



CTI Season Line-up Technician Program

Bend, OR

Location: Central Oregon Community College, Ponderosa Hall, 2600 NW College Way, Bend, OR 97703

Course #	Course Name and Description	Hours	Dates
ATV-6220-4	HYBRID & ELECTRIC VEHICLE SERVICE	4	10/12/2023
<p>Technicians may find themselves at a disadvantage when faced with new and ever-changing vehicle technology without the foundational knowledge of hybrid and electric vehicles. Some technicians are uncertain of the safety hazards that may exist during repair. This course explains the most current safety regulations, tools and procedures of servicing hybrid vehicles.</p> <p>Topics include:</p> <ul style="list-style-type: none"> Identifying hybrid vehicle configurations Understanding electric vehicle charging classifications Proper safety practices and vehicle safety systems Interlock circuit operation Analysis of high-voltage relay operation High-voltage batteries and predicting failures using test equipment or scan data The need for high-voltage battery maintenance and corrective procedures 			

Instructor: Adam Robertson

ENG-4010-4	VARIABLE CAMSHAFT TIMING	4	12/6/2023
<p>With a conventional camshaft, all the variables that determine valve timing, lift, duration and overlap are cast in stone the moment the lobes are ground. Variable Camshaft Timing (VCT) or otherwise known as Variable Valve Timing (VVT) was then developed in order to achieve better overall versatility in a wider RPM range and various operating conditions by phasing the camshaft. Camshaft phasing systems allow the valve timing to be adapted to the respective operating conditions of the engine. With completion of this class technicians can expect to gain a deeper understanding of:</p> <ul style="list-style-type: none"> - Camshaft foundations and the benefits of Variable Camshaft Timing (VCT) - Design and function of many modern VCT systems - Operation of various phaser styles - Special tooling requirements Variable Displacement oil pump technology - Testing of sensors, actuators and mechanical components of the VCT system - Scan tool data analysis and waveform diagnostics 			

Instructor: Adam Robertson

ENG-4011-4	VARIABLE DISPLACEMENT CYLINDER MANAGEMENT	4	12/7/2023
<p>Variable Displacement Cylinder Management has become a part of many modern engine designs. Each manufacture employs cylinder displacement management using different methods, but all have the same end goal, better fuel economy and emissions. In this class the operation and troubleshooting of variable displacement cylinder management will be covered. In addition, examples of testing and diagnostics will be presented. Systems covered include:</p> <ul style="list-style-type: none"> •GM Variable Valve Lift and Displacement On Demand •BMW Valvetronics •FCA Multi air •FCA Hemi MDS •Honda Vtech 			

Instructor: Adam Robertson

DVT-2010-4	ALL WHEEL DRIVE TECNOLOTIES	4	2/8/2024
<p>Today's SUVs, sedans and sports coupes are embracing all-wheel drive to improve vehicle handling and, in some cases, make better use of high torque/high horsepower powerplants. Don't confuse all-wheel drive with four wheel drive. Although some components are shared between the technologies, all-wheel drive utilizes advanced software and controls to precisely control torque vectoring and aid in the stability of the vehicle. Repairing these vehicles requires not only an understanding of the hardware, but also electronics and control strategies. Topics in the course include: Differences between AWD design vs. 4WD, The role of software's role in AWD operation, Common AWD components and how they operate, Proper diagnostic testing procedures, Analysis of vibration issues</p>			

Instructor: Adam Robertson

ILT-1419-8	VEHICLE COMMUNICATION BREAKDOWN	8	4/10/2024 & 4/11/2024
<p>The expansion and use of multiple on-board control units that communicate with each other in one or more networks in the vehicle has become complex. In addition, modern day networks such as Bluetooth and Ethernet that allow customers to run programs in the vehicle such as email, GPS navigation, calendar management, etc. means that diagnosing today's vehicle network related problems can be challenging to say the least. This course will give you a thorough understanding of how modern vehicle networks operate and communicate, have resources for gathering information concerning network codes and protocols, and enhance your network diagnostic capability through case studies of actual vehicle network communication problems.</p>			

Instructor: Adam Robertson

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EET-3502-4 DIAGNOSTIC APPLICATION OF WIRING SCHEMATICS**4****6/13/2024**

This course guides technicians through the effective use of wiring schematics as a diagnostic tool. Learn to combine schematics, circuit operation information, and power flow techniques along with applied circuit principles to diagnose problems quickly and accurately. Find electrical faults fast by recognizing the characteristics of shorts, opens, and high resistance circuit problems. Learn the most effective tools and techniques to use for a given fault. During this interactive course, students will use selected schematics to diagnose assigned circuit problems and conditions.

Instructor: Adam Robertson

EET-5000-8 STOP-START TECHNOLOGIES**8****8/28/2024 & 8/29/2024**

Many vehicles are now being engineered with Stop-Start technology. Implementing automated stop-start technology in today's vehicles is a cost-effective way to improve fuel economy and reduce emissions without affecting consumer acceptance. A Stop-Start system operates by cutting off the engine when the vehicle comes to a complete standstill, and automatically re-starts the engine when the driver releases the brake pedal. This operating strategy is often utilized in full hybrid-electric vehicles that have powerful electric systems, but is becoming more popular in non-hybrid vehicles that use traditional starter/battery configurations. We will cover manufactures using stop-start technology, dual battery and robust starter motor technologies, common components found on each system, diagnostic evaluation and repair methods and review important best service practices to handle working on vehicle's equipped with Stop-Start systems.

Instructor: Adam Robertson

*Times are 6:00 pm to 10:00 for Monday - Thursday classes; 8:00 am to 5:00 pm for Saturday classes.
Check with your local CARQUEST Store for changes and/or updates.*