



Engineering Technology (ET)

Awards Ceremony

On May 5, 2022, the Engineering Technology Department had an Award Ceremony and recognized 17 graduates. Nine graduates from Dec. 2021 and eight from May 2022 from the five BS and three AAS concentrations. There were 3 categories of awards - Outstanding Achievement, Academic Achievement, and Professional Achievement award. The Dean of CoSTEM alongside the Engineering Technology Faculty, Staff, and Awardees are shown in Pic 1.

Student Success Stories

Tucker Hurd (BS in Mechatronics Engineering Technology), completed an internship for Trane Technologies in Clarksville, TN during the Spring and Summer 2022. This internship resulted in him being hired into a full-time engineering position upon graduation in Aug 2022.

Britney Schmidt (BS in Mechatronics Engineering Technology) completed an internship for Nematik in Dickson, TN during Summer 2022. Nematik's facility in Dickson casts aluminum engine parts for various automotive manufacturers. Britney has had positive discussions with supervisors about being hired into an engineering position upon graduation in Dec 2022.

Matthew Harmon (BS in Electrical Engineering Technology, Dec. 2022) started as an Intern, operated on several automation projects, and is currently working full-time in Metalsa, Hopkinsville, KY. This plant is involved in the manufacturing of structural frames and frame components of vehicles such as the Chevy Colorado, GMC Canyon, GMC Hummer EV, along with a prototype line.

Joseph Plant (BS in Electrical Engineering Technology) is continuing an internship for Novelis Corporation in Guthrie, KY. During the Summer and Fall 2022 semesters, he will be training with their engineers to manage Automated Guided Vehicles. Joseph has had positive discussions with his supervisors to be hired into a full-time Electrical Engineering position upon graduation in Dec 2022.

The Innovation Experience

In April 2022, Engineering Technology students competed in the Innovation Experience. Led by a faculty advisor, teams were tasked with solving or researching a particular problem. From Engineering Technology, Dr. John Blake's team of Haleigh Silveira, Kevin Buckholtz, and Jackson Jones (Pic 2) took home 3rd place for their research into material sciences and additive manufacturing. The team collaborated with the GIS center to research advantages in 3D printing drones, and the optimal materials used in propellers in order to increase strength and resistance.



Prof. Jody Alberd's team presented on "Cost Reduction and Continuous Improvement in a Tire Manufacturing Process" and Prof. Matthew Anderson's team presented on "The Elderly and their need for Assorted Pill Dispensers".

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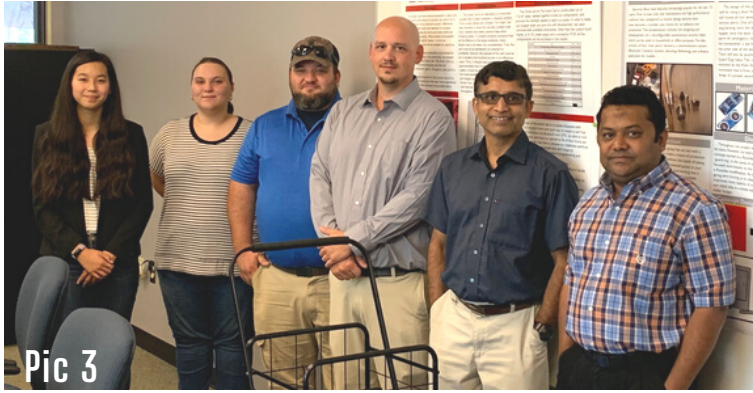
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BS Electrical ET Capstone—Smart Cart

During Spring II and Summer III 2022, Alyssa Young, Mia Lopez, Joshua Eib, and Kevin Cotter (Pic 3) developed and implemented a fully-functional prototype as part of the BS Electrical Engineering Technology Capstone. The Smart Cart has features, such as a Bluetooth module that allows a unique user to connect to and control the wheels via smartphone and an ultrasonic sensor for collision avoidance. The on-board charger allows for ease of recharging and the two LED strips illuminate the cart and the ground for potential nighttime use.



Pic 3

Student Organizations

The Innovative Design Club was started by Blue Tinsley in Fall 2021 with the goal of drawing together students from Engineering Technology with those in Art and Design. The organization's goals are to have collaborative projects that focus on Technology, Art, and 3D Design. The Innovative Design Club is open to new members and new officers, so reach out to faculty advisor Jody Alberd for information on how to join.



Innovative Design Club Logo



**Engineering
Technology**

TLC Club Letter Project

The Technology Leadership Cares club, helmed by Alyssa Young, is in collaboration with the Innovative Design Club to create solar powered Austin Peay Letters that are to be 3D printed in the Fort Campbell Additive Manufacturing lab. The solar panels and LEDs have been repurposed from outdoor pathway lights, and the lettering was modeled by Blue Tinsley. This project is to show what Engineering Technology students can do with widely available resources, and the finished letters will be displayed around the Technology Building

Engineering Technology Tenure-Track Faculty

In Fall 2022, Jody Lee Alberd joined the Engineering Technology team as an Assistant Professor, after serving as an Instructor in 2021-22. He is an APSU Alumni of the MSET program, a Retired United States Navy Veteran and a Manufacturing Engineer. A lifelong Clarksville resident, Mr. Alberd spent the last decade working with industries such as Ingersoll-Rand, MSSC, Inc., Commercial Insulating Glass and Electrolux Major Appliances.

Mahesh Kumar Pallikonda received his PhD in Mechanical Engineering from Cleveland State University. He is also a certified Lean Six Sigma Black Belt from the Council of Six Sigma Certification. Prior to joining APSU, he worked as a faculty of Manufacturing Technology at Ohio Northern University. He also worked as a "New Product Development Engineer" before pursuing graduate studies. His research interests lie at the interface of Manufacturing and Material science.



Jody Lee Alberd



Mahesh Kumar Pallikonda

VEX Robotics Competition

In December 2021, Professors Md. Ali Haider and Jody Alberd participated as judges in the 3rd Annual White House HS Fall League Vex Robotics Competition (VRC). High School Teams from across the state competed for an opportunity to qualify for the VRC State Championship in April 2022. VRC is a Middle and High School level robotics competition that encourages creativity, teamwork, leadership and problem solving among student teams. One of the student's robots is shown in Pic 4.



Pic 4

VEX Robotic Competitions are held throughout the year.

Implementation of Industry 4.0 in "Industrial Automation Systems"

The students in the Summer III 2022, ENGT 4210 (Industrial Automation Systems), taught by Prof. Ravi Manimaran, reviewed several of the journal articles from the International Society of Automation's InTech Journal. Fourteen students delivered PowerPoint presentations on various topics ranging from IIOT, ISA 95, Digital Twin, Soft PLC, IIOT API, Digital Transformation, Smart Instruments, Cyber-Physical Protection Systems, Open PLC's, Automation Development, Digital Sustainability, Augmented Reality, and Automating Automation. In Spring 2022, members of the Engineering Technology Industrial Advisory Board discussed the importance of Industry 4.0 in the Clarksville, Montgomery region and the department is continuing its work in incorporating various facets of this emerging technology in the Engineering Technology curriculum.



Ravi Manimaran

THEC (Tennessee Higher Education Commission) Minority Engineering Scholarship

In Academic Year 2021-22, thirty Engineering Technology Students received scholarships (\$ 1334 per student) in fall 2021 and spring 2022 terms. The Scholarship aims to increase the number of undergraduate minority students completing engineering and engineering technology degrees by reducing their financial burden associated with academics.

ABET Interim Report

On July 1, 2022, the Engineering Technology (ET) department faculty submitted the Interim Report for the AAS Electronics ET and BS Electrical, Manufacturing, and Mechanical ET Programs. The following eight Engineering Technology degree (concentrations) awarded by the department are ABET Accredited:

AAS in ET- Automotive, Construction and Electronics;
BS in ET - Automotive, Construction, Electrical, Manufacturing, and Mechanical.

Grants / Scholarly / Creative Activities

NSF S-STEM Grant (\$1.35 Million)

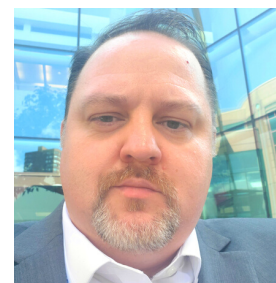
NSF S-STEM Grant (\$ 1.35 Million), "Increasing the retention and graduation rates of talented low-income students in Engineering Technology and Computer Science and Quantitative Methods" that was resubmitted on Feb. 22, 2022. Matt Anderson is one of the three Co-PI's for the grant. Ravi Manimaran is one of the senior personnel for the grant, which is a collaboration of three departments within CoSTEM - Engineering Technology, Mathematics, and Computer Science & Information Technology. If funded, the grant will provide scholarships to academically talented, domestic students with a documented financial need for five years. Over 60% of this funding will go directly to scholarships for the selected students.

The CREATE Consortium Grant (\$700,000)

In spring 2022, the Engineering Tech. Department and the GIS Center worked in collaboration with TBR, Tennessee Tech. University and several community colleges in Tennessee as part of a CREATE Consortium. On March 29, 2022, the DOD (Department of Defense) Grant CREATE Consortium titled, Tennessee DOD STEM Community College Consortium was submitted. If awarded, three faculty members Matthew Anderson, Jody Alberd and Ravi Manimaran will be Co-PIs along with Mike Wilson (GIS Center). The six-year grant (2022-2028), with APSU as a Sub-awardee will provide \$ 700, 000 for the initial 3 years.

Innovative University-Based Regional Workforce Development Experience

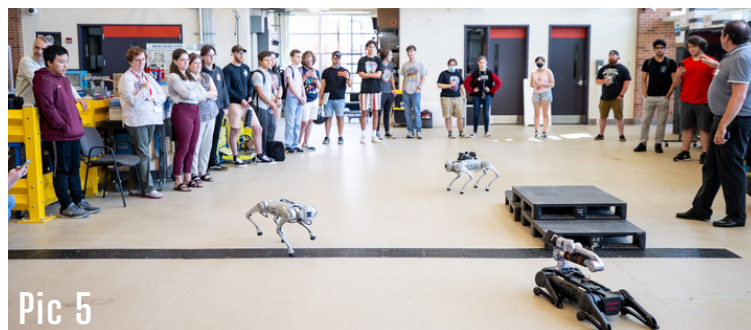
On June 26-29, 2022 Prof. Matthew Anderson presented a paper at the ASEE (American Society for Engineering Education) Annual national conference in Minneapolis, MN. The paper, titled "Innovative University-Based Regional Workforce Development Experience," discussed experience gained through the dual-enrollment course offered by the engineering technology department as part of the Manufacturing Technology Institute, a 2021 APSU Summer Camp.



Matthew Anderson

Unitree Robotics Demonstration

On August 24th 2022, Lab Technician Tim Daniel coordinated with one of the University's vendors, Technical Training Aids, to have Stokes Education Services demonstrate their Unitree quadruped robots, commonly known as robotic Dogs, at Austin Peay. Students as well as faculty took part in controlling the robots as they walked, danced, and climbed around the research lab in the Technology Building (Pic 5). More information can be found on the Austin Peay news page.



Pic 5

Inter-disciplinary Collaboration

In August 2022, the departments of Engineering Technology and Chemistry collaborated to modify materials for one of their labs. The Chemistry department had aluminum material that was too large for their equipment, so they requested Engineering technology use their machining equipment to cut down the pieces. Both departments benefitted by giving Engineering Technology students the opportunity to get hands on experience running industrial metal fabrication equipment, while providing the necessary materials for the Chemistry department.

The Aviation Science Program

During spring and summer 2022, there have been many firsts to the Aviation Science Program. The best example of student success in the program is the ability for students to earn FAA certificates and ratings. Four of the first cohort students have earned their flight instructor certificates; two of them have also earned their instrument flight instructor ratings. All four have been hired as adjunct instructors by APSU. They are currently flying students in our second and third year cohorts. Congratulations for a job well done to Mr. John Alden, Mr. Ryan Erb, Mr. Jerry Gray (also the program maintenance manager), and Mr. Samuel Nicholas (also the Aviation program's full-time mechanic).

Another first for the program is the acquisition of APSU's first new, from the factory Guimbal G2 Cabri helicopter (Pic 6). The aircraft was purchased in spring 2022 and delivered in a shipping container, from the Guimbal factory in France. The aircraft was assembled by our mechanics, with assistance from Precision Helicopters. The aircraft had 3.9 hours of flight time upon delivery to APSU. We are still waiting to get Gov decals on the airframe.



Intro to Engineering Technology Students show off their APSU Pride on T-Shirt Day.



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