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NACAT NEWS

VOL 37

DECEMBER 2023

NO.6

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February 2024 issue - January 10, 2024

April 2024 issue - March 10, 2024

June 2024 issue - May 10, 2024

August 2024 issue - July 10, 2024

October 2024 issue - September 10, 2024

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NACAT PRESIDENT'S UPDATE

DREW BARNES

VALE SCHOOL DISTRICT

Greeting Fellow NACAT Members,

It is crazy how fast time flies! As this edition of the NACAT news reaches you, I recognize that many of you are already nearing the halfway point of this school year and extremely busy. It seems like just yesterday we were wrapping up our conference in Texas and busy making plans to start the new school year. Now here we are, knee deep into the middle of this school year. With that being said, it is time to start looking forward and planning what professional development opportunities we are going to consider for next year. Hopefully, at the top of your list is registering to attend the [2024 NACAT Conference](#). If you follow us on social media, you have likely already heard the great news! We are very excited to be hosting the **2024 NACAT Conference "Back Home Again" in Indianapolis, Indiana during July 22-25, 2024**. If you would like to get a head start in your planning, the [Conference Hotel](#) and [airport](#) information is available under the NACAT Conference tab on the [website](#). Conference registration will be open soon.

If you have not had a chance to do so, please spend some time going through the NACAT website. There is a lot of information available. You will find access to [exclusive member benefits](#), [Mentor Roundtables](#), [Conference details](#), [board member information](#), [scholarships/awards](#), [automotive resources](#), and more.

Lastly, a favor from you - the membership. If you are happy with what this organization does and what we are about, please help us continue to grow. This is easy, all we ask is that you share your positive experiences about NACAT with other educators. Help us by sharing or commenting on our social media posts. NACAT is about you, the automotive educators. The more members that we have, the stronger our membership becomes. The stronger our/your membership becomes, the more resources we can provide to the automotive educator community.

I hope that you can all find time to enjoy the upcoming holiday season. Enjoy time with family and friends. Hopefully enjoy a little bit of rest and relaxation, before the year ends and the busy spring semester begins.

I look forward to seeing all of you in Indianapolis in July!



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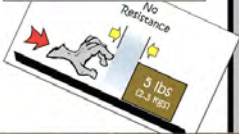
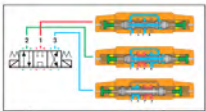
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Getting To Know... ...Billie Harris Owensboro Community and Technical College

Hello Everyone. I am Billie Harris. I am an Associate Professor and Coordinator of the Automotive and Diesel programs at Owensboro Community and Technical College in Owensboro, Kentucky. I have attended the NACAT conference the past 2 years since I have worked with the college.

I am honored to have been considered for inclusion in this issue of NACAT News. Attending the NACAT Conference has been great for meeting members of the community to lean on for advice, and the information each session brings has been immensely valuable. I hope to attend every year to continue building these relationships and continuing to learn and grow as a technician and educator.

My story is somewhat unconventional compared to many automotive enthusiasts I have met. My family did not have any interest in the industry and vehicles were simply a mode of transportation. I didn't develop an interest in understanding how they worked or how to fix them until I was in college and more or less fell into it. Without much plan I enrolled in the automotive technology program at my local technical college. What grabbed my attention most were the electrical systems and computerized controls on modern vehicles. I was taken with learning how these systems worked and how to monitor and manipulate them with scan tools.

While in college I took a lube tech job at a Toyota Dealership and worked there for about a year learning the pace and procedures of working in a dealership. From there I moved to Owensboro and began working at a Chrysler and Dodge dealer. I started as a lube tech there and moved my way to a line technician doing general diagnostics and repair. As I obtained more training from Chrysler, I worked my way up to being the automatic transmission and driveline specialist as well as an electrical systems specialist.

I worked at that dealership for 10 years until it sold to a new owner and I took a job at a new shop that was trying to build up a clientele. The majority of our work there came from fleet trucks performing primarily preventative maintenance and routine repairs. This environment was not a good fit for me and I only stayed there for one year before a friend of mine working at Owensboro Community and Technical College let me know that there was a teaching position open in the automotive program.

As you all know, transitioning from the industry to a teaching environment comes with many challenges. Once I accepted the position I was informed that over the past year the program had gone from three instructors (two daytime instructors and one nighttime instructor) to zero, with each person leaving for their own reasons. In an attempt to prove myself I kept a double load of courses to keep students cycling through at a normal pace. Also, I learned that our automotive program was due for ASE reaccreditation and the previous instructors had not left much documentation. As difficult as all of this was, I have loved every minute of it. Since I have come to the college we have hired another instructor and acquired several new vehicles and updated much of our equipment. Our program is growing to a point we are poised to open a new instructor's position to assist in both our auto and diesel programs.

My favorite part about teaching is watching the concepts "click" for students. As lucky as I am to have students who start our program already having a foundational understanding and experience; it's when I see students who, like myself, come in with little to no previous experience grow in their confidence and skills and ultimately accept career positions where they can continue to grow and thrive that really feel that I am reassured that I am doing my part to keep our industry going and preparing the next generations for the evolution and increasing complexity of modern automobiles.

Thank you for reading. I can't wait to see you all again at the NACAT Conference!

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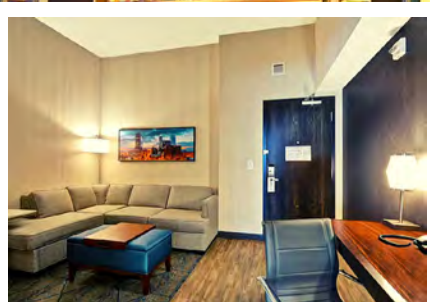
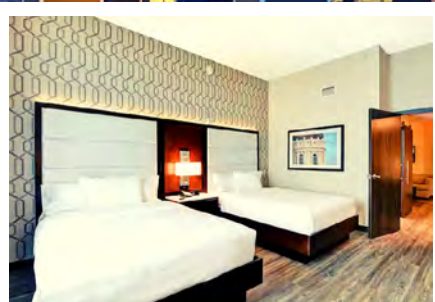
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AUGUSTA TECHNICAL COLLEGE HOSTS SOFT LAUNCH AND REVEALS PLANS FOR NEW CENTER FOR AUTOMOTIVE EXCELLENCE

[Augusta Technical College revealed its plans for the new Center for Automotive Excellence](#) during a soft launch opening event on November 1. The institution also unveiled the future naming of the facility, pending the Technical College System of Georgia's State Board approval, as the Jim Hudson Automotive Institute.

The new instructional facility will offer comprehensive training for automotive technicians, including in the specialized areas of electric and hybrid vehicles; light, medium, and heavy duty diesel; motorcycles; watercraft; and autobody and paint. Additionally, the site will include a "live work" program so the auto tech students as well as Augusta Tech's School of Business students can get firsthand experience working with customers.

"The Jim Hudson Automotive Institute will be a national model for automotive instruction," said Dr. Jermaine Whirl, President of Augusta Technical College. "No other college is offering this range of training both on the technical and business sides of the industry in one location."

The first classes will be offered at the site in Fall 2025. The College currently offers a diploma and numerous technical certificates of credit programs in automotive technology. These offerings will be expanded to include more programs in the new institute. Augusta Tech also plans to add automotive-industry specific classes to its Associated of Applied Science degrees in the School of Business. The institute will also provide noncredit training and upskilling through the College's Division of Economic Development.

"We are already hearing from companies throughout the region who say they will hire our graduates and send their current employees to us for training," Dr. Whirl noted. "We will have the space and the flexibility to offer everything from intensive boot camps and summer programs to school children to college degrees. This truly is a game changer."

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There's an old ad for [Indiana Beach Amusement Park](#) in Monticello, Indiana which always proclaimed, "There's more than corn in Indiana!" They were right! Indiana, other than being home to *The Greatest Spectacle in Racing*, The Indianapolis 500, has a rich automotive manufacturing history. Let's peek.

The Cole Motor Car Company: The Indianapolis based manufacturer operated from 1909 through 1925. The company gave the first automobile in the history of the U.S. presidency to then President William Taft.



President Taft in a Cole Touring Car

The Marmon Motor Car Company: Famous for the Marmon Wasp, the yellow



Ray Harroun's Marmon Wasp

racer driven by Ray Harroun, which was the winner of the inaugural Indianapolis 500 in 1911. Notable models include the Model 32, Model 34, Model 48, Little Marmon, and Marmon Sixteen. The Marmon Sixteen's V-16 engine displaced 491 cubic inches (8.0 L) and produced 200 horsepower. It was an all-aluminum design with steel cylinder liners and a 45° bank angle. The last Marmon was produced in 1933 when they went out of business.

The Marmon Motor Car Company is known for being great innovators, as they are credited with having the first rear-view window as well as pioneering the 16 cylinder engine and the use of aluminum in automotive manufacturing.

Stutz: Originally founded by Ohioan Harry Clayton Stutz who, in 1911, took five weeks to create the first Stutz automobile - a car which finished 11th in the inaugural Indianapolis 500. Stutz claimed the vehicle did not require a "single mechanical adjustment" (flat tires excluded), and immediately proclaimed the slogan, "The Car that Made Good in a Day." Cars began rolling off the assembly line in August 1911.

Models that Stutz offered included two seat roadster, four seat tonneau, five seat touring car, and a coupe, each costing \$2,000 - \$2500. The famous Bearcat was introduced in 1912. The company also manufactured a number of fire engines and transport vehicles. Operations ceased in 1936. [The Stutz Car Museum](#) showcases nine classic cars on loan, most designed and manufactured in the Stutz factory building a century ago.



1914 Stutz Bearcat



1934 Duesenberg Model J

Duesenberg: Duesenberg Automobile and Motors Company operated from 1920 to 1937. It was purchased in 1926 by E.L. Cord of Auburn Motor Company and was assimilated into the conglomerate. Soon after they began crafting the famous Model J until The Great Depression drove them to bankruptcy.

The [Auburn Cord Duesenberg Museum](#) houses a collection of over 120 classic, antique, and special-interest cars. Visitors are taken back in time in the original company Art Deco Showroom.

Studebaker: The Studebaker Brothers started their business, initially located in South Bend, as a blacksmith shop in 1852 and shortly thereafter became renowned for carriages and wagons. They produced their first electric car in 1902 followed by a gasoline model in 1904. Unlike many others, the company was able to make it through The Great Depression and both world wars as it produced popular models into the 1950s. Studebaker shuttered its South Bend plant in 1963 and officially closed its doors, leaving the automobile business, on March 17, 1966.



1947 Commander Starlight



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Adding Tesla to our Hybrid and Electric Vehicle Classroom

As I write this article, winter has arrived in Chicago and the fall semester is nearing a conclusion. I have spent a great deal of time this semester working on grant proposals to upgrade and expand our hybrid and electric vehicle curriculum and the equipment we need to support those changes. One of the decisions I made during the process was to include Tesla more broadly in the classroom and the lab. In this article I will share my thought process, some of the items I have already discovered, and why I believe our students will benefit from this decision.

As many of you are aware, Tesla service information, parts and components, scan tool and diagnostic information, and instructor training have been difficult to obtain. Additionally, when compared to other manufacturers, the costs associated with these items have been significantly higher. In the case of our



Figure 1: Charge Port

EV program, these factors were the main reason we did not broadly include the Tesla brand in our training when we launched our program five years ago. As we have moved forward, a number of these factors have improved, and we are now ready to make some changes.

The most significant reason for more broadly including Tesla in our program is the sales numbers in our area. In the Chicagoland area, Tesla sales volume far surpass any other brand in the market. Tesla models have been available for sale long enough that many of these vehicles are no longer under warranty. This means these vehicles are being serviced in both the Tesla service center and the independent garages. We have many independent repair facilities in the Chicagoland area, both mechanical and collision, that specialize in Tesla and other electric vehicles. For our program, it made sense to include the vehicles our students were going to see in the shop when they graduate.

The adoption of the Tesla NACS style charge port (See **Figure 1 - Charge Port**) by nearly every other electric vehicle manufacturer over the next few years is the second reason for more widely including Tesla into our program. It became necessary to understand exactly how the Tesla NACS style charge port and related components operated. For example, the onboard charge module on a Tesla is responsible for both level 1 and level 2 AC charging as well as DC fast charge. This differs from vehicles that use the J1772 CCS charge port. Typically, vehicles with the J1772 CCS charge port use the onboard charge module only for level 1 and level 2 AC charging.

The Tesla electrical architecture is also a great reason to have the vehicle a part of the program. The extensive use of wired and wireless network communication, including Ethernet, makes it a great platform to teach modern automotive electronics. The later model Tesla vehicles equipped with a 16-volt lithium battery (See **Figure 2 - Lithium Battery**) provide a model of what battery and charging systems may look like in the future. We are currently working on integrating more high-voltage



Figure 2: Lithium Battery

CONTINUED ON PAGE 17

components into the basic electrical classes. Why not test the functionality of a high-voltage pyro-fuse instead of an ATO blade type fuse?

As we travel down the path of Tesla electrification, we know much is still to be learned. This will include simple items such as lift adapters and noise reducing tire technology (See **Figure 3 - Lift Adapter** and **Figure 4 - Tesla Tire**). It will also include more complex items, such as the differences between a permanent magnet style and an induction style electric drive motor. We know that adding the Tesla brand to our program will require the staff and students to search beyond some of the typical resources to fully understand the technology. However, we also understand that a student who understands the operation of a Tesla, as well as other electric vehicle brands, will be better prepared when they enter this fast-changing workplace.



Figure 4: Tesla Tire



Figure 3: Lift Adapter

I will finish this article with the same offer I make after each of my presentations. If you are interested in getting started in the process of adding hybrid and electric vehicles to your curriculum or want more information, please feel free to [reach out](#). I am more than willing to sit down in-person or online and share my experiences. Are you looking for a classroom textbook? [Reach out to Pearson](#) and ask for a review copy of the all-new **Electric and Hybrid Electric Vehicle** text that Jim Halderman and I co-authored. It is a comprehensive text covering all the latest information on the subject.

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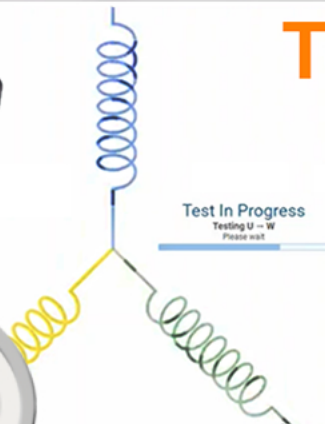
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ASE EDUCATION FOUNDATION UPDATES COLLISION REPAIR STANDARDS; ADDS NEW FUNDAMENTALS ACCREDITATION AREA

The ASE Education Foundation recently conducted a workshop to review the tasks and tools used by ASE-accredited collision repair and refinish programs in high schools and colleges nationwide. The review committee consisted of individuals representing vehicle manufacturers, collision repair and refinish shop owners and technicians, instructors and industry trainers and equipment and parts suppliers.

“We want to thank the committee members for working diligently to review and enhance our standards for collision repair and refinish program accreditation,” said Mike Coley, president of the ASE Education Foundation. “The updates reflect what is happening in the industry with new technologies like EVs and ADAS and will help collision repair and refinish students be better prepared to enter the workforce.”

One of the major outcomes was the creation of a new area of accreditation entitled “Collision Repair and Refinish Fundamentals.” This new area includes 121 distinct skills/tasks and requires a minimum of 300 hours of combined classroom/lab instruction. It draws from the existing areas of accreditation but focuses on five core skill areas highly valued by employers: damaged vehicle disassembly, reassembly, small dent repair, plastic repair and prep for refinish. This new option gives schools and local businesses another path to prepare students for success in entry-level positions with skills that are in high demand.

The updated collision repair and refinish standards include new hybrid and electric vehicle safety tasks that are required for all students in ASE-accredited collision repair and refinish programs. Two new task sections in mechanical and electrical components were also added for Advanced Driver Assistance Systems (ADAS) and hybrid and electric vehicle service procedures.

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TIPS & TRICKS

JEFF CURTIS

CONSULAB

Teaching With an XY Voltmeter

Using an xy voltmeter (oscilloscope) to teach beginning automotive and diesel students will shorten the path required to the competent use of Kirchhoff's voltage laws to successfully troubleshoot electrical faults.

Removing the digital multimeter from first contact and concentrating the instructor's efforts to expose the student to the concept of voltage over time, will result in the understanding of key elements of troubleshooting DC systems in the markets we serve.

This runs counter to current practice where instructors have often followed a textbook written from the perspective of teaching Ohm's law first by starting with theory. I posit that this teaching method does not work well for many of our learners.

We need to be cognizant of the audience, remembering that we were once 15- 25 years old, with many distractions in our lives. Is this how you best learned? We are not teaching matriculated physics or electrical engineering students. While they need much of the same knowledge, and may go on to be physicists, mathematicians, or engineers, we need to recognize that they learn differently than your typical "math centric" or "theoretical" learner. These students are not stupid by any means; they're just different. So how do we accommodate those who learn differently?

Sometime in the early 2000's I started relating music, the student's music, to the measurement of voltage and current over time. The correlation in a student's mind of moving a large magnet (amp + subwoofer) to make the bass audible and visible serves to start to build the understanding of how the relationships work; voltage and current flow in circuits. Adding the audible to the visual, correlated in real time on an oscilloscope screen is a priceless component for student learning.

In learning theory this follows the research of Lev Vygotsky and the "[zone of proximal development](#)", where the learner builds their own learning through the instructors' skillful use of "[instructional scaffolding](#)". "This support is specifically tailored to each student; this instructional approach allows students to experience student-centered learning, which tends to facilitate more efficient learning than teacher-centered learning. This learning process promotes a deeper level of learning than many other common teaching strategies."

This instructor has found great success with using this method to "hook" the learner into discovering their own learning. Using their own music, something that they are familiar with, as a hook saves time along the road to their understanding.

In informal canvassing of automotive and diesel shops across the U.S. this instructor is confident that more than 85% of so called "journeymen technicians" do not know how to utilize Kirchhoff's voltage and current laws to efficiently troubleshoot circuits on a vehicle or piece of equipment. The same learners are now trying to learn CAN Bus digital systems without understanding DC troubleshooting essentials. The base of knowledge or "[zone of proximal development](#)" is a critical step, or scaffold, in their learning process and needs to be addressed.

Another key factor in student learning is repetition. We need ways to introduce repetition into our training

CONTINUED ON PAGE 25

boards to develop the “muscle memory” of the technician so that they know where to test and to project their test results before they even connect their test leads. They need to think and project what would be an acceptable reading for each, and every, test. And repeat that time and again.

This repetition is more than “rote learning” or memorization. It involves the use of what is known and can do, at the center of their [proximal development](#) to push their boundaries further to diminish the zone of “the students cannot complete tasks unaided but can complete them with guidance”.

In Summary

At ConsuLab we organize our pedagogy in “user stories” to convey what we want to help other achieve as instructors. On this subject my user story for this is: “As an instructor of transportation and heavy equipment students I want the tools to utilize more of the student’s senses so that I can engage the learner earlier in the key foundational skills of electrical troubleshooting.”

Please join me across North America as we work to continue to develop not only new training equipment, but also to build student-centered learning opportunities for your technical programs.

Learn More About Lev Vygotsky and The Zone of Proximal Development at:

[Science Direct](#)

[Simply Psychology](#)

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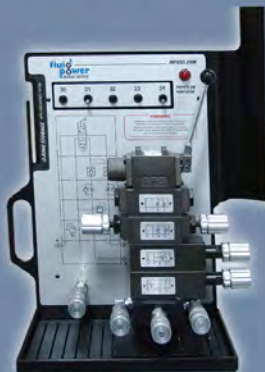
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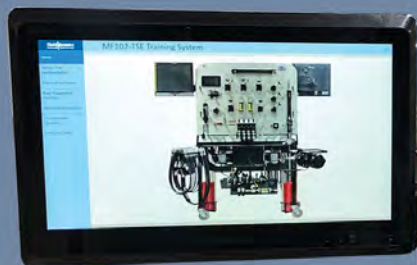
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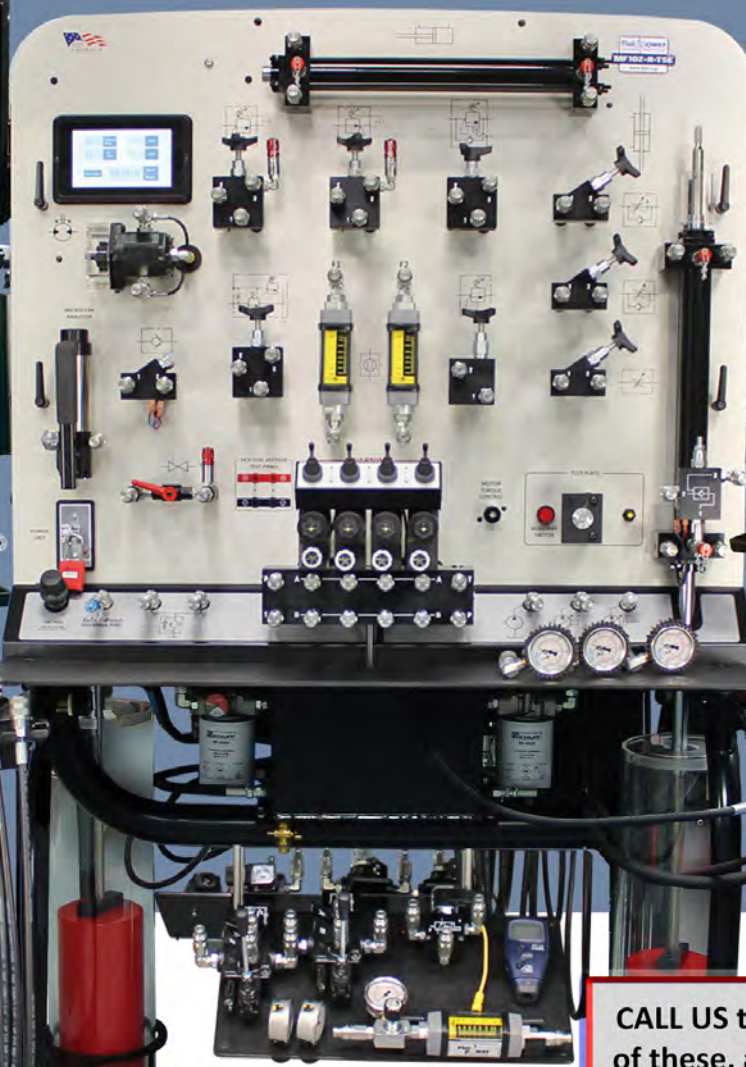


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Women in Auto Care, a community of the Auto Care Association, announced the opening of registration for its annual Women in Auto Care Leadership Conference. The conference will take place Feb. 20-22, 2024 in Salt Lake City, Utah, at the Hilton Salt Lake City Center. The theme for this year's conference is "**Innovate and Impact.**"



The 2024 Women in Auto Care Leadership Conference will feature a great variety of activities and sessions:

A COMMUNITY OF THE AUTO CARE ASSOCIATION

- DISC Assessments for each attendee;
- An interactive innovation workshop;
- Thought leaders unpacking the latest industry trends;
- An insightful keynote speaker;
- A series of *Lightning Talks* with practical tips on how to take advantage of emerging technologies;
- An array of engaging sessions and activities focused on personal and professional development;
- Exclusive conversations with industry leaders on how they got to where they are today and lessons learned;
- The annual fundraising event in support of the Women in Auto Care scholarship program.

"The Women in Auto Care community plays a leading role in providing educational opportunities and support for the industry," said Jessica Toliuszis, chair, Women in Auto Care. "Our community is making an impact at the forefront of trends influencing installers, repair shops, heavy duty suppliers, e-commerce platforms, retailers, consumers, distributors, supply chains, maintenance businesses, and so much more. Our 2024 conference in Salt Lake City will be jam-packed with content for your teams to impact and innovate throughout the industry. Come for the inspiration, leave with actionable insights to responsibly disrupt your business, driving towards our future."

Speaker Mentorship Program

The Women in Auto Care Leadership Council is excited to continue its successful speaker mentorship program for the 2024 conference, with the aim of supporting Women in Auto Care community professionals to translate their skills, knowledge, and expertise into an engaging presentation to share with the community at the conference. Through the speaker mentorship, the selected applicant will receive mentorship support in developing and creating an up-to-25-minute presentation for the conference. Full details can be found on the conference registration page.

Lightning Talk Sessions

The 2024 Women in Auto Care Leadership Conference is looking to provide a platform for community members to share their thought-provoking ideas and knowledge in a "lightning talk" format centered around harnessing the power of innovation and emerging technology. Interested attendees can submit their ideas for consideration to showcase their creativity and expertise. These short-form presentations will be 7-8 minutes in length, focused, fast-paced and share practical takeaways. Full details can be found on the conference registration page.

Earn CEU credits

Women in Auto Care conferences have been accredited by Northwood University since 2012 and all conference attendees are eligible to receive continuing education units (CEU) credits toward their Automotive Aftermarket Professional (AAP) or Master Automotive Aftermarket Professional (MAAP) professional designations.

For more information about the Women in Auto Care Leadership Conference and to register, visit: autocare.org/wiacconference or contact womeninautocare@autocare.org.

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