

Winter 2016-2017

Mata-Lopez & Welker Win at SGIA

Two Millersville University students, Gaby Mata-Lopez and Kyle Welker, were honored at the October 2016 Specialty Graphic Imaging Association (SGIA) Expo in Las Vegas for their submissions in the Tom Frecska Student Printing Competition. This competition recognizes their advanced printing ability and knowledge of their craft — proving that the upcoming wave of young imaging professionals will make their mark on the industry. The awards Gaby and Kyle received are as follows:



Award of Excellence

"Hecho en México Shirt"
by: **Gaby Mata-Lopez**

Category: Finished Garments (Light)— Single/Multicolor

Certificate of Merit

"2-Color Marauder Graphics Golf Balls"
by: **Kyle Welker**

Category: Pad Printed Products— Single/Multicolor

The SGIA is a professional association supporting the leaders of the digital & screen-printing community. "Specialty imaging" comprises digital imaging, screen-printing and the many other imaging technologies that SGIA members utilize, including those they'll develop in the future. These are imaging processes and technologies employed to create new products and enhance existing products such as point-of-purchase displays, printed electronics, membrane switches, signs, advertisements, garments, containers, window graphics and vehicle wraps.

Mata-Lopez and Welker were among hundreds of entrants in this year's competition for secondary and post-secondary students across several different specialty-printing categories. Submissions were entered on behalf of six Millersville students, by their Graphic Communication instructor Dr. Mark Snyder, for the 2015–2016 school year, and were eligible to win an Award of Excellence for first place in their category or a Certificate of Merit for an honorable mention.

The Tom Frecska Student Printing Competition, sponsored in part by the Academy of Screen and Digital Printing Technologies, recognizes exceptional specialty-printed items produced by students. SGIA Educational Institution Members are encouraged each year to submit their students' finest work into this competition to be judged by Academy experts. This is a great opportunity for students to have samples of their finest work evaluated by industry leaders from around the world.

Dr. Mark R. Snyder, AETM Coordinator



The Association of Technology,
Management, and Applied Engineering

Dr. Joe McCade & Students Honored



The annual TEEAP conference was held at IU 13 in Lancaster, PA on November 10th & 11th, 2016. During the awards ceremony Dr. Joseph McCade received the Silver Service Award from the TEEAP Organization in recognition of outstanding service to the organization over the course of his career. This award constitutes TEEAP's highest honor. It has only been issued 20 times throughout the association's 64 year history.

Also receiving awards were Hannah Card and Michelle Heckelman. These two MU Freshmen technology education majors received Wilkinson Scholarship Awards from TEEAP. The scholarship is named in honor of William J. Wilkinson, a founding father of the TEEAP organization who was a member for over fifty years.

Dr. Len S. Litowitz, AEST Chairman

Robotic Tour Guide Learns to Drive

Dr. Wright's work with the NAO Humanoid Robot continues as he adds more capability to the robot. For the last three years, Dr. Wright has been developing the robot to become an Assistant Tour Guide for the Department. Most recently, the NAO robot has been learning to drive his scooter. The scooter is capable of 2mph which is much faster than the speed of NAO's walk. In order to conduct tours of the building, the robot will need to move throughout the building at a decent pace. Much of Dr. Wright's work to date has been focused on utilizing classical artificial intelligence techniques to allow the robot to interact with people using his vision and speech capabilities. To view the latest progress on NAO as he is learning to steer his scooter, please visit the following link for a video demo/progress report: <https://www.youtube.com/watch?v=vY1PkWXSgg>



Dr. John R. Wright, ARET Coordinator

TEECA Students Shine at Virginia Beach Conference

Twenty-four members of the Technology & Engineering Education Collegiate Association at Millersville University (TEECA@MU) traveled to Virginia Beach along with two of their advisors (Sharon Brusic & Len Litowitz) for the annual TEECA Eastern Regional Conference from November 12-15, 2016. Every student competed in at least one of seven events at the conference and TEECA@MU proudly brought home four awards. Those awards, including the team members who won them, are:

- **1st place Technology Challenge**
Joshua Handshaw, Abbey Sweeney, David Wacker, & Shane Waters
- **1st Place Poster Session**
Marie Leatherman & Brittany Myers
- **2nd place Manufacturing**
Garrett Chellis, Rebecca Howell, Carla DiStasio, & Lauren Wood
- **2nd place Problem Solving**
Hannah Card, Brittany Myers, Amanda Piergallini, Abbey Sweeney, Shane Waters, & Spencer Hall-Yurasits

The competition was tough, but TEECA@MU members enthusiastically engaged in all events they entered. In addition to participating in competitive events at the conference, students participated in team-building exercises, interacted with potential employers at the job fair, and networked with about 220 peers and professors from about ten universities throughout the Eastern seaboard region at meal and social functions.

Congratulations go out to all TEECA@MU member participants. In addition, the TEECA at MU executive board including Grace Painter (President), Marie Leatherman (Vice President), Carla DiStasio (Treasurer), Adam Kennedy (Secretary), and Brittany Myers (Reporter) is to be commended for helping to organize this highly successful professional development experience for its members.

Dr. Sharon A. Brusic, TECE Coordinator ■



Technology Challenge team members won first place in a fast-paced question and answer quiz bowl event.
(L-R) David Wacker, Abbey Sweeney, Joshua Handshaw, and Shane Waters.



Marie Leatherman (L) and Brittany Myers (R) won first place for their poster session display which had to address "the appropriate place of old-school skills in high school Technology & Engineering Education."



Problem-solving team members placed second in the competition with a tough challenge focused on transporting goods with gravity.
(L-R) Spencer Hall-Yuratis, Hannah Card, Abbey Sweeney, Amanda Piergallini, and Brittany Myers
(Shane Waters is not pictured.)



The manufacturing team took home the second place award thanks to the great teamwork of:
(L-R) Rebecca Howell, Lauren Woods, Carla DiStasio, and Garrett Chellis.

Students Earn Amateur Radio Licenses

Nearly the entire class of Wireless Communications Systems students this past fall semester earned their Federal Communications Commission (FCC) amateur radio licenses. Amateur or “ham” radio is a hobby that mixes together the fun of making radio contacts with people from around the world and technical aspects that are widely used today. We are currently in the period of time when devices are all expected to link up wirelessly. The basics of radio communication was presented in this course, along with the challenge of earning the FCC license for the Technician level (the first level of licensing). A written test was provided and proctored by approved volunteer examiners Richard Kaelberger, coordinator (AB3RK), Harry D. Bauder (N3FMO), Dr. Tom Bell (KB3KPU), Dr. Ken De Lucca (WA3KD), Larry W. Laughman (K3LWL), Jeff Oberholtzer (KC3ETC), and Philip C. Theis (K3TUF).



The image shows all members of the Wireless Communications class that earned their FCC amateur radio licenses. From left to right: Dr. Ken De Lucca WA3KD Instructor, Nicholas Hagano KC3IHG, Ian McDonald KC3IGW, Daniel Vasquez KC3IGS, Cody Martin KC3IHH, Samuel Aquino KC3IGO, Andrew Miller KC3IGC, Randy Mercado KC3IGU, Weston Chambers KC3IGV, Nicholas Bozzelli KC3IGT, Ethan Snyder KC3IGR, Eathen Theimer KC3IHA, Khadem Lazare KC3IGX, Jordan Steele KC3IHF, David Edwards KC3IHE, Alexander Spencer KC3IGY, Daniel Poff KC3IHB, John Jespersen KD2MLG, Ryan Silver KC3IGP, Tyler Funk KC3IGZ, and Shakar Jones KC3IHD.

Dr. Ken De Lucca

Construction Option Changes Title

Starting in fall 2017, the bachelor’s degree in Applied Engineering and technology Management (AETM) - Construction Technology concentration will be updated with a new title, AETM- Construction Management concentration and will include two new courses: ITEC 347-Engineering Visualization and ITEC 348-Green Buildings and Sustainable Systems. Students in ITEC 347 learn how to visualize a construction process by 4D (3D models + time) modeling application. ITEC 348 covers fundamentals of green buildings and sustainable energy technologies and their dynamic costs and benefits. This course allows students to explore the integration of design principles and application of renewable energy, natural building materials, and ecological landscape into building design and community development. In addition to these two new courses, Building Information Modeling (BIM) will be added to the existing course, ITEC 346-Architectural Drawing and Design. BIM represents building elements such as beams, columns, and walls as smart three-dimensional (3D) objects that include embedded data such as geometry details, energy use data, and lifecycle cost information. The realization of these changes will not only allow students to seek a position as architectural drafters, but also allow them to seek employment in of BIM related roles such as BIM manager, BIM coordinator, BIM modeler, BIM drafter, and BIM consultant.

Dr. Ebrahim Karan

5 Jobs for Every TECE Graduate!

Did you know that there are amazing job opportunities for graduates of the Technology & Engineering Education (TECE) program? Last year, MU received more than 80 TECE teacher requests between January to August 2016. There were only 17 program graduates in the Fall 2015 & Spring 2016 classes combined. That means there were nearly 5 jobs for every graduate – and this is only counting the school districts who specifically contacted MU for assistance with recruitment. We know there were many more jobs than that. And, some jobs go unfilled because schools cannot find teachers. In some cases, they must hire teachers with emergency or alternative certification in order to fill needs.

The fact of the matter is that there is high need for more Technology & Engineering teachers and this need will continue as more baby boomers begin to retire. We are in dire need of getting more teachers into the pipeline so the need in schools can be met. How can you help?

Please take a few moments to watch our recruitment video at <http://tinyurl.com/TECE-MU>. If you are a teacher, consider showing it to your students. If you are a parent of a teen thinking about college, please encourage him or her to pursue this rewarding career. The opportunities are abundant and the rewards as teachers who can inspire others are priceless!

Dr. Sharon A. Brusic, TECE Coordinator

Robotics Team Takes Second Place

The MU Robotics Team recently traveled to Orlando in November to compete in the 2016 ATMAE National Robotics Competition. The team took home a Second Place finish with their latest robot, MAVIS 2.0. MAVIS stands for Millersville Autonomous



Vision Inductive Sorter. The robot was a redesign of the team’s 2015 robot that previously won the competition. This year’s robot featured a custom CNC built chassis, multiple 3D printed parts, a full suspension/tank-like drive system, a Cognex vision sensor, and was controlled using multiple Teensy microcontrollers programmed in C.

This year’s competition included Iowa State University, Southern Illinois University, The University of Northern Iowa, Eastern Illinois University, Ohio Northern University, Kent State University, Alcorn State University, and East Carolina University.

Congrats to Cody Martin, Joseph Wright, Kevin Wagner, Ian McDonald, Quentin Kilgore, Tyler Baldwin, Daniel Vazquez, Randy Mercado, Luke Yount, Andrew Miller, Rob Curtis, Samuel Brennan, Michael Wiles, Ibragim Pashaliev, Samuel Hahn, Asim Riaz, and Connor Moyer for their outstanding effort in leading the design and development of this years robot design.

Dr. John R. Wright, ARET Coordinator

Preparing How to Best Prepare PK-4 Teachers for Integrative STEM Education



iSTEM4ToYS

Dr. Sharon Brusic (AEST Professor) is serving at the principal investigator of a new 3-year grant from the National Science Foundation (NSF) titled Integrative STEM for Teachers of Young Students (iSTEM4ToYS) which began in August 2016. She is working with co-principal investigators in Educational Foundations (Dr. Nanette Marcum-Dietrich),

Early, Middle & Exceptional Education (Dr. Jennifer Shettel), and Math (Dr. Janet White) to explore how to best prepare Pre-kindergarten to grade 4 (PK-4) teachers for Integrative STEM (iSTEM) teaching and learning. The project is based on the premise that early childhood educators who are enthusiastic and confident in integrating STEM into their teaching are crucial to engaging students early and motivating them along a path to become the next generation of STEM innovators, workers, and knowledgeable citizens. The grant targets Millersville University (MU) undergraduates enrolled in the Integrative STEM Education Methods (ISEM) minor (a minor now offered through AEST) as part of their PK-4 teacher preparation program. The minor is designed to prepare them with the knowledge, skills, and confidence to integrate STEM concepts across the PK-4 curriculum. Graduates with this minor are eligible to apply for the Integrative STEM Education endorsement on their Pennsylvania teaching certificate.



Edwin T. Minguela (Junior ISEM minor) helps these children to measure and cut their dowel rod to length in order to solve a design problem.

This iSTEM4ToYS project will establish five research-based programmatic features that are designed to enhance teacher candidates' integrative STEM skills, understandings, and perspectives. The features investigated will include: development of an iSTEM Laboratory and Resource Center, coursework that engages learners in problem-based, inquiry-based, and design-based learning experiences that build deeper understandings of STEM concepts, STEM focused practicums in elementary schools, STEM professional development opportunities, and access to STEM-related community resources. The

overarching goal of this project is to determine which component(s) of the iSTEM minor at MU have the greatest impact on these future teachers. Researchers will investigate which research-based features of MU's iSTEM program are the most significant transformational elements that may increase the likelihood that undergraduates who complete the minor will effectively integrate iSTEM techniques in their future classrooms. By evaluating which features have the maximum impact, researchers will be able to make recommendations on how to replicate these outcomes at other teacher preparation institutions, thereby contributing to an understanding of how to better prepare PK-4 teachers as competent and passionate iSTEM educators.

Ultimately the project researchers hope to gather information that will help them to better prepare PK-4 teachers to address integrative STEM in their PK-4 classrooms. During the course of the project, Brusic and other researchers will be partnering with some local schools for the field experiences and they anticipate that teachers who are involved in the project will gain valuable expertise in how to engage their PK-4 students in iSTEM through involvement with the curriculum and its implementation.

Furthermore, this project develops a foundational understanding of what works -- and what doesn't -- in an undergraduate iSTEM program for pre-service PK-4

teacher candidates. Once there is a better understanding of what specific programmatic elements make the greatest difference for these teacher candidates, program developers can focus efforts on enhancing and refining those aspects of the program in the future. This project has the potential to benefit a large number of PK-4 teacher candidates and the students they will teach. At MU alone, there are currently more than 700 students preparing to be teachers of young students and more than 60 of these students are currently seeking the iSTEM minor. The findings from this study could help to inform program developers as they refine curriculum requirements. There is also the potential to collaborate with other institutions of higher education who prepare PK-4 teacher candidates to further explore whether these strategies work in other locations and with other types of programs. Establishing a network of like-minded colleagues can go a long way in helping to advance the mission of better preparing future PK-4 teachers to address iSTEM with their students.



Janae King (Senior ISEM minor) works with elementary students during a STEM after-school program. Students are testing their earthquake-ready structures on a gelatin foundation to see how they hold up when the ground is shaking.



Students in the ISEM minor worked as "STEM Teachers" in an after-school program at Carter & MacRae Elementary School during Summer 2016.

Dr. Sharon A. Brusic, TECE Coordinator



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AEST Receives Signage Donation



Finding the Department of Applied Engineering, Safety & Technology just got a whole lot easier thanks to the help of Bartush Signs. Two new signs were installed on Osburn Hall that clearly indicate what takes place in the building. "One of my goals as department chair," said Len Litowitz, "was to have some kind of signage installed on the building to let people know who we are and what we do."

The signs were donated by Chris Bartush (92), Kendra Keepert-Bartush (92), and Madelyn Bartush (2018). Chris and Kendra met here at MU while both were students in the AEST department. Kendra is a technology teacher and Chris is part owner of Bartush Signs. Dr. Litowitz

commented "I approached Chris about a quote for fabricating exterior signage for Osburn Hall to indicate the name of the department about a year ago. Instead of providing a quote they offered to fabricate and install the signage for free as a donation to their alma-mater!"



Chris Bartush, class of 1992 is pictured here with his daughter Madelyn Bartush, class of 2018.

Millersville University

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AEST to Host PATT Conference



The AEST Department will be hosting a major international research conference this summer in Philadelphia, PA. The PATT Conference, short for Pupil's Attitudes Towards Technology will take place from July 10 - 14, 2017.

Colleagues from all over the world are invited to submit abstracts for presentation at the international PATT conference. Presentations should be research-based and have international relevance. Preferably (but not exclusively) they should relate to the main theme. For information or questions, contact Marc de Vries at m.j.devries@tudelft.nl, or Len Litowitz at llitowitz@millersville.edu.

Welcome Dr. Alex Johnson



Dr. Alex Johnson joined Millersville University as an Assistant Professor of Manufacturing Technology in the Department of Applied Engineering, Safety & Technology in the Fall 2016. Prior to joining Millersville, he served as an assistant professor at the University of North Dakota where he received his Ph.D. and taught various courses in the areas of materials & processes, manufacturing and other technical subjects. Dr. Johnson brings extensive industrial consulting experience to MU and has been active with ATMAE.

TQM Students Earn Certifications

Total Quality Management Students took the Certified Technology Manager (CTM) Professional Certification Exam in December during finals week. Eleven of the fourteen students passed the open-book, 160-question, multiple-choice examination. The CTM includes questions on Leadership/Self-Management, Systems, Processes, Operations, People, Project, Quality, and Risk.

While the exam's national pass rate has hovered around 51% for the last five years, our Applied Engineering and Technology Management (AETM) students exceeded this rate significantly with a 78.5% pass rate. The CTM is one of several professional certifications offered by The Association of Technology, Management, and Applied Engineering (ATMAE). ATMAE is also the professional accreditor for the Department's AETM Bachelor of Science degree program. Congrats to the following students for passing the CTM!

Thelmelis Abreu, Alexis Bartlett, Abigail Grove, Andrew Ha, Steven Halterman, Kaitlin Heilenman, Eric Hibbs, William Hollis, William Jonas, Wesley Rathman, and Roger Welsh.

Dr. John R. Wright, ARET Coordinator