



Engineering Technology (ET) Newsletter

Fall 2023, Spring & Summer 2024 | ISSUE 4

AP Austin Peay
State University
CLARKSVILLE TENNESSEE

Editor - Professor Ravi Manimaran

Student Success Stories



ET Faculty, Staff and Award Recipients

On April 26, 2024, the Department of Engineering Technology celebrated its third Annual Award Ceremony. The department also recognized 14 graduates from the four concentrations in the Bachelor of Science in engineering technology, Associate of Applied Science in electronics, and Bachelor of Science in Aviation Science programs. Six graduates were from December 2023 and eight graduates from May 2024. There were three categories of awards - Outstanding Achievement (3.8 to 4.0 GPA), Academic Achievement (3.5 to 3.79 GPA), and Professional Achievement award (3.0 to 3.49 GPA).



Outstanding Achievement Award (L to R) – Ravi Manimaran, Russel Wipert and Matthew Anderson



Professional Achievement Award (L to R) – Ravi Manimaran, Malik Gowan, Jody Alberd



Academic Achievement Award (L to R) – Ravi Manimaran, Mia Lopez, Md. Ali Haider

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The Innovation Experience

On April 18, 2024, the third annual Innovation Experience was hosted by the Austin Peay College of STEM. The event was created by Dean Karen Meisch to encourage collaboration between Austin Peay's CoSTEM programs, while also exposing promising students to local leaders in industry. Each program presented teams of students, led by a faculty advisor, who were tasked with solving or researching a particular problem. Their work was then presented, and winners were selected based on their findings and presentations. From Engineering Technology, Associate Professor Matthew Anderson had three teams - Roomba Pooper Scooper, Polymer RFID Embedding Station, and Monuments to Models; Assistant Professor Jody Alberd had two teams - A Fan Test Move in an Assembly Operation Development of a Manifold Compressor Leak Test. Process and Professor John Blake's team presented on Hydraulic and Pneumatic Training Station Refurbishment. Associate Professor Anderson's Student Capstone Roomba Pooper Scooper won the 2nd prize.



Mechatronics Capstone, Roomba Pooper Scooper won the 2nd Prize in Innovation Experience

Internships

During Summer 2024, **Jamieson Nunley, a BS Mechatronics concentration student** completed an internship with the United States Army Corps of Engineers (USACE), working with office engineers and quality assurance (QA) personnel. The two roles are distinctly different, with the office engineers working on requests for Information (RFI's), while the QA personnel spend most of their time on job sites, interacting with the construction workers and the management, all the while inspecting and evaluating the job site to ensure compliance with regards to the project contract, USACE construction safety and standards, and OSHA. He also visited Smithland Locks and Dam, a potential future project that will enable him to work on the schematics and design aspects. His advice to incoming engineering technology students is: *"I highly recommend applying for an internship and using it to bridge the gap between classroom and job while learning new skills for future employment with the regional industry."*

During Summer 2024, **Victoria Brooks, a BS Mechanical concentration student** completed a reliability internship with Novelis in Guthrie, KY. Her internship consisted of multiple projects, one of which was to conduct a gap analysis and spare part evaluations on major plant assets. Another accomplishment was the implementation and successful use of the a reliability-centered maintenance study (RCM) in collaboration with mechanical, electrical, and quality

engineers. She also created an implementation plan for installing and sustaining Auto Lubers on all critical assets, including creating one-point Lessons, PMs, and safety stock. Her advice to incoming engineering technology students is: *"Be as open, available, and willing as possible to do what it takes to get as much real-world experience as possible."*

Since November 2022, **Joshua Lipe, a BS Mechatronics concentration student** has been working as an engineering Intern at Metalsa, a car chassis manufacturer. Their internship program involves rotating through different departments within the plant in order for the employee to gain exposure to the different aspects of the industry. He started in the safety department, then was moved to the process engineering team for one of Metalsa's new assembly lines, followed by the maintenance department that decides on what spare parts are needed for the new line. He also worked in the quality department and collaborated with control engineers who train the intern on how to code Allen-Bradley PLCs (Programmable Logic Controllers). Joshua highly recommends looking into an internship with a regional company, as an engineering technology student and is thankful to Professor Matthew Anderson for informing him of the internship opportunity.

During Summer 2024, **Jackson Peer, a BS Electrical concentration student**, worked on an internship at Metalsa as a Controls Engineer Co-Op in the Press Bay department. He worked with controls engineers who deal with a multitude of different PLCs that help contribute to the functionality of the presses. It is the control engineers' job to ensure the upkeep and maintenance of the various PLC cabinets, while also looking for continuous improvement of the PLCs' logic, so the company can have more productive and safer in operation. His advice to engineering technology students is: *"While the vital skills that students learn in class are instrumental in setting the foundation, it is the real-world experience that will prepare for the workforce."*

Jimmy Lemus, a BS Mechanical concentration student started an engineering internship at Metalsa in Hopkinsville, KY in February 2024. Jimmy works alongside the process engineering team in the Forming Department. He assists the engineering team in processing, quoting, implementing, and maintaining engineering changes, as well as validating current manufacturing processes to ensure productivity, quality, and safety. Jimmy's advice to engineering technology students is: *"Internships are a great way to answer the question that we, as students, have: What does a day-to-day look like for an engineer? Everything you learn in the classroom will be beneficial in a real work environment, and it is a nonstop learning experience."*

Scholarly Activities

PUBLICATIONS AND PRESENTATIONS:

In AY 2023-24, Department of Engineering Technology's faculty made remarkable scholarly efforts that resulted in several publications and conference presentations. Six papers were published and presented at the 2024 ASEE Conference, one paper was published and presented at the TFEC conference, and two conference presentations were given at the 2024 ABET Symposium. ASEE Papers published and presented: (a) The integration of sustainability and automation to enhance manufacturing in Industry 4.0 - Ahmed, Pallikonda, Haider, Manimaran. (b) The Future of Learning: Harnessing Generative AI for Enhanced Engineering Technology Education - Alberd, Pallikonda, Manimaran (c) Methodology to implement project-based learning (PBL) within the context of Operations Management - Pallikonda, Ahmed, Haider, Manimaran (d) Advancing 2-Year Degree Students Towards a Bachelor's Degree in Engineering Technology: A Pilot Study - Haider, Ahmed, Pallikonda, Manimaran (e) Demonstrating a Continuous Improvement Process in Action with an Initiative to Adopt Computer Algebra System Calculators in an Engineering Technology Degree Program - Blake (f) Design a learning model to integrate IoT Applications into Engineering Curriculum - Haider, Alberd. (g) Empowering Economic and Occupational Freedom through the Transformation of Engineering Technology education from 2 Years to 4 Years Degrees - Haider, Ahmed, Palikonda (h) Professors Ahmed and Haider published and presented a paper titled, TFEC-2024-50700 "Numerical analysis of the effect of Fin on circular microchannel Heat exchanger's thermal performance" at the TFEC 2024.

In Fall 2023, Professors Ravi Manimaran and Jody Alberd were invited as speakers at the 2024 ABET Symposium. The April 4-5, 2024 ABET Symposium presentations: (a) Continuous Improvement in ETAC of ABET Programs: A Journey to Reaccreditation - Ravi Manimaran (b) The Future of Learning: Harnessing Generative AI for Enhanced Engineering Technology Education - Jody Alberd, Ravi Manimaran.

GRANTS:

Department faculty applied for several grant proposals including TAF that were funded for Fort Campbell and Clarksville. The department used the funds to maintain manufacturing equipment, renew the maintenance contract, and purchase new equipment to support more hands-on labs.

They are: (a) "Google Data Centers Community Grants: Advancing STEM learning focused on Hardware Programming Experiences for 6-12 grade Students," Sponsored by Google, Private, \$5,000.00 - Haider. (b) "GOVing Tuesday - \$2,500.00 - Haider. (c) CoSTEM Innovative Teaching Mini-grant titled Enhancing STEM Student Success: An Innovative Teaching Plan - \$1,540.00 - Haider, Ahmed (d) TAF: The ABET accredited Electrical ET program secured \$21,000 TAF funds which were used to purchase a Portable Allen Bradley PLC, BK Precision 2.1 GHz Spectrum Analyzer, and Dual Channel Function/Arbitrary Waveform Generator - Haider (e) SASI grant titled, "Celebrating National Manufacturing Month: Engaging Industry Leaders to Promote Student Awareness" - \$800 - Pallikonda

TEXTBOOK:

Chapters published: (a) Biochar-Based Polymer Composites: A Pathway to Enhanced Electrical Conductivity, First author: Mahesh K. Pallikonda, second author: Joao A. Antonangelo (b) A Review on Corrosion of All Aluminum Microchannel Heat Exchangers - Hossain Ahmed.

FALL 2023 APSU FACULTY CONFERENCE:

Department faculty were actively involved in two areas - Teaching Pedagogy and Accreditation. They are: (a) Integration of Professional Publications to Augment the Learning Experience in Undergraduate STEM Education. Speaker: Ravi Manimaran (b) Cultivating a culture of continuous improvement in program accreditation. A round table panel discussion / presentation that involved speakers from multiple colleges from APSU. The panel moderators were Ravi Manimaran and Melissa Gates. Cultivating a Culture of Continuous Improvement in Program Accreditation - Ravi Manimaran (Engineering Technology); Program development and redevelopment based on accreditation standards - Amy Hamlin (Nursing); Creating curriculum maps and streamlining data collection - Emily Lean (Business); and Program Assessment Tool in Art & Design - Tony Morris (Arts and Letters).

The Aviation Science Program

AVIATION GRADUATES:

- December 2023 – Herbert Huddleston and Ethan Tingle
- May 2024 – Carl Manning
- August 2024 – Christian England and Brayden Rooks

AVIATION STUDENT AND GRADUATE SUCCESS STORIES:

- Herbert Huddleston is an Agricultural Pilot at Larson Helicopters, Perham, MN
- Carl Manning is a Flight Instructor at APSU
- Brett Smith is a senior in the Bachelor of Science in aviation science program and the president of the APSU Mentorship Program



OTHER AVIATION ACCOMPLISHMENTS IN AY 2023-24:

- Created the APSU Aviation Mentorship Program
- APSU now owns all Guimbal Cabri G2 aircrafts.
- Created and filled an additional aviation maintenance technician position
- Extended our outreach efforts
 - Sept. 30, 2023 “Just Plane Fun” Day, Clarksville Regional Airport
 - Nov. 13, 2023 Student Career Orientation. Rossview High School, Clarksville, TN
 - Jan. 31, 2024 Christian County Schools Career Expo. Hopkinsville, KY
 - April 24, 2024 Clarksville VA Expo. Clarksville, TN
 - April 30, 2024 Student Career Orientation. Liberty Creek High School, Gallatin, TN



ET Industrial Advisory Board Meeting – Spring 2024



Engineering Technology Tenure-Track Faculty

In Fall 2023, Dr. Hossain Ahmed joined the Engineering Technology team as an assistant professor. In AY 2023-24, he has contributed to multiple conference papers for the American Society of Thermal and Fluids Engineering (ASTFE) and ASEE. He has authored a peer-reviewed book chapter on corrosion of microchannel heat exchangers and has served as a session chair at ASTFE, moderator at ASEE, and a reviewer of the Journal of Energy (Elsevier) and Corrosion.

Engineering Technology (ET) Department

RAVI MANIMARAN
Professor & Chair

Faculty:

Hossain Ahmed
Jody Alberd
Matthew Anderson
John Blake
Md. Ali Haider
Mahesh Pallikonda
Charles Weigandt (Aviation)
James Gallagher (Aviation)

Staff:

Timothy Daniel (Lab. Technician)
Michele Tamayo (Academic Assistant)
Jerry Gray
(Director of Aviation Maintenance)
Kristina Smith
(Aviation Operations Coordinator)

Student Workers:

Jackson Peer
Jamieson Nunley
Jimmy Lemus
Calleway Schmidt
Savannah Williams
Elijah Patrick
Brett Smith (Aviation)



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