the recipients of the ESD Distinguished Service Award. This award is given to ESD members who have distinguished themselves in their professions or by exemplary service and contributions to ESD. This award was presented to **Richard E. Marburger**, HD'93, LTU president emeritus; **William A. Moylan, Jr.**, BSCE'74, associate professor of construction management at Eastern Michigan University; and **Matthew N. Roush**, managing editor of the University News Bureau and director of media relations at LTU. Moylan also received "The Ray" volunteer award from LTU in 1998.

Also, **Gene D. Dickirson**, BSME'73, president of Gene Dickirson Engineering, was presented the ESD Outstanding Leadership Award. This award is granted to exemplary ESD committee or council members based on their service and accomplishments.

Kirk T. Steudle

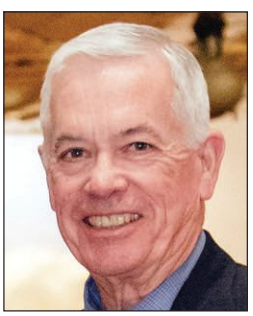
Harold A. Ladouceur



Richard E. Marburger

William A. Moylan

Matthew N. Roush



Gene D. Dickirson

Farlow wins Distinguished Architecture Alumni Award

Mark Farlow was selected to receive the 2016 Distinguished Architecture Alumni Award by the Architecture and Design Alumni Cabinet of the Lawrence Technological University Alumni Association.

The annual selection is made by previous winners of the award, which dates back to 1997. Farlow also received the Henry B. and Barbara J. Horldt Excellence in Teaching Award in 2016.

Farlow is director of design at Hamilton Anderson Associates in Detroit, leading the development of the firm's projects, with an emphasis on mixed-use, hospitality, and commercial and residential process. The firm is designing some of the most prominent projects in Detroit, such as the District Detroit (including Little Caesars Arena), Brush Park Neighborhood Development, Orleans Landing, and Corktown Neighborhood Development.

He has also been an adjunct professor of architecture at LTU since 1995.

Farlow earned three degrees from LTU: a Bachelor of Science in Architecture in 1981, a Bachelor of Architecture in 1982, and a Master of Architecture in 2009. In his second year of architecture school, he became the resident curator of LTU's Frank Lloyd Wright-designed Affleck House in Bloomfield Hills. After graduating from LTU, he pursued a Master of Science in Architecture at the University of Cincinnati, 1982–84, and then joined the faculty at Mississippi State University, where he remained until 1988.

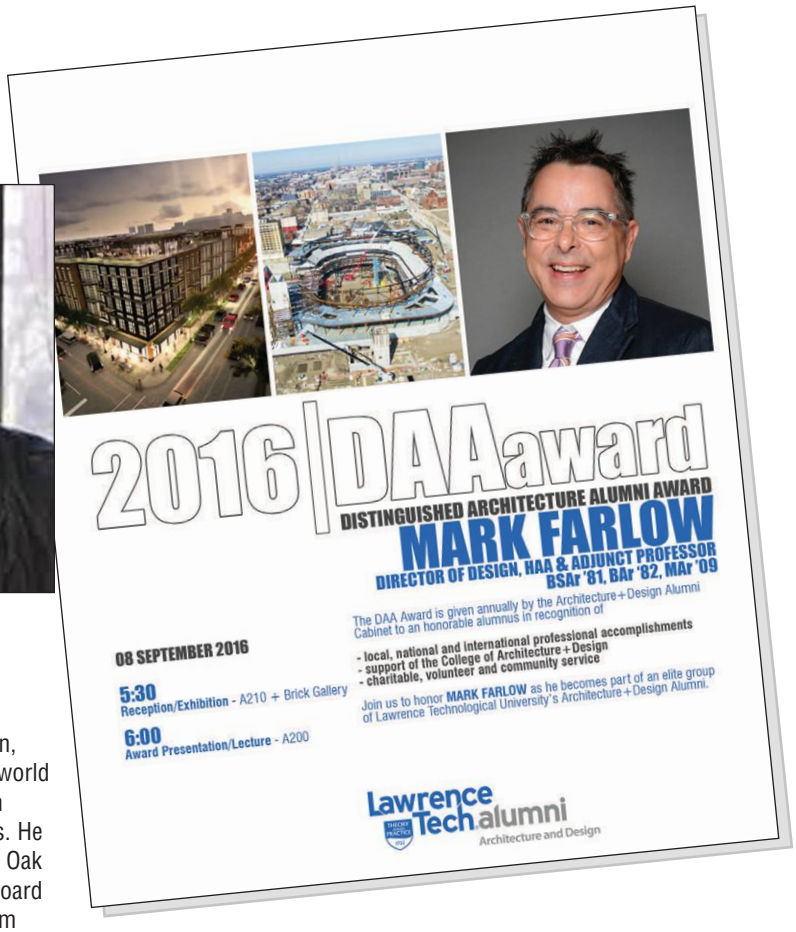
He joined the architecture firm Garbooshian/Budday in 1988, and Victor Saroki & Associates in 1992, before taking his present post at Hamilton Anderson in 2014. He has numerous professional awards from AIA-Michigan,

Mark Farlow

AIA-Detroit, the International Interior Design Association Michigan Chapter, and the Masonry Institute of Michigan, and has traveled around the world to represent his employers in business development efforts. He has also served on the Royal Oak Historical Commission, the board of directors at the Birmingham Bloomfield Art Center, the AIA-Detroit Membership Committee, and chaired the AIA-Detroit House Tour Committee twice.

In 2007, Farlow was invited to serve as a design lead for the AIA-150 Neighborhoods by Design Charrette. Working with another LTU alumnus, Frank Arvan, BSAr'78, AIA, along with students from both the University of Detroit Mercy and Lawrence Tech, the transit-oriented development they designed for Royal Oak focused on the issue of transit and lifestyle choices in the metropolitan Detroit area. The proposal was subsequently awarded the Design in Transit award for its vision and design excellence.

Farlow also chaired LTU's Architectural Alumni Cabinet, 2009–10, and has served three times as keynote speaker for the College of Architecture and Design's annual commencement recognition ceremony.



In 2009, he also launched the country's first online graduate-level thesis studio for Lawrence Tech's online Master of Architecture program. He was recognized for his groundbreaking work with the University's 2013 Teaching & Learning Using Technology Award, becoming the first adjunct professor to receive this award. Overall, Farlow has taught more than 160 students in the past seven years and has helped nearly 200 students in securing career opportunities locally and nationally. ☐*MR*

SAVE THE DATES!

LTU Homecoming 2017

Monday, Sept. 25 – Saturday, Sept. 30

Event details coming soon!

From shopping malls to mansions to dream playhouses, Architecture alumnus building elaborate toyscapes

In a 30-plus-year architecture career, Wayne Visbeen, BSAr'84, BAr'86, has designed more than 100 shopping centers and hundreds of spectacular homes.

But when he wants to really have some fun, he designs elaborate playhouses for children.

"It's a blast," Visbeen says of his playhouse designs. "When I'm being for real as an architect, I have to think about structure, mechanics, efficiency, and budget. I do homes from $150,000 to $25 million, everything from fabulous mansions to small houses, but we always have to think in technical detail. In a playhouse, I can do a five-minute sketch and the team can take it and run with it. I can have fun and get crazy. I can dream and dream big."

Wayne Visbeen (right) and members of the Visbeen Architects, Inc., team go over designs for dream playhouses.

Visbeen was hired by the Taubman Co. when he was still an LTU student, and in five years designed over 100 shopping center prototypes. Then he moved to Grand Rapids and directed store design for the retail chain Gantos.

He started his own company, Visbeen Architects, Inc., in 1992.

"I started out doing retail design," he said. "I worked for Martha Stewart, I did the Softer Side of Sears campaign, worked in retail all over the world, Brazil, Singapore, Europe. At the end of 1995, I started designing residential houses in order to stay home, because I was on an airplane 50 percent of my life."

That worked for a while, but now, Visbeen said, "our residential business has exploded." He's designed homes in 46 states, and has current projects from coast to coast and overseas – so he's back on airplanes regularly again.

The playhouse designs started, as things often do, by chance. He was speaking at a builder's show in Orlando, Fla., and Canadian landscaper Tyson Leavitt heard him. A few years later, Leavitt called Visbeen and said he was starting a custom playhouse business, and asked Visbeen for some designs. After some initial hesitation, Visbeen said he designed 30 playhouses in a single day, and became a partner in Leavitt's company, Charmed Playhouses. A TV crew filmed the installation of a playhouse for a Make-A-Wish Foundation child in Grand Rapids, and the two pitched a TV show about spectacular playhouses.

Later, Visbeen designed for fun a playhouse for the daughter of Golden State Warriors star Steph Curry. Visbeen posted the design on social media – where Curry's wife saw it and contacted him, asking him to build it.

The Curry playhouse became the pilot episode of Playhouse Masters, featuring Visbeen's designs and Leavitt's construction. It's available for viewing at www.tlc.com/tv-shows/playhouse-masters. Eight more episodes of Playhouse Masters began airing in January 2017.

Of the playhouses, Visbeen said, "It's a fun hobby. I literally do it on airplane time, because I'm in the middle of 50 custom home projects all over the country."

And outside it. Visbeen said he's also working on a 35,000-square-foot villa for a

Upcoming Alumni Association Events

Easter Bunny Brunch

Sunday, April 2, 2017
11 a.m.–1 p.m.

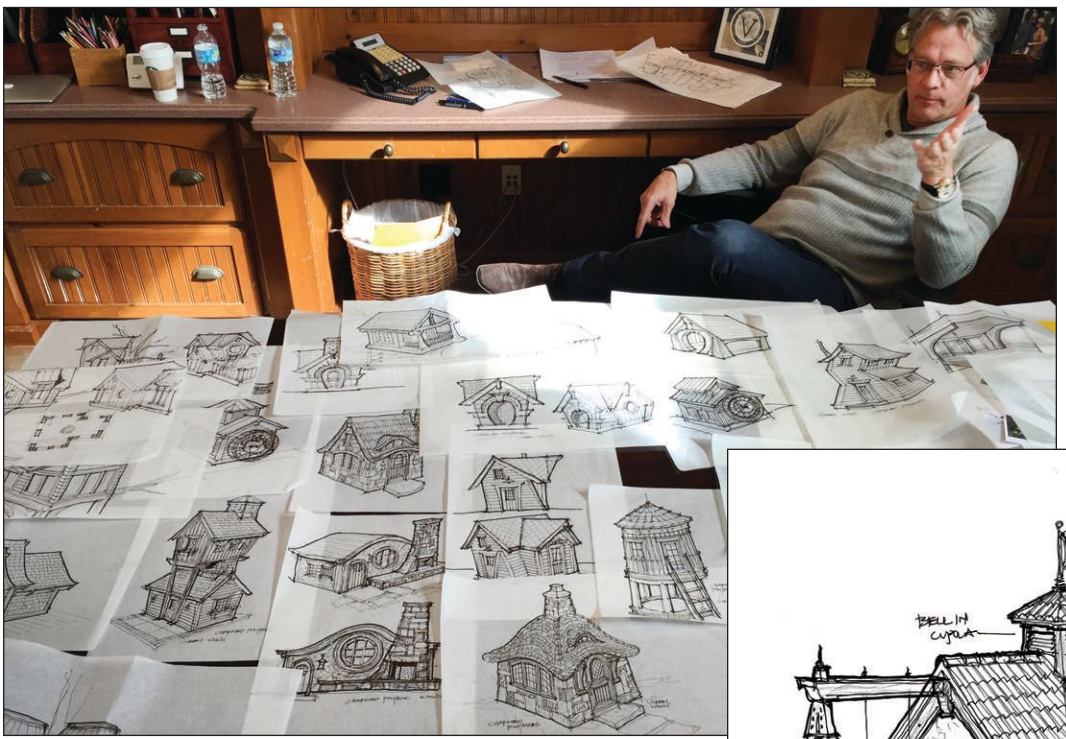
Buell Management Building cafeteria
Cost: $7 Adults - $5 Children - Under 2 free
Includes buffet breakfast, picture with the Easter Bunny, Easter egg hunt, and children's crafts
Registration information coming soon!

Alumni Social at Windsor Express Basketball Game

Wednesday, April 5, 2017

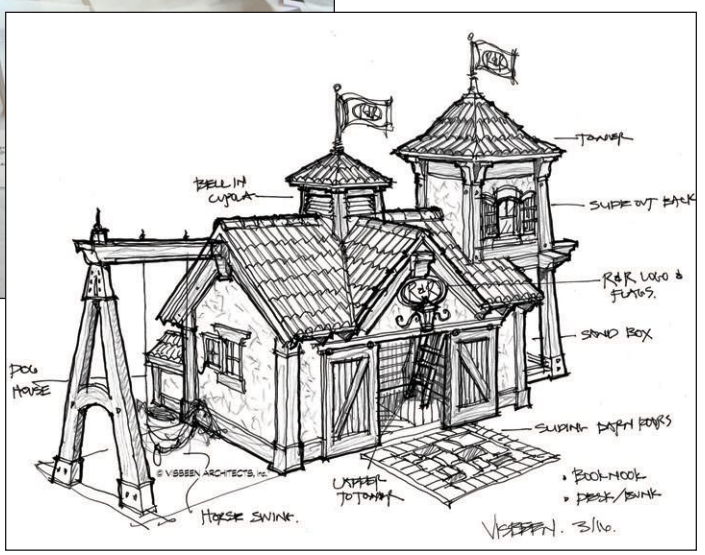
Watch your email for more information!

For any questions about upcoming alumni events, contact Krysta Coleman, director of alumni relations, at alumni@ltu.edu.



Wayne Visbeen says his fantastic kids' playhouses let him "dream and dream big."

Wouldn't this be an amazing place for a kid?



prominent family in India.

For now, Visbeen said, he's looking forward to the 25th anniversary of his company in June. To celebrate, he is flying 28 people – his entire staff and significant others – to Europe, for a cruise from Rome to Barcelona. "We thought, what better thing to do than take a bunch of architects from Rome to Barcelona, and have them look at great architecture, cool cities, and eat, drink, and be merry?" ☐*MR*

Engineering alumnus chosen as new president of Macomb Community College

James O. Sawyer IV, BSME'85, was named the new president of Macomb Community College (MCC) on Dec. 20.

Sawyer was previously provost and senior vice president of the college, a post he had held since 2009. He is the sixth president in MCC's 63-year history.

After graduating from Lawrence Tech, Sawyer earned advanced degrees from Central Michigan University – a master's degree in administration in 1989 and a doctorate in education, with an emphasis on educational leadership and administration, in 2008.

Sawyer is a certified quality engineer and had 17 years of business experience prior to joining MCC. He was the college's dean of engineering and advanced technology from 2002 to 2007 and vice provost from 2007 to 2009. His experience includes curriculum development, grant management, program reviews, technology and building enhancements to improve learning, and partnership development.

Sawyer was chosen to lead Macomb after a comprehensive national search. MCC board chair James F. Kelly, who also chaired the search committee, said, "Even with a competitive and qualified candidate pool, Dr. Sawyer was clearly the best choice. His long-standing experience with the college and community, as well as his solid background in business, will ensure a smooth transition with a knowledgeable leader ready to fully leverage Macomb's strengths while effectively guiding the institution into the future."

A resident of Macomb County for more than 40 years, Sawyer serves on the boards of Leadership Macomb, St. John Providence Hospital, Macomb-St. Clair Workforce Development, Michigan Design Council, and American Society of Body Engineers Foundation. ☐*MR*

James O. Sawyer

Detroit by night

LTU-trained photographer's brooding cityscapes part of DIA exhibit

Jonathan DeBoer, BFA'11, says he just feels more awake at night. Perhaps that's why his stunning nighttime cityscapes look so vividly alive.

DeBoer is a professional graphic designer and photographer. His mostly black-and-white photographs are part of the "Detroit After Dark" exhibition at the Detroit Institute of Arts, which features the city's nightclubs, music venues, skylines, and streets at night, and runs until April 23, 2017.

"I am a night person," DeBoer said. "I've always felt more awake and creative at night – especially in winter, when I get off work, it's already dark. I love the mood you can get at night, how it transforms the look of the city. I love the strong contrast between light and dark that you get at night, that sort of film noir, Gotham City-inspired look of black and white with heavy contrast."

A native of Port Huron, DeBoer said he chose LTU for college because "I was look looking at both architecture and graphic design, and Lawrence Tech is one of the few schools that offers both. And I heard great things about the college, that it would really prepare you for a career."

DeBoer said he fell in love with photography through two classes at LTU in 2008 and 2009. Photography, he said, "allows me to look at my surroundings and look at the world in a new light. I find that photography is the best way to express myself. I can communicate my thoughts and emotions through photography better than I can with words. That's what I really love about it."

While his degree wound up being in graphic design, DeBoer said he is "still interested in architecture, and I can express that interest through photography."

Not all of DeBoer's subjects are buildings at night. He's also been the team photographer for the Detroit City FC soccer team since its first season. He's employed as a graphic designer at Sawicki & Son Inc., a printing company in downtown Detroit. ☐*MR*

Campus Martius

Penobscot Lights

Gotham Detroit

Alumni Notes

Alumni Notes includes news gathered from alumni, their families, and friends. Submissions received after the deadline for this issue will be published in the summer 2017 issue. Use the form in this section to share news about you and alumni you know!

Roger E. Avie, BSIM'68, is the CEO and president of Medical Systems Resource Group, a consulting company specializing in computer installations in medical facilities using a variety of Electronic Medical Record (EMR) software. He also serves as CEO and president of Supply Team, a Service-Disabled Veteran-Owned Small Business. A decorated Vietnam War veteran, Roger is serving his second year as the statewide finance officer of the American Legion. A former LTU Alumni Association president, he is a member of the Trustees Society for lifetime giving and received the University's 2009 Ray Award for volunteerism at Lawrence Tech.

Daniel W. Winey, BSAr'74, BAr'75, MAr'15, FAIA, IIDA, LEED AP, is the COO at Gensler, a global architecture, design, planning, and consulting firm. He recently received the Magnolia Silver Award and certificate for contributions to the culture of China and for designing Shanghai Tower, the tallest building in China and second-tallest building in the world. His company has operations in Shanghai and Beijing. Dan is an LTU trustee and a 2010 Distinguished Architectural Alumni Award honoree.

Richard A. Howey, BSMa'75, was awarded a Doctor of Business Administration degree by Metropolitan State University in Minnesota. His research dissertation analyzed economic-related issues that arise when implementing information systems that share data across organizational boundaries within a business enterprise.

Alan H. Cobb, BSAr'76, FAIA, LEED AP, president and CEO of Albert Kahn Associates, received a 2016 Gold Medal from the American Institute of Architects for his work and dedication in advancing the AIA and the profession of architecture during his 40-year career. He is LTU's 2000 Distinguished Architectural Alumni Award honoree. His firm is architect of record for LTU's recently completed A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex.

Grace A. M. Smith, BSAr'85, BSIA'85, RA, LEED AP, was appointed by Gov. Rick Snyder to a four-year term on the State of Michigan Historic Preservation Review Board. Grace is an architect who has specialized in historic preservation for the past 23 years.

Thomas S. Moore, BSEE'86, received a 2016 Distinguished Graduate Award from the Paris (TX) Intermediate School District. The holder of 32 U.S. patents, Tom retired as vice president of advanced vehicle technology development at Chrysler. He was previously executive engineer in charge of Ford Motor Co.'s advanced engineering group. He is also a member of the President's Club for lifetime giving at Lawrence Tech and a member of the College of Engineering Advisory Board.

Delores Annajee, BMSE'87, is a senior logistic analyst with Unified Business Technologies, Inc., in Troy, focusing on process improvement and mechanical system documentation for the U.S. Army's Tank Automotive Command. She is also a Train-the-Trainer Professional, Certified CMMI Partner, and ISO Auditor.

R. Scott Leo, BSEE'87, is president of ETS Engineering, Inc., a Royal Oak-based engineering/consulting firm, where he is working with local architects involved in the revitalization of Detroit.

Joseph R. Sprangel, Jr., AMET'95, DBA'09, is the first dean of the College of Business and Professional Studies at Mary Baldwin University in Virginia. Joseph previously taught at Ithaca College, Lawrence Tech, and Spring Arbor University.

Agustin "Augie" V. Arbulu, MB'97, is the executive director of the Michigan Department of Civil Rights. He was recently profiled in an article in the *Detroit Jewish News* in which he cited police/community relations as one of the most pressing concerns he faces.

Jacqueline L. Buchanan, MSIS'00, is president and CEO of Auburn Hills-based Genisys Credit Union. Jackie was recently cited by *Crain's Detroit Business* in the category "Most Influential Women: Finance."

Mark J. Jordan, AEET'02, BSET'11, is senior sales manager for western regional sales and operations at Cincinnati-based Intelligrated's district office in Ontario, CA. Mark has more than 20 years of experience in material handling automation.

News For Alumni Notes

Use the space below to tell us about you or your fellow Lawrence Tech or DIT alums. Mail it to the Office of Alumni Relations, fax to 248.204.2318, or email alumni@ltu.edu. Tell us about honors, promotions, marriages, appointments, and other activities.

❑ New Address?

Name

Street

City State ZIP

Home Phone ( )

Email

Use the email address above or mail to:
Office of Alumni Relations
Lawrence Technological University
21000 West Ten Mile Road, Southfield, MI 48075-1058

Christopher George, BSAr'04, MAr'08, was promoted to associate, Architecture + Design, at Harley Ellis Devereaux (HED). In this role, Chris is responsible for leading the design and technical systems for large, complex projects for the firm's Southfield office. In addition, Chris will continue to support technical project team leadership and coordination relative to the use of building information technology (BIM) as a BIM Champion.

Stephen McKay, BSAr'05, MAr'07, a partner and vice president of Cranbrook Custom Homes in Shelby Township, was named one of the "30 in Their Thirties" by *dBusiness* magazine. Steve launched the company with two partners in 2011.

Ben J. Loznak, BSAr'10, MAr'13, is with Cornwell Architects in Traverse City. He recently earned licensed architect status with the State of Michigan.

Zachary P. Verhulst, BSAr'13, MAr'15, is an architectural technician at TowerPinkster, an architectural/engineering firm with offices in Grand Rapids and Kalamazoo. Zach is a member of the West Michigan Minority Contractors Association and the National Society of Leadership and Success.

Sheryl L. Mitchell, DBA'14, Albion's city manager, was unanimously appointed by the Calhoun County Board of Commissioners to the board of Summit Pointe, an independent mental health agency.

Tynisha McGee, MBA'15, GCertNML'15, is the associate dean of Academic Affairs and Accountability at Wayne County Community College District. She also was elected recording secretary of the National Alumni Council of the United Negro College Fund and honored with the National Black MBA Association-Detroit Chapter Presidents Award.

Jeanne Seaman, MBA'16, was appointed office manager of the accounting department at the *Traverse City Record-Eagle*.

LTU Alumni *and their families and friends enjoyed lunch and a Tigers game at Comerica Park.*

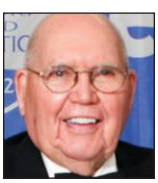
In Memoriam

Information for this section is gathered from family and friends of the deceased and from media accounts. When providing an obituary, please furnish as much information as possible, including the date of death and any Lawrence Tech- or DIT-connected survivors and their graduation dates. If sending a newspaper clipping, please include the date and name of the paper.

Russell R. Noble, BSEE'48, of Grosse Pointe Shores, June 9, 2016. A Marine Corps veteran, Mr. Noble was chief engineer of safety design at Chrysler Corp. After retiring from Chrysler, he formed Noble Engineering PC, serving as president and principal consultant. He was survived by his wife, Marjorie Ann, and two daughters.

Robert W. Lemon, BSME'49, of Farmington, Aug. 21, 2016. After service in the Army Air Corps during World War II, Mr. Lemon worked in the automotive industry until 1986 and was a lifetime member of LTU's President's Club. As a student, Mr. Lemon was active in Lawrence Tech's aeronautical program, helped build the "Spirit of Lawrence Tech" airplane, and provided helpful counsel during its restoration. He was survived by three daughters and a son.

William F. Golisch, BSEE'50, of Escondido, CA, Sept. 29, 2016. He was survived by two daughters and a son.



Robbie A. Williams, BSCvE'50, of Clio, Aug. 17, 2016. Mr. Williams was a World War II veteran and a General Motors Corp. retiree. He was survived by his wife, Irene, three daughters, and a son.

William C. VanLeuven, BSME'51, of Fenton, Jan. 25, 2016. Mr. VanLeuven, a World War II veteran, owned and operated Valmec, Inc., for many years. He was survived by his wife, Annie, three sons, and two daughters.

Alexander Waligora, BSIE'52, of Shelby Township, Sept. 5, 2016. Mr. Waligora retired from General Motors Corp. after 42 years as an Engineering Group manager. He was survived by his wife, Eunice, two sons, and a daughter.

Jan A. Derecki, BSCvE'55, of West Chicago, IL, Sept. 27, 2015. Mr. Derecki was a senior scientist at the National Oceanic and Atmospheric Administration. He was survived by his wife, Krystyna, a son, and a daughter.

Clifford F. Miotke, AMT'57, of Brighton, July 12, 2016. He was survived by his wife, Gloria.

Dennis G. DeClerk, BSIM'58, of Bloomfield Hills, July 21, 2016. An Air Force veteran, Mr. DeClerk had a long career in the construction business. His first job was in his father's company, DeClerk Industries, and ultimately he owned his own business, Stress-Con Industries. He was survived by his wife, Barbara, and four stepchildren.

James E. Baltazar, AIST'58, of Beulah, June 27, 2016. Mr. Baltazar's career as an industrial engineer and quality control engineer included positions at General Motors, Rockwell International, and Outboard Marine Corp. He was survived by his wife, Barbara, two sons, and four stepchildren.

Richard Pharo, AEEtT'58, of Lewiston, June 1, 2016. A Navy veteran, Mr. Pharo was survived by a brother.

David W. Dunham, BSCvE'59, of Hillsdale, June 26, 2016. A Korean War veteran, Mr. Dunham was a senior assistant civil engineer for the City of Detroit. He was survived by his wife, Grace, and two sons.

Lynwood S. Jackson, AEEtT'62, of Dearborn, July 16, 2016. Mr. Jackson was an electrical engineer at Ford Motor Co. He was survived by his wife, Mary, a son, and a daughter.

Demetrius "Jim" S. Raptis, BSEE'62, of Royal Oak, March 6, 2016. Mr. Raptis, who was awarded the Purple Heart for his service with the Marines in Korea, was a sales engineer with the GE Foundation. He was survived by his wife, Katherine, a son, and a daughter.

Harold A. Ladouceur, BSME'63, of Livonia, November 23, 2016. Mr. Ladouceur worked as an engineer at a variety of companies, including Vickers, Alpha Industries, and Multifasterner Corporation and held 61 patents. He was survived by his wife, Lucille, and a daughter.

Donald L. McInnis, BSIM'63, of Downers Grove, IL, Aug. 9, 2016. Mr. McInnis, an Air Force veteran, was the sole proprietor and manager of Village Valet Dry Cleaners. He was survived by his wife, Sylvia, and two daughters.

Charles D. Sanovich, BSIM'64, of Lincoln, CA, Oct. 5, 2016. After service with the Army in Germany, Mr. Sanovich worked for Carroll Shelby Enterprises and at TRW Microwave as chief financial officer. He was survived by his wife, Elaine, two daughters, and a son.

Reginald D. Shepard, BSEE'65, of Cape Coral, FL, Dec. 26, 2015. Mr. Shepard was an engineer in the automotive industry, retiring from General Motors in 1992.

Homer T. Harrison, AIST'67, of Bloomfield Hills, Sept. 5, 2016. Mr. Harrison was a longtime executive in the auto industry. He was survived by his wife, Maureen, six daughters, and two sons.

Bruce O. Karvonen, BSIM'67, of Plano, TX, Dec. 13, 2013. Mr. Karvonen was a sales representative for the GE Foundation.

Kenneth G. Masters, BSIM'68, of Fenton, July 20, 2016. Mr. Masters was president/owner of Wamcor, Inc. He was survived by his wife, Karen, and three sons.

Gilbert J. Opaleski, BSIM'71, of Kimball Township, Feb. 10, 2016. Mr. Opaleski worked at the General Motors Tech Center in Warren, retiring as head of plant engineering in 1987. He later worked for Cushman & Wakefield, where he oversaw construction of the Chrysler Tech Center in Auburn Hills. He also served as a Sanilac Township supervisor. He was survived by his wife, Frances, three sons, and two daughters.

Elmer E. Anderson, BSIM'72, of Port Richey, FL, Dec. 2, 2013. Mr. Anderson was a general accountant at General Motors. He was survived by his wife, Linda, two daughters, and a son.

Charles H. Birdsall, BSIM'72, of Traverse City, June 29, 2016. Mr. Birdsall, who also held an advanced degree from the United Kingdom in marine archeology, was survived by his wife, Kathleen, and two daughters.

Wilford B. Kellum, BSAr'73, of Traverse City, Aug. 7, 2016. Mr. Kellum worked for a time for Gourdie Fraser and then retired as Sergeant First Class from the U.S. Army. As a student, Mr. Kellum was president of the Civil Engineering Society Club and a student government representative. He was survived by his wife, Nancy.

William Mayle, BSME'77, BSCE'84, of Livonia, Sept, 29, 2016. Mr. Mayle was a product designer at Ford Motor Co., a Marine Corps veteran, and a recipient of the Purple Heart. He was survived by his wife, Judy, and three daughters.

John W. Winters, BSAr'85, BAr'87, of Royal Oak, Jan. 29, 2016.

Bradley W. Fairse, BSIM'87, of Clarkston, Aug. 6, 2016. Mr. Fairse was a production manager at Chrysler. He was survived by his wife, Carla, and two sons.

IN MEMORIAM

Thomas B. Blair, BSCE'91, of New Hudson, July 28, 2016. Mr. Blair was director of product engineering at Edward C. Levy Co. and a former member of the Civil Engineering Advisory Board. He was survived by his wife, Pamela, and a son.

Michael R. Schurig, MBA'96, of Flint, June 8, 2016. Mr. Schurig was an Army veteran, serving in the Vietnam War. He was survived by his wife, Lois, and a son.

Christina A. Schulz, MSIS'97, of Ferndale, July 20, 2016. Ms. Schulz was a longtime Ford Motor Co. employee. She was survived by two siblings.

Donald J. Urban, BSAr'98, of Brighton, Sept. 15, 2016. Mr. Urban was an architectural designer at Leidos. He was survived by his wife, Heather, and three daughters.

Phillip E. Atwater, BSME'03, of Waterford, Oct. 22, 2014. He was survived by his wife, Carol.

Matthew C. Grant, AGS'12, BSIT'14, of Salisbury, MD, Sept. 8, 2016. Mr. Grant worked for Apple, Inc. He was survived by his mother and a brother.

DIT IN MEMORIAM

Edmund J. Zeglen, BSME'41, of Farmington Hills, June 6, 2016. Mr. Zeglen, a World War II Air Force veteran, was a manager of product liability and safety for Massey Ferguson for 35 years. Upon his retirement he formed his own company, Zeglen Associates. He was survived by three daughters and a son.

Lawrence R. Sieczkowski, BSMa'68, of Chesterfield Township, Oct. 19, 2015. Mr. Sieczkowski was a senior business analyst with Fiat Chrysler. He was survived by a brother.

James M. Nederlander, of Southhampton, NY, July 25, 2016. A veteran of World War II, Mr. Nederlander served over 70 years as chair of the Nederlander Organization and managed a network of prominent theaters across the U.S. and in London. Locally, these included the Fisher Theatre and Detroit Opera House. A successful producer, he was the recipient of several Tony Awards and numerous other top entertainment awards. He was also credited with developing the outdoor amphitheater concept, including what is now DTE Energy Music Theater at Pine Knob. Survivors include his wife, Charlene, and a son.

THE LAWRENCE TECH FAMILY

Julius Pallone – extraordinary volunteer

Julius L. Pallone, an LTU trustee since 1982 and advisory member of the University corporation, died August 12, 2016. Mr. Pallone also served on the board's finance committee. He formerly was chairman of the board and president of Maccabee's Life Insurance Co., president and CEO of Royal Financial Services, Inc., and chairman and CEO of Royal Life of America. A graduate of Fordham University and the Polytechnic Institute of New York, Mr. Pallone was active in numerous professional and business organizations. In 1986, Lawrence Tech honored him as one of the "Outstanding Volunteers of Michigan" sponsored by the Michigan chapter of Fund Raising Executives. He helped LTU secure scholarship and capital campaign commitments, recruited volunteers for corporate solicitation, and provided the University with facilities for phonathons.

Kurt Tech – automation pioneer and longtime trustee

Kurt O. Tech, BSME'48, HD'90, an advisory member of the University corporation since 1975 and a trustee, 1981–94, died Sept. 18, 2016. Mr. Tech was associated with the Cross Company, an innovator in machine tools, for 40 years prior to his retirement as the firm's president in 1980. Working his way up from being a drill press operator, he was a pioneer in the development of automatic production lines, helping manufacturers, including auto makers, streamline their processes by using automation for complex tasks. In 1958 he received LTU's Alumni Achievement Award. He was a past president of the Alumni Association, the Russell Lawrence Foundation, and his evening school graduating class. Active and respected in his industry, Mr. Tech also served his community, including being a life member and past chairman of the Salvation Army's Metropolitan Detroit Advisory Board, a trustee of St. John Health System, and a trustee and former chair of the Judson Center. He was a member of the Grosse Pointe Shores Employee Retirement Commission for 20 years, serving 10 as its chairman. Survivors include his wife, Carole, and three sons.

Report to Investors

FROM THE PRESIDENT AND CEO

By all measures, the past year has been one of tremendous progress for Lawrence Technological University. This comes in large part thanks to the generosity of thousands of alumni, faculty, staff, corporations, foundations, and other friends who have rallied to address campus needs and support student aspirations.

LTU's ambitious 10-year Proud Heritage, Bold Future capital campaign came to a close June 30, 2016, raising more than $125 million in cash and pledges. The campaign has already provided important new resources for scholarships and enhanced facilities. The dollars raised were nearly twice its original goal.

In May we dedicated the Edward Donley Residence Hall. Formerly called North Housing and opened in 2002, this building's new name recognizes Edward Donley's lifetime of leadership and support to his alma mater as chair of the Board of Trustees and, with his family, late wife, and the company he led, being among the University's most generous donors.

On September 21 the campus community came together again for the dedication of the A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex. This $16.9 million, 37,000-square-foot facility completes the link, symbolically and physically, between the buildings around LTU's quadrangle that house LTU's four colleges: Arts and Sciences, Engineering, Architecture and Design, and Management. We expect that the collaboration between the programs in all these areas will continue to expand.

Lawrence Tech's campus also grew with the purchase of a 97,000-square-foot office building and five acres of land and parking adjacent to the north side of campus. Renamed LTU's Enterprise Center, this building will eventually include a business incubator as well as academic space.

The world championship of Robofest, a global robotics competition created by C.J. Chung, professor of mathematics and computer science, is a chance for President Moudgil to speak to hundreds of students from around the world – and their parents.

These facility expansions marked the second year of notable additions. In August 2015, our third campus housing center opened. The Lloyd E. Reuss Residence Hall is named to honor the University's great friend, supporter, and longtime former Board of Trustees chair. So popular and successful has been the expansion of residential options for students, the Board of Trustees has already approved the addition of a fourth campus residence hall. We're on a fast track to plan and build this facility to accommodate students for fall 2018.

And while all these improvements change the face of the campus in Southfield, at the same time in Detroit's burgeoning Midtown, our Detroit Center for Design + Technology, also opened in

President Moudgil and other university administration and faculty congratulate LTU's world champion team in the Intelligent Ground Vehicle Competition, held in June. The students whose faces appear on the computer screens were attending the congratulatory celebration via computer hookup from India.

2015, is providing numerous first-hand opportunities for students and the University to develop solutions to urban issues and challenges. The center is located on Woodward Ave., on the much-anticipated trolley route, the QLine, which will run between downtown and the New Center area.

All this facility growth is among the early fruition of many aspects of the University's Strategic Plan that was completed last year. Over 18 months or so, the trustees, the campus leadership team, and many others within the LTU community collaborated to develop the plan, the sixth in a series that has guided LTU since we formalized our planning process in 1999. Each update reflects the evolution and advancement of the University and provides the "roadmap" for where we want it to be and how we will get there. Both the trustees and campus leadership groups meet regularly to gauge our collective progress.

The plan continues to focus on strong academics, first and foremost. Our STEM programs in science, technology, engineering, and math have been boosted and are expanding to reach as deeply as the primary school level. The goal is to improve America's global competitiveness, and the effort has significance for workforce development, national security, economic opportunity, and more. We're firmly committed to offering STEM and STEM-leading education, buttressed with design education.

Alumni enjoy breakfast and meeting longtime friends at the annual True Blue Brunch, part of LTU's Homecoming festivities.

In partnership with another great Southfield institution, St. John Providence, we have launched an innovative all-new program leading to a Bachelor of Science degree in nursing that will enroll its first students in fall 2017.

Augmenting housing and program growth, another key goal of the Strategic Plan has been a paradigm shift to a more vibrant student life with more student activities that encourage interactions and learning in and outside the classroom.

Part of the increase in student activities is exemplified in the burgeoning student demand for and growth of intercollegiate athletics. After a nearly 50-year hiatus, LTU athletics programs were relaunched in 2012 and we now field 20 men's and/or women's teams in basketball, soccer, lacrosse, hockey, bowling, baseball, softball, volleyball, golf, tennis, and cross country. We are attracting students with strong scholastic aptitudes who also enjoy the competition, discipline, and camaraderie of intercollegiate athletics. And the average GPAs of our student athletes are actually higher than

VISION, MISSION, VALUES, CAUSE

The Vision, Mission, Values, and Cause statements in Lawrence Technological University's newest Strategic Plan, developed with broad campus involvement, reflect LTU's emphasis on technological innovation.

Vision: To be recognized for transformative STEM and Design education that develops leaders with an entrepreneurial mindset and global perspective.

Mission: To develop innovative and agile leaders through a student-centric learning environment and applied research embracing theory and practice.

Values: Character and Integrity
Theory and Practice
Teamwork and Trust
Student-focused and Caring

Cause: The intellectual development and transformation of our students into critical thinkers, leaders, and lifelong learners.

Dr. Moudgil speaking at a Lawrence Tech vigil to mark the mass murder of nearly 50 people in an Orlando, Fla., nightclub in June.

those of our general student population.

As reported elsewhere in this magazine, capping off this return to athletics is again fielding a football team, something that LTU has not had since the World War II era. This past summer, Lawrence Tech added a $1 million AstroTurf multi-sport playing field, the gift of an anonymous donor. Adding stadium and player amenities is expected to be part of a new capital campaign, planning for which is underway under the leadership of Vice President Kristen DeVries. She was appointed in August, following a national search, to lead LTU's Office of University Advancement.

Even as these new facilities, programs, and activities are added, LTU's reputation has continued to grow. Among the rankers, LTU placed in the top 100 colleges and universities nationwide in the 2016 PayScale College Salary Report, which measures the earning power of college graduates.

Lawrence Tech also ranks in the upper third of more than 1,000 colleges and universities for the highest average salary of graduates 10 years after completing their education, according to the *Wall Street Journal* and *Times Higher Education*, the United Kingdom's top publication on higher education.

In the 2017 *USA Today* college rankings, Lawrence Tech is in the top 5 percent of all American colleges and universities for the highest paid graduates and the best architecture programs. Other programs recognized were engineering and computer and information sciences. LTU was also cited for best overall quality, quality in the Great Lakes region, and quality in Michigan.

Business Insider, a business, celebrity, and technology news website, ranked LTU among the 610 "Smartest Colleges in America" in 2016 based on brainpower, as reflected by the school's average standardized test scores.

As I've reported in the past, organizations as diverse as the Kern Family Foundation, the Kresge Foundation, and the National Science Foundation have placed LTU at the lead of important new investigations to improve educational success and outcomes.

Lawrence Tech students are serious and committed to success – no matter where they are on their professional path. We appreciate the contributions of LTU's donors, volunteers, and friends who contributed to the progress of this past year. Your support makes a difference in all we do, and we are grateful for it. Thank you!

Virinder K. Moudgil

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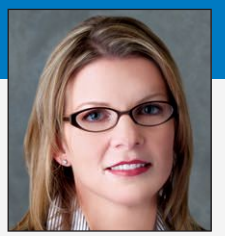


Elizabeth Howell, BSEE'92
Independent Consultant, PYRACAP, Inc.

Raymond R. Khan, BSEE'70
Former Senior Vice President, CIO, Blue Cross/Blue Shield of Michigan

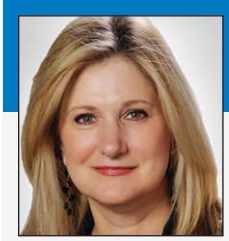
Marcy Klevorn
Vice President and Chief Information Officer, Ford Motor Company

Larry D. Lyons
Former Vice President, Car and Minivan Product Team, Chrysler Corp.

Howard B. Padgham
Former Vice President, Advanced Manufacturing Engineering Power Train, Chrysler Corp.

John G. Petty, BSME'65
Former Director, Fox Vehicle Program, General Dynamics Corp.

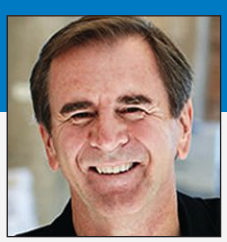
Lloyd E. Reuss
Former President, General Motors Corp.



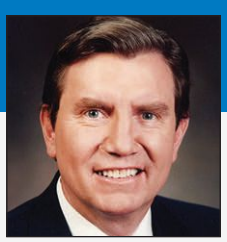
Barbara Samardzich
Former Chief Operating Officer, Ford of Europe

Victor A. Saroki, BSAr'79, BAr'80
President, Victor Saroki & Associates Architects, PC

John G. Smith
Chairman, Board of Directors,
Ross Controls



Daniel W. Winey, BSAr'74, BAr'75, MAr'15
Chief Operating Officer, Gensler

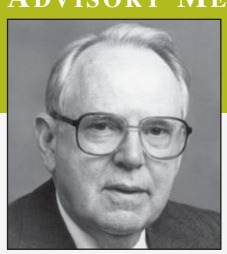


David B. Wohleen
Former President, Electrical, Electronics Safety and Interior Sector, Delphi Corp.

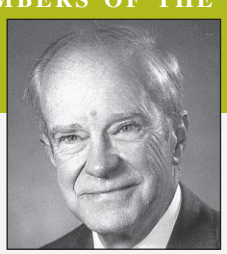
Cary B. Wood, MSIO'96
Former President and CEO, Sparton Corporation

ADVISORY MEMBERS OF THE CORPORATION

MaryAnn Wright
Group Vice President, Technology and Industry Relations, Johnson Controls Power Solutions



Richard H. Cummings
Former Senior Vice Chairman, NBD Bank and NBD Bancorp, Inc.



Edward Donley, BME'43
Former Chairman, Air Products and Chemicals, Inc.

EX OFFICIO

Virinder K. Moudgil
President and CEO, Lawrence Technological University

FROM THE VICE PRESIDENT FOR ACADEMIC AFFAIRS AND PROVOST

It is with great pleasure that I share some of the accomplishments and developments of the past academic year as well as some of the events that took place this fall. With students at the center, we strive to continually enhance academic offerings, campus life, and career opportunities.

Throughout the past academic year we were very busy planning for events culminating in the fall. The Taubman Complex, where the Marburger STEM Center and our programs in the life sciences and robotics are now residing, was under construction and we had to prepare for the move.

All the planning and work were well rewarded as we had a very smooth transition and move to the new building, which officially was dedicated in September. New laboratories for biomedical engineering, molecular and cell biology, robotics, and the sophomore Entrepreneurial Engineering Design Studio are designed to expand and develop pedagogy and research that fully engage students in their learning, so exemplified by the University's theory and practice motto.

We were also successful in concluding two searches for key administrators. Karl Daubmann started as the new dean of the College of Architecture and Design on July 1, after a national search that attracted numerous high-caliber candidates. A design architect with experience in both academia and industry, he was attracted to Lawrence Tech's multidisciplinary design culture. He and his team are already working on their college's strategic plan to make Lawrence Tech even better known for the quality of designers that we produce. In addition to architecture and interior architecture, the college offers excellent undergraduate transportation and industrial design, game art, graphic design, and interaction design programs. We look forward to an even greater future with Dean Daubmann.

Dr. Sibrina Collins started as the inaugural executive director of the Marburger STEM Center, also on July 1. She is another dynamic addition to Lawrence Tech. Working with the faculty and the administration, she is developing the vision and mission of the Marburger STEM Center to focus on innovative teaching that reinvents the meaning of STEM as "Systems, Technology, and Educational Mentoring" through student research and K–12 outreach. The goal is to instill in all students a passion for STEM careers. Dr. Collins' office in the Taubman Complex is literally in the middle of it all.

In addition, we are proud to start serving the health care industry through a partnership with St. John Providence to offer a brand new direct-admit Bachelor of Science in Nursing. We have worked hard together to form a strong partnership and on November 3 we were authorized by the Michigan State Board of Nursing to offer the new degree.

Our program will emphasize the skills that are needed for the nurse of the 21st century. In addition to the traditional nursing functions, health management and use of technology will be hallmarks of LTU's program. Students will start their nursing courses as freshmen and will have their laboratories at nearby Providence Hospital and their clinical training in the six hospitals that are part of the St. John Providence health system. Our Office of Admissions is now very busy recruiting our first class that will start fall semester 2017. The program will be administered within the College of Arts and Sciences.

Lawrence Tech's undergraduate enrollment continues to increase. This fall our undergraduate students increased by 3.1 percent with a 7.3 percent increase in credit hours relative to the fall semester of 2015. The freshman class increased by 6.4 percent with an average GPA of 3.5 and an average ACT score of 25. Students looking for careers in engineering and other STEAM disciplines continue to find that a Lawrence Tech education is an investment with enormous return, as identified by the Brookings Institution, PayScale, *Wall Street Journal*, and others.

Despite the added rooms provided by the Lloyd E. Reuss Residence Hall that opened in fall 2015, we find that campus housing is again completely full. Over 800 students reside on-campus, achieving a 100 percent occupancy rate. With the increase of residential students there is a growing number of daily events on campus organized by the students themselves or

Provost Vaz congratulates Lior Shamir, associate professor of mathematics and computer science, for outstanding scholarly achievement at LTU's Research Day in April.

by the Office of Student Affairs – sports competitions and games, professional student chapter meetings, professional seminars, service learning activities, plays, clubs, Greek life, and more. It is exciting to see the engagement of students in vibrant campus activities that enhance their leadership skills and sense of civic responsibility. During the presidential election about 50 of our students helped at the voting stations in Southfield.

Our athletic program, with students competing as part of the National Association of Intercollegiate Athletics (NAIA), continues to grow. This year we started a men's baseball team and a women's softball team. Our student athletes continue to be role models for all the other students. In addition to being part of competitive sports teams, they are also very good students.

The scholarship of our faculty complements and enhances the classroom experience. In addition to a software donation by Siemens that includes 200 seats for student and faculty training and has a commercial value of about $200 million dollars, many of our faculty received grants for projects that involve students, including undergraduates, in research or industry sponsored projects. In 2015–16, faculty obtained some $2 million for research and student projects.

LTU's Detroit Center for Design + Technology (DCDT) has been bustling with activity in Detroit's Midtown district. In addition to several studios that take place at the DCDT, many exhibitions, presentations, and seminars have occurred there. It has also served as a gathering place for design and community development professionals. The DCDT provides excellent opportunities for architecture and design and other LTU students and faculty to connect with each other and engage in Detroit's renaissance.

Provost Vaz (upper right) meets with alumni and former staff and faculty during the annual True Blue Brunch at Homecoming 2016. Left to right: Richard Maslowski; Stan Harris; Joe Dyki; John Grden, BSEE'77; Provost Vaz; Barry Knister; and Ruth Favro.

In 2015–16 the evaluation team from the National Association of Schools of Art and Design (NASAD) visited LTU to accredit all the art and design programs offered by the College of Architecture and Design. The graphic design, game art, interaction design, transportation and industrial design, and interior architecture programs were all re-accredited for 10 years. We are thankful for the many faculty and administrators who maintain such quality programs for students, and we are proud of our students who do such excellent work.

The process for attaining Association to Advance Collegiate Schools of Business (AACSB) accreditation for the College of Management is now in its final phase. The AACSB accepted our application, and the chair of the visitation team made his initial visit to LTU this past fall. In addition, the College of Engineering prepared last year for the ABET accreditation team visit in October 2016. Eight programs were evaluated. We will report next year on our success.

Provost Vaz provided the closing remarks at the world championships of Robofest, held at the Don Ridler Field House.

Lawrence Technological University's faculty and staff strive to provide an excellent education that offers outstanding value. The contributions of our alumni and friends as partners in assuring the distinctiveness and affordability of a Lawrence Tech education are essential to our success. Thank you for your generous support!

Maria J. Vaz

FROM THE VICE PRESIDENT OF UNIVERSITY ADVANCEMENT

Alfred Lord Tennyson once wrote, "Hope smiles from the threshold of the year to come." And our hope at Lawrence Technological University is based on generations of students, now alumni, leading happy, productive lives in communities throughout Michigan and indeed around the world. Each year we are delighted to welcome hundreds of alumni back to campus to engage them in the life of the institution that they have helped shape.

Today, thanks to the generous support of alumni, trustees, corporations, foundations, and our own faculty and professional staff, LTU is stronger than ever. Philanthropy continues to transform lives, whether through the hundreds of donor-supported scholarships that students received this year, or through the sponsored research making roads safer and cars more efficient.

It is always our students who say it best:

"After opening an email letting me know I had received a scholarship, I immediately thought of the future. I knew that I was receiving this support for a reason. Once I graduate, I know I will be able to be hired into a great job. This job will not only help me, but I already know I want to return this favor to another LTU student one day. I will strive to achieve my goals and remember that now I have an additional person helping me that I can make proud. Thank you." – Jacob

The woman graced with this scholarship will in turn become a great architect and continue to value her education. Sometimes my motivation weakens, but I continue to strive for my goal. Before I received the email about the scholarship I was having a difficult week, but that email gave me hope. I sincerely want to thank you for giving me the motivation to continue." – Autumn

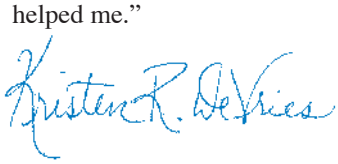
"Thanks to this scholarship, I will be able to take the classes I want. I will learn as much as I can during my time here and become an engineer that will make a difference in the world. It warms my heart knowing that later in life, I'll be able to give back to my community as you have given to me." – Joshua

Kristen DeVries, vice president of university advancement (right), enjoying some quality time with LTU Alumni Association President Donna Bell, BSEE'89, at Homecoming 2016.

President Moudgil wrote about the tremendous impact the A. Alfred Taubman Engineering, Architecture, and Life Sciences Complex is already having on our campus, thanks to the philanthropy of so many. Philanthropic support is also providing the backbone for the Detroit Center for Design + Technology, as well as the remarkable new AstroTurf multi-sport playing field. We even enjoyed achieving Bronze Status as a Bike-Friendly University thanks to a generous alumnus.

In this new year, we are optimistic about ever-growing numbers of alumni, donors, and friends coming back to the University for events like Homecoming and Springsation, engaging with our students through guest lectures and mentoring, cheering on our sports teams, and offering their financial support. Because of you, Lawrence Tech will continue to grow in reputation and in excellence as we stay true to our mission to develop innovative and agile leaders through a student-centric learning environment and applied research embracing theory and practice.

Again, an LTU freshman student says it best, "I will always remember the impact you have made on my life. I understand the value of this opportunity, and I will work hard for myself, my team, my family, you, as well as Lawrence Technological University. Thank you. I hope to one day help students achieve their dreams just as you have helped me."



Kristen R. DeVries

Kristen DeVries, vice president of university advancement, enjoys a chat with (from left) President Virinder Moudgil, LTU board chair Doug Ebert, and Robert Taubman, prior to the dedication of the Taubman Complex in September.

FROM THE VICE PRESIDENT OF FINANCE AND ADMINISTRATION

Linda L. Height

Lawrence Technological University ended Fiscal Year 2015–16 on a very positive note by exceeding budget projections and achieving a surplus of $3,915,403. This marks two consecutive years of achieving better than expected budget surpluses. Enrollment numbers were strong in both undergraduate and graduate programs, with an overall 7.3 percent increase in credit hours.

The athletic program continues to positively affect our enrollment numbers, our retention rates, and the overall grade point average of our students. Student athletes have increased our reach by attracting excellent students from around the country and across the state. These numbers have contributed to our solid operating performance and are in line with the University's strategic initiatives.

Reuss Hall, our newest 150-bed housing unit, was completely full throughout this academic year, and we continue to be oversubscribed in housing. Because of that, we continue to lease beds from a third party in the area. It will be important to our growth initiatives to look for ways in which to add an additional housing unit on campus by fall 2018.

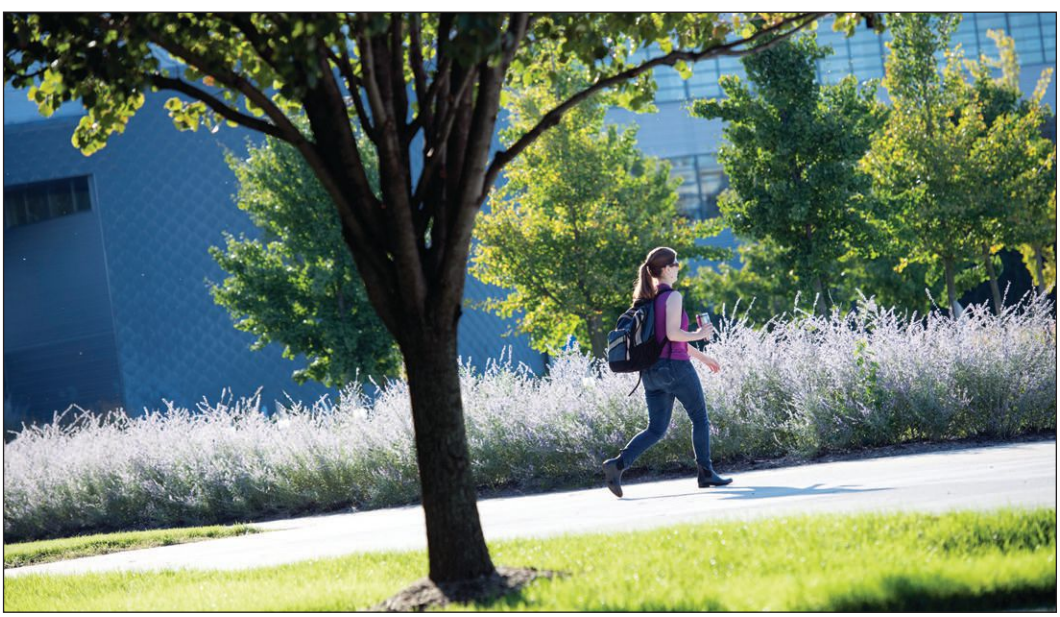
We continue to focus on identifying cost efficiencies and ways in which to deliver quality service at the lowest price. This is an effort that requires all University departments to be involved. Due to the opening of Reuss Hall, plant operations and institutional support budget items increased in FY2015–16, as well as scholarship support and our debt service from the new housing bond.

Each year, we invest more in student scholarships. This year, scholarships increased to $16,644,114. All of these scholarships are funded through operations. The University did not increase tuition at all in FY2015–16, but continued to provide a significant amount of support to students through these academic and athletic discounts. Additionally, there is approximately $1,000,000 of funded scholarships that is awarded annually, thanks to the generosity of our donors.

Human Resources and the Benefits Committee continued their work to enhance employee benefits while reducing overall costs. By working with our insurance providers, the Benefits Committee negotiated a competitive rate for employee medical benefits, and no cost increase for life, disability, vision, and dental coverage. As a strong advocate for preventive health care, the University instituted the "Healthy Living" initiative two years ago, and it has resulted in remarkable benefits for employees and their families. As a group, we are shedding pounds and reducing the need for blood pressure medications.

In order to assist our employees with retirement readiness, an additional 0.5 percent match was added to the University match for employees' 403b plan, bringing the match up to 3 percent of salary. Many educational programs are provided, both individually and in group settings, so employees can be well-informed about their options. Our plan is reviewed twice a year by our investment advisor and changes are made when necessary.

Campus Facilities remains busy with routine maintenance items, lifecycle maintenance requirements, and new projects. With some additional capital approved by the Board of Trustees, several major lifecycle purchases were begun, including the replacement of old boilers and windows across campus. Considerable attention continues to be paid to our landscaping, and, as a result, LTU received its second Green Star Award from the Professional Grounds Management Society for the



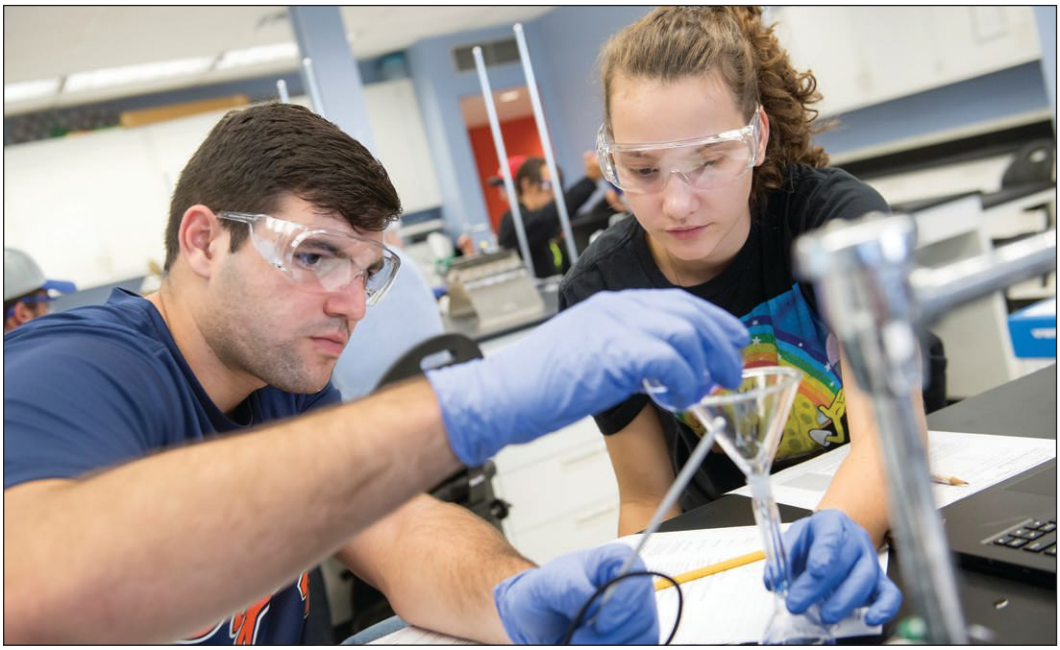
Lawrence Tech received another Green Star Award from the Professional Grounds Management Society for the beauty and sustainable design of campus.

beautification and sustainable design on our campus grounds.

In FY 2015–16, we were successful in purchasing the Mark Plaza property, which is contiguous to our campus. This property will continue to be used as rental property, with the net revenue going toward the endowment. This 97,000-square-foot building and five acres of land will be incorporated into the update of the Campus Master Plan and may allow for some educational use in the future.

Emphasis continues to be placed on the safety of our campus, both physically and with our computer systems. This year, we continued to replace cameras across the University and to add exterior cameras in the parking lots. Door access is also a significant project being undertaken by Information Technology and Campus Safety. We have had several Critical Incident training workshops. Additionally, Campus Safety has forged strong relationships with the City of Southfield Police and Fire Departments.

Investments in the University endowment performed well in this fiscal year. Lawrence Tech outperformed similar institutions, and the S&P 500 over a one-year period and kept pace with them over three- and five-year intervals. These investments are monitored constantly, and the University's investment strategy is reviewed with the Finance/Investment Committee of the Board of Trustees. Some changes have been made to our portfolio due to the changing marketplace.

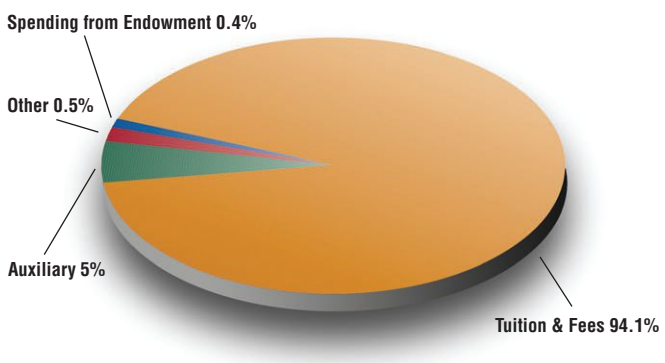


Each year, more than $17 million in LTU and donor-funded scholarships give students the opportunity to benefit from a superior Lawrence Tech education.

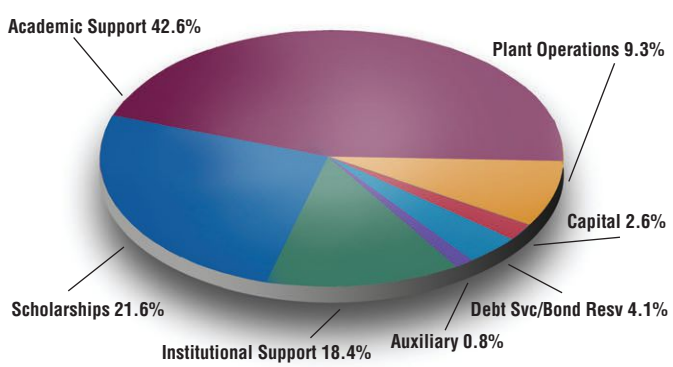
Overall, the University is making progress in its goals to increase enrollment and retention. That is important as our revenue comes primarily from student tuition. To assure our financial health, we must continue to focus on alternative revenue opportunities, cost efficiencies, debt reduction, and increasing our endowment. Improvements in these four categories will help us improve the financial health of the University as well as sustaining its reputation.

Linda L. Height

Revenue: $80,889,861



Expenses: $76,974,458



Financial results for fiscal year ending June 30, 2016

Gifts to the LTU Annual Fund impact every area of campus, enabling the University to deliver the world-class Theory and Practice education that has set our graduates apart for 85 years. **You can help students like Rasha discover *their* possibilities.** To make your gift, visit www.ltu.edu/give or text "GiveLTU" to 91999. If you have questions about your giving options, please contact University Advancement at 248.204.2300 or development@ltu.edu.

Lawrence Technological University

Learn more about Rasha and other exceptional LTU students at www.ltu.edu/possible.

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Lawrence Tech, St. John Providence partner for nursing education

M. Therese Jamison

Lawrence Technological University's motto, "Theory and Practice," has been brought to life in another new academic program – nursing.

The program, beginning in the Fall 2017 semester in August, will provide classroom instruction at Lawrence Tech with clinical and laboratory instruction at six St. John Providence hospital locations around metro Detroit. St. John Providence is part of Ascension, the largest nonprofit health system in the U.S. and the world's largest Catholic health system.

The new program will be administered by Lawrence Tech's College of Arts and Sciences as a major in the Department of Natural Sciences, and will culminate with a Bachelor of Science in Nursing. The program will admit an initial cohort of 32 students in fall 2017, and 32 new students per year thereafter.

"Michigan and the nation as a whole are in the midst of a continuing shortage of qualified, well-trained nurses," Lawrence Tech President Virinder Moudgil said. "We aim to help solve that problem with a nursing education program that will take full advantage of our 85-year history as a technologically advanced university. LTU's 'Theory and Practice' motto is a perfect description of the kind of nursing education we will deliver with our partners at Providence."

"This partnership is part of our ongoing commitment to providing the training our future nurses need so they can deliver the high quality and compassionate care that patients expect and deserve," said Jean Meyer, St. John Providence president and CEO.

The Michigan Board of Nursing approved the application for the new program Nov. 3.

Lawrence Tech has hired Therese Jamison, DNP, ACNP-BC, as professor of nursing and director of the program. Jamison earned her Doctorate of Nursing Practice from Vanderbilt University. Earlier, she earned both a Bachelor of Science and a Master of Science in Nursing from Wayne State University, as well as a post-master's certificate as an acute care nurse practitioner from the University of Michigan.

A veteran nursing specialist, Jamison continues to work one day a week as a nurse practitioner in cardiovascular services at St. John Macomb-Oakland Hospital, Warren Campus. Why? Said Jamison: "The landscape in healthcare is continuously changing, and as an administrator and faculty member, I must be abreast of what is going on in the healthcare industry, so I can effectively and positively inform our students."

Jamison said the nursing shortage is real and will continue, due to an aging population, which creates more patients, and an aging population of nurses nearing retirement. That's one reason she believes LTU's nursing program will be well-received: "Because of the nursing faculty shortage and the lack of clinical sites, 75,000 nursing student applicants have been turned away in just the past few years."

Jamison said the LTU program's close alliance with St. John Providence makes the program unique, as does its direct admittance. (Most bachelor's degree nursing education consists of two years of "pre-nursing" prerequisites, when only the most successful students are allowed to participate in the final years of actual nursing education. At LTU, qualified students will be admitted directly to the BSN program, and will begin receiving nursing education in their first semester.) Also, she said, the LTU program will be conducted in 11 consecutive semesters over four years with no summers off; most other BSN programs take five years to complete.

Jamison added that LTU's status as a technically focused school will confer special advantages to students in terms of being exposed to other science, engineering, and design disciplines.

The six St. John Providence locations where students will complete clinical studies are St. John Hospital and Medical Center, Detroit; St. John Macomb-Oakland Hospital, Warren; St. John Macomb-Oakland Hospital, Madison Heights; Providence-Providence Park Hospital, Southfield; Providence-Providence Park Hospital, Novi; and St. John River District Hospital, East China Township ☐*MR*