

SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

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WOOD-FRAME BIKES REWARDING FOR CEDARVILLE PROFESSOR AND STUDENTS

When you talk about bicycles and trees, it's usually a story punctured with lacerations, stitches, and possibly a trip to the emergency room. But for Assistant Professor of Mechanical and Biomedical Engineering Jay Kinsinger and four senior engineering students, trees are the source material to build a bicycle frame *from*, rather than something to wrap a frame *around*.

Kinsinger has been building, testing, showing, and riding wooden-frame bicycles since 2011. Last year, four seniors — Jake Miller '14, David Yoder '14, Garrett Start '14, and Cody Lewis '15 — took on the challenge of analyzing, building, and testing wooden bicycle frames as their capstone senior design project.

"The wooden bike senior design project was an excellent opportunity to learn how to work with a team and apply engineering principles to a complex situation," said Miller. "It was the first time in my education where there really were no 'correct answers' in the back of the book. The uniqueness of the project meant that there were no experienced professionals to consult. Now that I am working in

industry, I've realized how valuable the ability to think independently and creatively really is."

The frames are made out of custom laminated black walnut, which is a relatively stable wood and has a very good strength-to-weight ratio. The frames are hollow, making them comparable in weight to an aluminum bike. The ride is very smooth because the wood absorbs vibration from the road.

"The wooden bikes themselves were incredible to work with," added Miller. "There is nothing quite like riding the wooden frame that you saw through every step to becoming a bicycle. Using what I learned from the project, I was able to build a walnut triathlon frame, and I wouldn't want to ride any other bike. I'm hoping to do my first triathlon on it this spring."

For Kinsinger, his passion for wooden bikes goes much further than his work with students. He has been building wooden bicycles for years, amassing awards and building memories along the way.

In 2014, Kinsinger represented Cedarville University at the North American Handmade Bicycle Show



Assistant Professor of Mechanical and Biomedical Engineering Jay Kinsinger won four awards for his cyclocross bike, including Best in Show at Artistry in Wood, the country's largest woodworking show.

(NAHBS) in Charlotte, North Carolina. His wooden tandem was recognized by *Bicycling* magazine as a Best of Show. NAHBS is the largest handmade bicycle show in the world.

FACULTY RECEIVE SCHOLARLY ACTIVITY AWARDS



Dr. Timothy Norman was granted one of only two Scholarly Release Awards offered to the faculty of the College of Professions during the spring 2014 semester. Norman used his three hours of academic load release to research fifth-year master's degree programs offered by a number of engineering departments across the country and determine whether it

would be feasible for Cedarville to do likewise. Issues he reviewed included faculty size and expertise, on-campus versus online delivery, market conditions and revenue potential, and curricular requirements. Based on his findings, the School of Engineering and Computer Science is proceeding to develop five-year course work only master's degrees.



Dr. Thomas Thompson received one of only a handful of 2013 Cedarville University Faculty Scholarship Summer Grants. Thompson used the funding to develop a low-cost software package that allows the user to define key points in space to design linkage elements for prosthetic knees. Through this, Thompson allows prosthetic

engineers to individualize their product for each patient once certain characteristic dimensions were input into the software.



Dr. Timothy Tuinstra received one of only four 2014 Cedarville University Faculty Scholarship Summer Grants. Tuinstra used the grant to develop software that permits a quad-copter to perform tasks autonomously, without direct pilot influence. Classic radio-controlled planes have been enjoyed by aero enthusiasts

for about a half-century. Modern warfare now incorporates drones that are unmanned, but not pilotless. Tuinstra, who has advised student design competitions for two autonomous vehicles (Ground Robot and RoboBoat), is taking the next obvious step with his research.

NEW FACULTY NEWS



Patrick Dudenhofer joined our faculty in the fall of 2014. He earned his bachelor's degree in computer science from Cedarville University in 2004. Dudenhofer managed technical information, designed software, and researched human-computer control interfaces for the Air Force Research Laboratory at Wright-Patt after he graduated from Cedarville. He also earned his

master's degree from Wright State University in 2011. Dudenhofer hopes to pursue a Ph.D. in computer science over the next few years, while getting to know our ever-increasing population of students.



Dr. Fred Harmon joined our faculty in the fall of 2014. He earned his bachelor's degree in electrical engineering from Embry-Riddle Aeronautical University while participating in the Air Force ROTC program. Upon being commissioned in 1992, Harmon was stationed at Wright-Patterson Air Force Base. He performed many functions for the Air Force as an electrical

engineer at Wright-Patt, Rome Laboratory, and Edwards Air Force Base before attending the University of California-Davis, where he earned his Ph.D. in 2005. Harmon taught at the Air Force Institute of Technology just prior to his retirement from the Air Force, after which he worked as a Radar Engineer for SAIC.



Dr. Darren Holland, joined our faculty in the fall of 2013. He graduated from Cedarville University with a degree in mechanical engineering in 2006 and earned his doctorate from the University of Michigan in 2012. While a student at Cedarville, Holland enjoyed the Vibrations elective taught by Dr. Larry Zavodney. He spent his years as a graduate student performing research on gas

turbine components in order to improve our understanding of their characteristic modes of vibration and determine their damping factors. Holland has been advising the SIM PVC Hand Pump mechanical engineering senior design teams, whose goal has been to evaluate and improve a pump designed to provide clean drinking water to communities in Bolivia.

Few universities — Christian or not — offer the modern facilities, extensive hands-on experiences, and one-on-one faculty interaction that characterize Cedarville's programs. The rigorous classroom experience combined with a campus environment openly committed to Christ prepares our graduates to find jobs in a wide range of engineering and technology fields or to succeed in graduate school.

FACULTY

- Robert Chasnov, Ph.D. (Dean)
- Samuel SanGregory, Ph.D. (Assistant Dean)
- Gerald Brown, Ph.D.
- Timothy Dewhurst, Ph.D.
- Patrick Dudenhofer, M.S.
- Vicky Fang, Ph.D.
- David Gallagher, Ph.D.
- Seth Hamman, M.S.
- Frederick Harmon, Ph.D.
- Harwood Hegna, Ph.D.
- Darren Holland, Ph.D.
- Jay Kinsinger, M.S.
- Clinton Kohl, Ph.D.
- Timothy Norman, Ph.D.
- George Qin, Ph.D.
- Keith Shomper, Ph.D.
- Jeffrey Shortt, Ph.D.
- Thomas Thompson, Ph.D.
- Timothy Tuinstra, Ph.D.
- Tim Yao, Ph.D.
- Lawrence Zavodney, Ph.D.

MAJORS

- Computer Engineering (B.S.Cp.E.)
- Computer Science (B.S.)
- Electrical Engineering (B.S.E.E.)
- Mechanical Engineering (B.S.M.E.)

MINORS

- Biomedical Engineering
- Computer Science

SPECIAL PROGRAMS

- Cooperative Education Program
- Engineering Honors Program

INTERSHIPS

Cedarville's Career Services staff will help you prepare for your career through discipline-related experiences, or internships. You will have an advantage in a competitive job market because of real-life, hands-on experience. Students in our department have enjoyed internships with organizations including:

- 3M
- Advanced Navigation
- Air Force Institute of Technology
- Amazon.com
- Avetec
- BAE Systems
- Ball Aerospace
- Belcan Corporation
- BMW
- Boeing
- Booz Allen Hamilton
- CAT
- Century Engineering
- Cisco
- Cummins
- Fastenal
- Honda Research and Development
- John Deere
- Microsoft Corporation
- NASA Glenn Research Center
- Northrop Grumman
- Procter & Gamble
- Rockwell Automation
- Toyota
- Wright-Patterson Air Force Base

GREETINGS FROM THE DEAN

No, your eyes are not playing tricks on you ... my new title of Dean was made official soon after the academic division restructured. Whereas we had been a department within the College of Professions, we are now the School of Engineering and Computer Science. As Dean of the School, I report directly to our Academic



Vice President. Change is the new rule of thumb, and we are excited in anticipation of what God may bring our way.

This year's newsletter has a stronger focus on our faculty than you would have found in many of the previous issues. You will be introduced to our newest faculty members and learn about the latest research being done by others. We also share with you the honors

received by some of our faculty over the past year. Our 21 full-time faculty members are busy learning, teaching, experimenting, consulting, and competing. In turn, they keep our 456 students busy both in and out of the classroom.

The growth in the number of students majoring in computer, electrical, and mechanical engineering as well as computer science has led to ours being the largest school at Cedarville. As always, our goal is to educate some of the finest students in the world and turn them loose as servants of the Lord in industry, education, and government. We enjoyed hearing the stories as told by the members of our very first class of graduates from 1994 at their 20-year reunion during homecoming weekend last October. The alumni who competed in SAE Aerodesign or Supermileage marveled at the progress made over the past 20 years.

We hope you enjoy reading the reports from the competition teams from the past year ... some good, some not so good. Much the same way that the New York Yankees or the Green Bay Packers or the Miami Heat are always being chased by a large crowd of teams trying to topple their status as champions, Cedarville's role as a winner in many of our competitions is difficult to maintain every year. Through it all, it is always our desire to "grow in the grace and knowledge of our Lord and Savior Jesus Christ" (2 Pet. 3:18), that He would receive the glory for all we do, and that our efforts would have an eternal impact on the lives of those we compete against.

Blessings to you,

A handwritten signature in dark ink that reads "Robert Chasnov".

Robert Chasnov, Ph.D., P.E.
Dean, School of Engineering and Computer Science

FACULTY PUBLICATIONS AND PRESENTATIONS

Our faculty members are dedicated teachers who challenge their students to push past familiar boundaries of knowledge and stretch their ability to find solutions to complex science and engineering problems. Our engineering and computer science professors push themselves as well, researching and digging deeper to increase their understanding and to expand the body of knowledge in their areas of expertise.

Following are some of the articles our faculty members have produced and professional presentations they've given in service to Cedarville, their colleagues, and to the Lord. Many of the conferences that our faculty members attend require presenters to publish their findings in the conference program. These are listed among the publications and not duplicated on the list of presentations. We are proud of our professors and congratulate them for their excellent peer-reviewed contributions in higher education.



The Institute of Electrical and Electronics Engineers (IEEE) Power & Energy Society (PES) awarded Cedarville junior Jared Newman a \$2,000 Plus Initiative scholarship for the 2014–15 academic year. Newman is one of 184 scholarship recipients from 95 U.S. and Canadian universities. This summer, Newman plans to intern with American Electric Power in Columbus, Ohio. He is pictured with Dr. Gerry Brown (L) and Dr. Bob Chasnov (R). Newman is also a third-year midfielder on the men's soccer team.

PUBLICATIONS

T.L. Norman, "Low Velocity Impact of Composites," book chapter in *Multifunctional Composites* (E.J. Barbero, Ed.), 2014.

J. Hutchison, D. Madsen, T.L. Norman, and J.D. Blaha, "Knee Loading in Abnormal Gait," Society of Engineering Sciences (SES) Annual Meeting, Purdue University, Oct. 1–3, 2014.

Z. Qin and R.H. Pletcher, "A Statistical Model of Drop Increase with Deposition in Granular Filters," *Advanced Powder Technology*, in publication, 2014.

T.L. Norman, S. Gardner, S. Grafton, A. Orton, and T.S. Fehring, "Taper-Trunion Interface Stresses in Metal on Metal Hip Implant Systems Become Critical with Ball Size and During Certain Activities," Proceedings of the 60th annual meeting of the Orthopaedic Research Society, New Orleans, LA, March 2014.

T. Dewhurst and G. Brown, "The Preliminary Design Phase – The Key to Achieving Project

Objectives." In N. van Hattum-Janssen, R.M. Lima and D. Carvalho (Eds.), Proceedings of the Fifth International Symposium on Project Approaches in Engineering Education PAEE 2013, Eindhoven, Netherlands.

T. Ronco, G. Brown, and T. Dewhurst, "Cross-Discipline Projects Prepare Students for Industry," In N. van Hattum-Janssen, R.M. Lima and D. Carvalho (Eds.), Proceedings of the Fifth International Symposium on Project Approaches in Engineering Education PAEE 2013, Eindhoven, the Netherlands.

T. Dewhurst and G. Brown, "Mentoring Students in a Capstone Design Experience," In N. van Hattum-Janssen, R.M. Lima and D. Carvalho (Eds.), Proceedings of the Fifth International Symposium on Project Approaches in Engineering Education PAEE 2013, Eindhoven, the Netherlands.

K. Nicolaisen, G. Brown, and T. Dewhurst, "Contingency Plans – A Key Element of Successful Engineering Designs," In N. van Hattum-Janssen, R.M. Lima and D. Carvalho (Eds.), Proceedings of the Fifth International Symposium on Project Approaches in Engineering Education PAEE 2013, Eindhoven, the Netherlands.

Y.N. Yener, C.U. Brown, T.A. Gruen, and T.L. Norman, "The Relationships between Femoral Cortex Geometry and Tissue Mechanical Properties," *Journal of Mechanical Behavior of Biomedical Materials*, Jan 23;21C, pp. 9–16, 2013.

T.L. Norman, T.R. Shultz, G. Noble, T.A. Gruen, and J.D. Blaha, "Bone creep and short and long term subsidence after cemented stem total hip arthroplasty (THA)," *Journal of Biomechanics*, Mar 15;46(5):949–55, 2013.

S.D. Daffner, S. Waugh, T.L. Norman, N. Mukherjee, J.C. France, "Nicotine Increases Osteoblast Activity of Induced Bone Marrow Stromal Cells in a Dose Dependent Manner: An In-Vitro Cell Culture Experiment," *Global Spine Journal*, Vol. 2, pp153–158, 2012.

PRESENTATIONS

J. Kinsinger, "Swapping Silver Braze for Sawdust," North American Handmade Bicycle Show, largest hand-built bicycle exposition/symposium in the world, Charlotte, NC, March 2014.

R. Chasnov, "Energy From the Sun," IEEE Dayton Section Awards Banquet, Dayton, OH, April 2014.

T. Thompson and E. Watson, "A Computer Design Tool to tailor the Motion of Low-cost, Four-bar Prosthetic Knees for Individual Patients," The 9th Annual Dayton Engineering Sciences Symposium, Dayton, OH, October 2013.

T. Dewhurst and G. Brown, "IEEE/PELS 'SOLAR SPLASH' 2014.

Intercollegiate Solar/Electric Boat Competition Workshop," IEEE/PELS Energy Conversion Conference and Exposition 2013, Denver, CO, September 2013.

S. Gardner, S. Grafton, T.K. Fehring, T.L. Norman, "Mechanical Evaluation of Metal on Metal Total Hip Arthroplasty," Research and Scholarship Symposium, Cedarville University, Cedarville Ohio, April, 2013.

J. Meade, Z. Young, T.L. Norman, and E. Injeti, "Parallel Plate Flow Chamber Design to Study Endothelial Cell Response," Research and Scholarship Symposium, Cedarville University, Cedarville Ohio, April, 2013.

CEDARVILLE UNIVERSITY SHINES AS SOLAR BOATING HOST

Cedarville has traveled across the country and around the world to prove its solar boating skill, but in 2014, the competition came to familiar waters.

Solar Splash, the world championship of intercollegiate solar/electric boating, motored into Eastwood Park in Dayton, Ohio, from June 11–15. Dr. Tim Dewhurst, Senior Professor of Mechanical Engineering and faculty advisor for Cedarville's solar boat team, led the effort to bring Solar Splash to Dayton. Dr. Gerry Brown, Associate Professor of Electrical Engineering, served as primary advisor for Cedarville's team, while Dewhurst coordinated the five-day event.

In addition to Cedarville, the following universities launched boats at this year's renewable energy competition: University of Dayton, SUNY (The State University of New York) Stony Brook, The College of New Jersey, Middle Tennessee State University, University of South Carolina, University of Arkansas, Northeastern University, University of Rochester, and the University of North Texas.

Prior to arriving at the competition, each team created a piloted boat up to 18 feet in length powered by 480 watts of solar power with 1 kW-hr of stored energy in batteries. During the competition, teams battled for the title of Collegiate World Champion during a qualifying heat, high-speed sprint race, long-endurance race, and slalom event. In addition to races, judges reviewed technical reports submitted by each team.

Cedarville is a seven-time Solar Splash champion and also placed first among universities in



the Danish Oil and Natural Gas (DONG) Solar Challenge in the Netherlands in 2012. This year, Cedarville students and faculty members built an entirely new boat including the hull, solar panels, motors, electronics, and drive train. Due to electrical malfunctions, this year's boat did not perform as expected.

However, results were still impressive. The Cedarville boat recorded the fastest sprint time and had a commanding lead in the endurance event before the motor-controller failed. The team won first place for its technical report and visual display and earned honors for best solar system design, for which the team is currently pursuing a patent. The recent advances may not have netted a victory, but the Cedarville engineer-boaters are positioned to shine when Solar Splash returns to Dayton in 2015.

Solar Splash is an Institute of Electrical and Electronics Engineers (IEEE) Power Electronics Society event.



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- STR, Morningstar
- Honeywell, Inc.
- TE Connectivity/Ladd Distribution
- Soller Composites
- IEEE/PELS
- Melink
- ASME (National and Dayton Section)
- SOCHE
- Union Bank and Trust
- RBI Solar
- REC Solar



Cedarville University's 2013–2014 SAE Aero Design teams included (Left to Right): senior Stephanie La Croix, Dr. Tim Norman (Advisor), seniors David Ross, Christopher Fox, Alan Lockwood (team captain), Quinton Paul, Jeremiah Morton (team captain), Micah Holck, Corey Caldwell, Ian Leong, and underclassmen Benjamin Thompson, Melody Strayer, Adam Barbato, Daniel Cape, Krister Samuelson, Kayla Fry, Joel Baker, Sarah Harbeck, Spencer Helmick. Picture courtesy of Scott Huck, Cedarville University.

AERO DESIGN TEAMS EARN GREENE COUNTY ACHIEVERS HONOR

Greene County (Ohio) Commissioners honored Cedarville University's Society of Automotive Engineers (SAE) Aero Design teams as Greene County Achievers during their Annual Report to the community. Every year, the commissioners recognize individuals, groups, and businesses whose accomplishments highlight what's great about Greene County.

For the SAE Aero Design competition, student teams design, build, and fly remote-controlled airplanes. Teams receive the design guidelines in August or September and craft their designs during fall semester. In the spring, the teams build and refine the airplanes to prepare them for the April competition. Teams earn points for flights, an oral presentation, and a report.

Eighteen Cedarville students competed, with Dr. Tim Norman, Professor of Mechanical and Biomechanical Engineering, serving as team advisor. An underclassman team built a plane in the micro class. These planes can be folded and fit in a box, unpacked, and assembled in three minutes by two people, and fly with a high amount of weight (payload) compared to a low overall empty weight. An all-senior team

constructed a regular class plane, which is also tested to see how much weight it can carry. There was also an advanced class, developed with real-time communications with the ground and made for delivering objects in drops.

The competition featured teams from Poland, Brazil, India, and many other countries. During the event, students flew their planes multiple times, earning points for every successful flight and the payload.

Cedarville's team entered innovative and risk-taking designs. "From a theoretical point of view (the senior team plane) had all the right stuff," Norman said. "The plane, similar to a flying wing, had the kind of issues that typically come with a flying wing, such as stability problems, and that's what made the flying portion of the competition a real challenge."

While the teams met with limited success in this year's competition, their mindset and positive attitudes soared. "I heard from many advisors and students that the (senior) team was an inspiration for their work ethic," Norman said. "They got the plane back in the air after crashes and pulled three successive all-nighters doing it."

The senior team placed fourth out of 40 in the oral presentation segment of the competition but ranked 34th out of 42 overall. The underclassmen placed 15th of 19 teams. "Getting to the podium is not the whole picture," Norman said. "They weren't on the podium, but they were noticed because of their character. Yes, the long-term goal is to be on the podium, but also to get there with good character every year."

Cedarville's Aero Design team has a long history of winning. The team placed first overall in 2003 and landed in the top five spots in five of the last 10 years. They also finished in first place in maximum payload lifted or first place in design in three of the last 11 years.

The 2014–2015 SAE East Aero Design competition takes place March 13–15 in Lakeland, Florida. SAE is a U.S.-based professional organization of more than 138,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries.

SHELL ECO-MARATHON TEAM REPORT

By Dr. Larry Zavodney
Senior Professor of Mechanical Engineering

Cedarville University's Efficient Vehicle Team hit some bumps in the road during the April 2014 Shell Eco-marathon held in Houston, Texas. In spite of the setbacks, they earned an invite from Shell to the 2015 Detroit Auto Show.

The Shell Eco-marathon holds races in the Americas, Europe, and Asia to challenge students to design, build, and test super energy-efficient vehicles. Cedarville entered three vehicles: Gold Lightning II and Sting in the Prototype Division and Urbie in the Urban Concept Division.

URBIE

Urbie was designed and built in the 2011–2012 school year and has gone through a number of upgrades. The 2014 team added a custom electrical control box, a new switch and fuse panel, and an Android tablet for a display panel beside the steering wheel. They also incorporated a conventional turn signal lever, headlight switch, and windshield wiper switch.

Urbie's hybrid-electric drivetrain uses a Honda GRX 25cc 4-cycle engine that powers two 200-watt generators. At competition, all systems ran as designed and passed technical inspection, but Urbie could not finish 10 laps in the required time.

Despite the poor showing in Houston, Shell wanted to showcase Urbie. In October, Urbie was featured in two workshop tours at the Meeting of the Minds conference in Detroit, a gathering of

leaders imagining new possibilities for American cities. In January 2015 at the Detroit Auto Show, Urbie was taken for a test drive by NASCAR star Brad Keselowski, 2012 Sprint Cup Champion.

GOLD LIGHTNING

Gold Lightning II (GL-II) made its debut in 2007 for the inaugural Shell Eco-marathon Americas held at the California Motor Speedway in Fontana. GL-II features a Webcore chassis and fiberglass body. A 4-cycle, electric-start 49cc scooter engine provides GL-II its 3 horsepower, which is more than twenty times the power needed. The 2014 team modified this engine and replaced the factory fuel injection controller with its own, raised the compression ratio, and modified the crankcase.

In Houston, the car passed inspection, but the free wheel on the transmission jackshaft came apart during the first race, causing the chain to jump off the sprocket. The team made temporary repairs, but GL-II was only able to run once, placing 13th with 834.2 mpg (miles per gallon).

STING

Sting was designed by a group of seniors in 2006 for their capstone design project and has undergone many upgrades through the years, including a conversion to battery electric propulsion. The 2014 team designed a new embedded controller, a computer-based motor

controller, a lithium-ion battery management system, and an Android app to run on the tablet that served as an instrument panel. This year, two Cedarville graduates from SeaLandAire Technologies provided technical support and also donated space-grade solar cells for capturing solar energy.

The team also built new wheel covers to reduce draft. They built a full-sized pattern and mold and Montgomery Auto Sports produced the two carbon fiber wheel covers.

The team took fifth place with 141.3 miles traveled per kilowatt-hour (kWh), which costs about seven cents. That's equivalent to more than 2,000 miles on one dollar of electric energy.

The team did a lot of work getting three vehicles completed and ready for the Eco-marathon in Houston and passing technical inspection. GL-II and Sting completed runs and placed in the top half of their divisions.

We appreciate and thank our sponsors who made Cedarville's Eco-marathon experience possible: Ashland Chemical, The Elliot Company, Airplane Plastics, Industrial Fiberglass Specialties, Inc., engineering consultant Eric Jensen, engineers Ben Puterbaugh and Brandon Bordner from Showa R&D, Earl Harper, Montgomery Motorsports, SeaLandAire, Aetos Machining, Webcore, National Composites Center, and the Winchester Foundation.



Cedarville University's Supermileage Team raced Gold Lightning (left), Urbie (center), and Sting (right) at the Shell Eco-marathon Americas competition in Houston, Texas, in spring 2014. More than 100 teams from North and South America participated in the race. Picture courtesy of Scott Huck, Cedarville University.

FACULTY RECEIVE AWARDS



Dr. Tom Thompson (left) receives a plaque from Dr. Sivaram Gogineni, Past Chair of the Dayton Section of ASME.

Two of our mechanical engineering faculty members received awards from the American Society of Mechanical Engineers (ASME) at the 2014 awards banquet of the Dayton Section of ASME.

Dr. Thomas Thompson received the Best Paper award in the Human Factors/Biomedical category for his presentation at the 9th Annual

Dayton Engineering Sciences Symposium (DESS). Thompson wrote and presented a paper titled "A Computer Design Tool to Tailor the Motion of Low-cost, Four-bar Prosthetic Knees for Individual Patients."

Dr. Robert Chasnov received a Dedicated Service Award from ASME for dedicated voluntary service to the Society. Dr. Chasnov has been the Cedarville student section advisor since 1993, leading teams of students to regional conferences. Of particular note is how well Cedarville students have performed in the Old Guard Oral Competition over the years. The competition requires students to speak for 15 minutes and answer questions about their presentation for up to five minutes. Cedarville students placed first in the region on five separate occasions, second in the region on four occasions, and third in the region on seven different occasions.



Dr. Bob Chasnov (left) receives a plaque and certificate from Dr. Sivaram Gogineni, Past Chair of the Dayton Section of ASME.

Each of the first-place winners were invited to the ASME International Mechanical Engineering Conference and Exposition (IMECE) to compete against the other regional winners. Of those five winners, two became international champions, one received the second-place award, and one received the fourth-place award.



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