



CAT Spring 2025 Workshops



High Voltage Safety 2025

Jack Rosebro (Earthling Automotive)

Probably no EV subject that we teach is more important than high-voltage safety. In class, many of us cover PPE and safety standards, and we're off and running. Can we — and should we — offer a more in-depth safety curriculum? And if so, what should we teach? We'll have some ideas for you in this presentation.

Tesla Model 3 and Y in the Context of the Classroom

Jack Rosebro (Earthling Automotive)

The Tesla Model 3 and Model Y are by far the best selling EVs in North America. How relevant are they to today's EV curricula? How do these vehicles differ from typical EVs? What learning resources are available for these vehicles?

Introducing PWM And Frequency to Your Students

Tony Salas (ATECH)

Join ATech Training for an exciting "hands-on" exploration of pulse width modulation and frequency. Discover teaching strategies and new learning opportunities utilizing ATech's latest electrical diagnostic training equipment. Together we will explore the principles and applications of pulse width modulation and frequency controls found in today's automotive systems.

Increase Teacher Efficiency; Help Students Succeed with e-Cheat Sheets; Upgrade Your Worksheets to a Smart Database

Elie Massabki (Skilled2Hire)

Students don't get enough hands-on training in school, they don't remember everything they learnt after they graduate, and they can benefit from an electronic "cheat sheet" that reminds them of all the tasks to perform for a given repair while on the job. Also, students will be valued a lot more by prospective employers if they had lab transcripts with grades of all the tasks they practiced. In this highly interactive workshop, we will discuss the challenges that you, the industry and students face and propose solutions to help all stakeholders. We will also brainstorm and discuss out-of-the-box ideas on how to give students more hands-on training with limited resources and in the limited time they have in school and in the labs. Still struggling with your worksheets or managing them the hard way? Habits are hard to break but there are MUCH better and more efficient ways out there.

OBD on UDS Decoded: Master the Changes Coming in 2025

Rick Escalambre (RLEscalambre)

The information presented will help the technician adapt to the new E/E Diagnostics Test Modes called On-Board Diagnostics on Unified Diagnostic Services (OBDonUDS). OBDonUDS will have a new protocol, additional freeze frames, DTC status byte information, failure type bit, and extend the use of In-Use Monitor Performance Tracking (IUMPT). This system will phase-in starting in 2025 and will be mandatory by 2027. It's not just a change; it's a requirement. Don't be caught by surprise!

Foundational Diagnostics

Rick Escalambre (REscalambre)

The foundation for sound diagnostics revolves around input, processing, and Output. (IPO) principles. Regardless of the vehicle being worked on, all input and output components should be categorized into groups. Each single group should be evaluated for its type of signal and critical dimensions. Understanding the relationship between inputs and outputs is essential to effective diagnostics.

Diagnosing Parasitic Battery Drains

Dave Hobs (Delphi)

Have you ever battled a phantom (intermittent) parasitic battery drain? Your customer's 12-volt battery tests great today but goes dead in a week. In this Delphi hands on class, senior tech trainer Dave Hobbs will give you practical tips on identifying phantom battery drains in order to keep your customers' vehicles starting reliably!

Preliminary Tests Verifying Battery Condition / Verifying 14-Volt charging (Alternator / DC-DC converter)	Parasitic Current Draw - What IS Normal?
Using "False Ohms" with an Ohmmeter as a "Quick Check"	How to "Sneak" into Battery Circuits w/o a 12-Volt Power Down
Ammeter Do's and Don'ts	mV Voltage Drop Testing Across Fuses
Thermal Imaging Camera Tips & Other Helpful Tools demonstrated	

Electric Vehicle Supply Equipment (EVSE) Communication & Diagnosis.

Paul O'Connell (Riverside City College)

- Vehicle and EVSE communication.
 - EVSE diagnostics using the Fluke FEV-100.
 - Common scan tool PID's related to vehicle charging.
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CAN Network Diagnosis

Paul O'Connell (Riverside City College)

- Collecting CAN network waveforms.
 - CAN waveform analysis.
 - Diagnosing "no-communication" faults.
 - Gateway modules and how they change diagnostic approach.
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Hydrogen basics Part I

Andrew McGee (Solano College Automotive)

Toyota Mirai gen 1 overview.

Hydrogen basics Part II

Andrew McGee (Solano College Automotive)

Follow on training that was done in part 1 or with Pam Gutman fall 2024. Little bit more in depth. Might leverage the concept that these vehicles are affordable for teaching hybrid training as well. More insight into the power generation system and such on the Toyota Mirai. etc.

Unveiling Future Technology: Tesla Cybertruck - Technology Overview - Diagnostics and More!

Scott Brown (AES Wave)

Join us for an in-depth exploration of the Tesla Cybertruck's groundbreaking technologies at the California Automotive Teachers Conference. This session will include a live, hands-on demonstration and analysis of the following systems:

- **48V Mid Voltage System:** Understanding how the transition from traditional 12V to a 48V system enhances efficiency and reduces vehicle weight through thinner wiring and less copper usage. We'll discuss the practical implications for vehicle electronics and component design.
- **800V High Voltage Architecture:** We'll cover the benefits of this high-voltage system, from faster charging capabilities to improved power distribution and efficiency within the vehicle.
- **Steer by Wire:** Learn about the first fully steer-by-wire system in a production vehicle, examining how it removes mechanical links between the steering wheel and the wheels, offering new possibilities in vehicle maneuverability and safety.
- **Four Wheel Steering:** An examination of how this feature enhances the Cybertruck's agility and handling at both low and high speeds.
- **Ether loop Communications:** Explore Tesla's innovative approach to vehicle networking, reducing wiring complexity and improving data transmission speeds across vehicle systems.
- **Diagnostics and Tesla Toolbox:** We'll introduce the Tesla Diagnostics Toolbox, which provides mechanics and technicians with real-time diagnostics and troubleshooting capabilities. The session includes a case study using Tesla's toolbox/sandbox, demonstrating practical applications for vehicle maintenance and repair.
- **Remote Vehicle Access:** Discuss how Tesla's remote access features integrate with diagnostics and vehicle management, providing insights into future automotive service trends.
- **Live Vehicle Data Analysis:** Participants will get hands-on experience with live data from the Cybertruck, focusing on power analysis of the front drive unit and CAN data analysis. This segment will highlight the intricacies of electric vehicle performance and diagnostics.

This class promises to be an eye-opener for educators and professionals in automotive technology, offering a glimpse into the future of vehicle diagnostics and the new standards set by the Tesla Cybertruck. Don't miss this opportunity to understand and prepare for the next wave of automotive innovation.

Introducing a new Baccalaureate Degree in Automotive Technology Management

Dave Capitolo (De Anza College)

De Anza College is offering the first Northern California Community College Baccalaureate Degree in Automotive Technology, beginning in Fall 2025. This fully online degree program is available to all auto tech students, from any of our community colleges, who have earned an associate degree in automotive technology. This is an exciting new affordable pathway for any of our students who want a career in management or any other job that may require a degree. Come learn about the career possibilities, admission requirements, graduation requirements, available student services, and affordable tuition.

Battery Management Hands on Activity

Mark Weller (EV West)

This is an interactive course that will cover the battery management system (BMS). Familiarity with current electric vehicle terminology is recommended. BMS theory and operation will be introduced followed by building actual systems in several small group settings. This will include building a sample battery pack, wiring the cell taps plus programming and fault testing. There are a limited number of workstations with a laptop. If you want to work on your own Windows based laptop, bring it along. Upon completion, attendees should be able to: (1) Describe the function/limitation of the BMS. (2) Configure the parameters of a BMS. (3) Diagnose faults and state of health.

Three-Phase Electric Motor Sensing Systems" and assess the speed sensor

Virgil Pop (Electude)

Three-Phase Electric Motor Sensing Systems and assess the speed sensor "Resolver" with more details on construction, operation, and how we teach this to the students.

AAMCO University LMS

Reese Blalock (Technical Director - AAMCO Transmissions)

Find, Train, and Retain - Introduction to AAMCO University and LMS system and how it can help you and your students in today's technologically evolving industry. [Click or scan QR to get early access for you and your school.](#)



Modern Transmission Diagnostics

Reese Blalock (Technical Director - AAMCO Transmissions)

No trouble codes? Intermittent issues? While we could call this a Parameter Identifier (PID) diagnostics class, we prefer to break it down as "Pieces of Important Data" (PID). This session focuses on analyzing and interpreting PID information for more effective diagnostics. It's not just about transmission. Virtually every system in modern vehicles relies on PID data. Master these techniques and pass them on to your students.