2022 Course Descriptions

Monday, August 8, 2022

1:30pm-3:00pm

S1-1 Discover the Benefits of Using "Hands-On" Activities While Teaching Electrical Diagnostics in Today's Classroom *by Jim Wilson* sponsored by ATech Training

The real question is, do our students and technicians have the basic electronic foundation they will need to become successful in this industry? Exploring the need for "Structured Skilled Development" can still be one way to approach training; by building from fact to understanding, working from simple to complex, learning through discovery, and then transferring knowledge to problem-solving. While taking this approach, we will explore teaching methods to incorporate more hands-on activities into training, using electrical system trainers with hands-on activities. Class focus will be on teaching basic electrical to advanced electrical/electronic diagnostics and troubleshooting systems.

1:30pm-3:00pm

S1-2 Hybrid and Electric Vehicle Battery Safety *by Bob McGinn* sponsored by CCAR and Electude

As an Automotive Instructor, you are likely teaching your students safety best-practices as part of your regular curriculum. But what about you? Wouldn't YOU like to have credentials to back up your knowledge of safety best-practices as they relate to hybrid and electric vehicle battery safety? In this session, you will learn; - safety best practices for evaluation and handling of possibly compromised high voltage batteries. - a closer look at the hazardous processes that can occur in lithium ion power systems. Successful completion of the final exam (which is given at the conclusion of the session) will generate a Certificate of Completion credential for each instructor in the session. CCAR (The Coordinating Committee For Automotive Repair) and Electude have partnered to deliver a new online safety curriculum and credential designed for today's generation of automotive learners. CCAR eSafety engages and guides learners to an understanding of automotive safety best-practices, preparing them to receive the CCAR's automotive student safety course completion certificate.

1:30pm-3:00pm

S1-3 Think Like a Computer - Electronic System Diagnostic Strategies *by Dave Kapitulik* sponsored by Megatech Corp

ECM, BCM, TCM, PCM, etc – they all operate on similar principles. Learn more about how computers measure input values, process information, and control outputs. Interpret scan tool data and devise electrical pin checks to develop your diagnostic strategy. We'll also take a look at how electronic control units determine faults and set codes. In this workshop, you will use Megatech "Sensors and Controls" training units to build and test generic ECU circuits and simplify scan tool data.

1:30pm-3:00pm

S1-4 What the Ignition Waveforms are Trying to Tell Us *by Jim Morton*

We will be breaking down the Ignition Waveforms to understand what is actually happening both Inside and Outside of the Combustion Chamber in order for your students to maximize their diagnostic time.

Tuesday, August 9, 2022

8:00am-9:30am

S2-1 Diagnosing Multiplexed Data Bus Networks *by Rob Roth* sponsored by General Motors / ACDelco

Diagnosing complex network system failures is a challenge, even for experienced technicians. In this seminar, technicians will focus on diagnostic strategies to hone their problem solving skills for serial data failure modes in multiplex networks. The following components will be covered in detail: Network protocols including the Controller Area Network (CAN), Local Interconnect Network (LIN), GM Local Area Network (GMLAN), Media Oriented Systems Transport (MOST®), and repair methods.

8:00am-9:30am

S2-2 New Automotive Instructor Fundamentals: It Isn't As Scary As You Might Think *by Lyle Taylor* sponsored by ATech Training

Although targeting instructors new to the education field, this course is also an excellent opportunity for those more experienced to get an overview of practical training skills for the classroom. Additionally, the attendee will receive instruction on courseware and associated training tools that can be incorporated into their automotive program and receive an opportunity to participate in a lab where the tools are available for use. Overall, this is an excellent opportunity for new and experienced teachers to gain experience with o today's most modern trainers and courseware.

8:00am-9:30am

S2-3 Three's Company - Diagnosing 3-Phase Low Voltage BLDC Motors *by Dave Hobbs* sponsored by Delphi Technologies by BorgWarner

Many import and domestic passenger cars and light duty trucks are using began using BLDC (Brushless Direct Current) in tank fuel pump.

Starting in model year 2011, Toyota, Lexus, Chevrolet, GMC, Porsche. VW and Audi began running 3 power wires to their fuel pump assemblies. This new technology helps longevity (no brushes) and is more efficient (saving fuel) but how do you diagnose them? This course will help automotive technicians and technical trainers become proficient at; - Identifying 3-Phase Applications - Diagnosing pump electrical problems with a DMM (Digital Multimeter) - Diagnosing pump electrical problems with a DSO (Digital Storage Oscilloscope) - Scan tool tips to assist with 3-Phase BLDC fuel pump diagnostics

10:00am-11:30am

S3-1 Introducing Your Students to the Lab Scope ***by Jim Morton***

With the technology and speed of the circuits today, the Lab Scope is no longer an Option. It is Rapidly becoming the "Must Have" piece of Diagnostic equipment to have and Master the use of. This introduction presentation will lay the proper ground work to get your students started on the path of using the Lab Scope efficiently.

10:00am-11:30am

S3-2 Revealing the Mystery Behind Hybrid/Electric Vehicle Transmissions ***by Curt Ward***

This class is for any vehicle instructor who wants to know more about the transmission in a typical hybrid/electric vehicle. The class will include disassembly information, system specific information, and case studies. Highlighted in the class is a transmission power flow demonstrator that can be created by an instructor.

10:00am-11:30am

S3-3 The Art of Electrical Fault Diagnosis ***by Pete Meier*** **sponsored by Motor Age Training**

Pete has helped hundreds of technicians become comfortable tackling electrical problems. How? By helping them master fundamental electrical principles and testing techniques. In this session, Pete will help you shore up any holes in your understanding of electrical circuit operation as well as the factors that affect their function. He'll also share the ONE testing technique your students MUST master to succeed.

2:30pm-4:00pm

S4-1 Handling Incomplete Readiness Flags ***by Rick Escalambre*** **sponsored by AES Wave**

The workshop will provide a systematic approach to “Handling Incomplete Readiness Flags". Learn how Global CAN “C” MODE $09 and MODE $06 can be used together to help identify difficult to set Readiness Flags. Understanding the difference between a Readiness Flag and a Monitor, then implementing this plan will allow the Technician to sit in the driver's seat with a scan tool and work smarter, not harder. Case studies will be used to demonstrate the plan.

2:30pm-4:00pm

S4-2 Starting and Charging Systems ***by Rob Roth*** **sponsored by General Motors / ACDelco**

This seminar covers the proper methods used to diagnose and repair start stop technology starting systems and computer controlled charging systems. Emphasis will be placed on discovering the root cause of starting and charging system failures and proper service procedures.

2:30pm-4:00pm

S4-3 The New CDX Online ***by Keith Santini*** **sponsored by CDX Learning Systems**

In this session we will look at the newest version of CDX Online. This includes all of the latest videos, animations, and 3D simulations.

4:30pm-6:00pm

S5-1 Everyday Scope Techniques ***by Pete Meier*** **sponsored by Motor Age Training**

In this presentation, Motor Age's Pete Meier will help you understand the basic set up of a modern DSO (Digital Storage Oscilloscope) and share how it, mated with the appropriate accessory probe, is capable of testing nearly every engine management system on the vehicle. In some cases, the DSO is the ONLY way to diagnose the problem! The use of a scope over more conventional methods saves time and makes the diagnostic process more efficient.

4:30pm-6:00pm

S5-2 INVEST - Intelligent Vehicle Electrification Systems Training ***by Dave Hobbs*** **sponsored by Delphi Technologies by BorgWarner**

The presentation is designed for technicians and technical trainers with prior hybrid electric vehicle training to become more familiar with Plug In Hybrid Electric Vehicle (PHEV) and Battery Electric Vehicle (BEV) technology and service. The course covers; - Review of Electrified Vehicle Components - Review of Safety During Service - Essential PHEV & BEV Vehicle Technology Changes - Electric Vehicle Supply Equipment (EVSE) & Introduction to AC Power

4:30pm-6:00pm

S5-3 Teaching Automotive Students How to Use Vehicle Service Repair Information ***by Alex Richards*** **sponsored by Electude**

Training will focus on teaching tips that will help instructors on getting their student familiar with vital service and repair information.

Wednesday, August 10, 2022

1:00pm-2:30pm

S6-1 Hidden COVID Funds for Training Programs ***by Jake Clayson*** **sponsored by DAKTIC**

Over $263 BILLION in COVID relief funds have been distributed for schools nation-wide to ensure they have the training systems they need to withstand potential lockdowns, but confusion and conflicting information prevents most transportation programs from accessing those funds.

In this session, Jake Clayson will show you how to find out exactly how much funding is available at your school and how to use those funds to future-proof your students for a rapidly evolving, increasingly electrified transportation industry.

1:00pm-2:30pm

S6-2 CAN Bus for Electric Vehicles *by Al Santini* sponsored by ConsuLab

This class will examine the use of CAN Bus to control and monitor the high voltage side of an EV. Basic diagnosis will be covered and demonstrated.

1:00pm-2:30pm

S6-3 What You Need to Teach EV Technology *by Craig Van Batenburg* sponsored by ACDC

If you are presently teaching hybrids, EV are here and many more are on the way in 2022. What do you need for equipment? Are there new safety issues? What about the EVSE? What EVs are the best for teaching? ACDC will provide a hand out on a jump drive, as we always do. ACDC wants you to succeed in this transition away from fossil fuels into a world of electric drive.

3:00pm-4:30pm

S7-1 Evaporative Emissions Systems Diagnosis *by Rob Roth* sponsored by General Motors / ACDelco

This seminar provides the technician with information to effectively diagnose Evaporative (EVAP) Emission System Diagnostic Trouble Codes (DTCs) and malfunctions, including diagnosing "very small leaks" (P0442). EVAP monitoring strategies including natural vacuum, intrusive, non-intrusive, leak detection pumps and sealed systems will be discussed. The operation, failure and best diagnostic method for EVAP components will be explained.

3:00pm-4:30pm

S7-2 Have You Driven a Ford Lately? Mustang EV *by Craig Van Batenburg* sponsored by ACDC

Ford has the F-150 Lightning coming. The Mustang EV is here. We will dive into the Ford of today. The Ford 2022 E-Transit is included. If time allows, we will look at GM and BrightDrop. How soon will the switch to EVs happen. That question and many others will be examined.

3:00pm-4:30pm

S7-3 Tools for the Flipped Classroom *by Darcy Wedel* sponsored by Electude

The rapid switch to online learning during the height of the pandemic, not only disrupted student learning for a time, it forever changed the way technical content is delivered going forward.

Thursday, August 11, 2022

8:00am-9:30am

S8-1 Heavy Duty EV Trucks, Busses and Vans *by Craig Van Batenburg* sponsored by ACDC

If you offer Heavy Duty truck training at your school, this class is for you. We will discuss the latest information about trucks, delivery vans, school buses, coaches and class 1 to 8 commercial trucks. We also include fuel cell, hydraulic hybrids, agriculture, and construction vehicles. We will offer the ACDC look at the present and near term future of EMV technology applied to the heavy duty segment. Getting ready for this class had many surprises for me, as the industry had moved very quickly since my last HD class I did for the US Marines in 2016.

8:00am-9:30am

S8-2 Variables for Running Non-Continuous Readiness Monitors *by Rick Escalambre* sponsored by AES Wave

The workshop will look at the variables for Completing non-Continuous Readiness Monitors. These variables include: Inferred Exhaust Time, Parallel and Series Monitors, Test Samples and Flow Counts, Minimum and Maximum Monitor Completion time, Normal and Fast Filtering using Exponentially Weighted Moving Average (EWMA).

8:00am-9:30am

S8-3 Preparing Your Classroom for the Electrified Automobile *by Curt Ward*

The world our students will face when they leave our classroom and enter the workplace is rapidly changing. The electric vehicle is commonplace in most markets today. This training presentation will cover how to prepare your classroom and students for the EV powertrains and high-voltage electrical systems that are on the road today. Information will include successes and not-so-successful moments from a recently completed hybrid and electric class on our campus. Specific classroom resources and curriculum highlighted.

10:00am-2:30pm

S9-S10-1 Onsite Tour - ATech Training *by Lyle Taylor* sponsored by ATech Training

Are you interested in a behind-the-scenes tour of ATech's manufacturing and training facility? Then this is the course for you. This opportunity will take folks on a tour of ATech's national headquarters located in nearby Walton, Kentucky. Participants will have a chance for a behind-the-scenes tour of ATech's research and development, manufacturing, and training facility. Participants will also have an opportunity to interact with a wide selection of ATech training tools demonstrated by the staff. This two-block class will include transportation to and from the facility in addition to lunch, as well as an instructor-led training class that utilizes advanced training tools for a complete hands-on experience on structured skills development. Overall, this is an excellent opportunity to get an excellent feel for new and existing training tools and courseware available to you and your school. (includes 1 CE credit)

10:00am-11:30am

S9-1 Connected, Automated and Intelligent Vehicles *by Nelson Kelly* sponsored by Macomb Community College, The Center for

Advanced Automotive Technology

One of the major megatrends affecting the automotive industry is the increasing ability of a vehicle to sense and communicate with its surroundings and to use that information to control important vehicle functions. Using cameras, radar, wireless technology, and powerful computers that can combine the input data to control steering, braking, and acceleration, the vehicle can assist the driver or even drive itself. The impetus for this initiative is increased safety, although some of the initial systems are more focused on driver convenience. Topics of discussion for this session will include: - How sensors, such as cameras, radar, and Lidar (experimental at present), along with computer controlled electromechanical devices, can assist the driver at different levels of automation. - How adding wireless connectivity to other vehicles, the infrastructure along with precision global positioning information can increase the level of automation such that, under certain circumstances, the vehicle can drive itself. - The need for cybersecurity as vehicles use wireless technology and become increasingly connected to the outside world so that they are vulnerable to hackers.

10:00am-11:30am

S9-2 How to Successfully Establish an Effective CTE Advisory Committee ***by George Arrants***

Useful tips on how to select and recruit advisory board members that will be most effective for your program/district. Arrange meetings that will have the most value for you, your students and your board members. What should your expectations be? How can you provide value to your board members and students? What should you consider when planning meetings? See how an effective advisory board benefits your students, your program, your community and local business and industry.

10:00am-11:30am

S9-3 What is New in 4WD and Torque Vectoring ***by Keith Santini*** **sponsored by CDX Learning Systems**

Take a look at what is new in the world of AWD / 4WD systems and how this involves you and your students. Torque Vectoring Systems will also be covered.

1:00pm-2:30pm

S10-1 New Ford Automotive Technology - Vehicles & Diagnostic Equipment ***by Jason Duvall*** **sponsored by Ford Motor Company**

Covering new vehicle technologies. Discussing Electric / Hybrid Vehicle Technology including battery testing and repairs. Discussing and demonstrating new diagnostic equipment and diagnostic processes for diagnosing complex vehicle systems. Vibration analyzing, FD CAN network diagnostics, oscilloscope pattern diagnostics, etc.

1:00pm-2:30pm

S10-2 TPMS 2022 - Advanced TPMS Education for Automotive Instructors ***by Sean Lannoo*** **sponsored by Continental Automotive Systems**

- Vital TPMS service tools and functions - Correct maintenance and service techniques - System types and how they operate - Importance of the Relearn procedure - Preventive maintenance - TPMS enhancements and the future

1:00pm-2:30pm

S10-3 Training Students on ProDemand ***by Mike Alberry*** **sponsored by Mitchell1**

Speaking with instructors at various conferences, we realized that many instructors are not aware of all the features that are available in their ProDemand software. This session will show them all the features they have so they can maximize their students' experience.

3:00pm-4:30pm

S11-1 Attacking the Top 10 DTCs - From Initial Inspection to Final Verification ***by Pete Meier*** **sponsored by Motor Age Training**

While this presentation showcases the Top 10 DTCs working techs deal with regularly, the focus is on implementing a solid diagnostic process that can be applied to whatever challenge a technician is faced with. With the challenge of increasingly complex technologies growing at an exponential rate, this session may help you prepare your students for the challenges ahead.

3:00pm-4:30pm

S11-2 Diesel Emissions and Exhaust Aftertreatment ***by Rob Roth*** **sponsored by General Motors / ACDelco**

This seminar covers emission systems and components found on modern diesel-powered vehicles. Exhaust aftertreatment components discussed include: Diesel Oxidation Catalyst (DOC), Diesel Particulate Filter (DPF), Nitrogen Oxides Adsorbing Catalyst (NAC), NOx Storage Catalyst (NSC) Selective Catalytic Reduction (SCR), and Diesel Exhaust Fluid (DEF). Diagnostic strategies, known malfunctions, real-world case studies, and diagnostic exercises in the class will prepare the technician to repair these systems.

3:00pm-4:30pm

S11-3 Using a DSO to Introduce Engine Inputs and Outputs to Student and/or Technicians ***by Al Santini*** **sponsored by ConsuLab**

During this hands-on class we will transmit DSO patterns for common engine inputs and outputs to all participants in the room. We will have U-Scopes set up on a harness so everyone can see the same pattern. Every two instructors will be able to view a DSO. We will, together, analyze the patterns from a student learning standpoint. We will look at MAF, MAP, CMP, CKP , IAT, ECT, Ignition and fuel injection patterns. The class will have a handout and be partially PowerPoint based.