

BAR UPDATE & DIAGNOSTIC WORK SHOPS

Note: Beginning January 2013 BAR changed the format of update training and it is now based on a continuing education model. To keep your repair status current you are now required to submit 16 hours of update training on any subject that has been approved by the BAR. Schools that provide this training must have their curriculums approved by the BAR before they can make it available for you. Smog Tech Institute is committed to providing a variety of up to date subjects for you to choose allowing you to have training that will bring you the most benefit.

Note: some classes below are Approved updates and some are Workshops

Advanced Emissions & Drivability Diagnostics

School Name: Smog Tech Institute

Course Name: Advanced Emissions and Drivability diagnostics

Course Number: TBA

Program Title: Smog Update Class

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-0620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

We have researched and developed this training manual and update course to address the most difficult issues facing today's smog technicians. This approach doesn't cover procedures or rules. Rather, we offer an intuitive diagnostic approach that will pay you back many times the hours spent in this course. This return on investment of your time happens every time you use the information in this manual to arrive at a more accurate diagnosis in less time. Not only will your income increase as your frustration level decreases, but the shop, the customer, your parts source, and every other Californian will benefit from a rapid and correct diagnosis. IN order to accomplish this we will discuss interviewing techniques. This includes diagnostic strategies based on the emphasis of basic diagnostic tests to eliminate possible faults, catalytic converter testing and proper engine efficiency to streamline the diagnostic process. Time will also be spent on actual case studies. These labs will require the student to choose efficient diagnostic paths in repairing actual smog test failures. We will also discuss modern tools and techniques widely available to today's technicians, and the benefit to both the technician and the customer that these provide.

At the end of this course students will have developed the skills necessary to diagnose the 19% of tailpipe and OBD2 failures that cannot be repaired using conventional methods per manufactures data of flow chart repair effectiveness. Students will have developed new diagnostic strategies to eliminate, or isolate the root cause of the failure in a time and cost sensitive manor.

The certificate for completion is valid for two years from the date of the final exam.

Required Textbook:

- Advanced Emissions & Drivability Diagnostics

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: Upon completion of this course the student will be able to:

- Properly interview a customer for diagnostic purposes.
- Perform a volumetric efficiency test and understand the results.
- Test an OBDII catalytic converter using switch rate and Oxygen Storage Capacity (OSC) with an understanding of the results
- Have a clear understanding of diagnostic paths in relation to ASM tailpipe and OBD2 failures.
- Properly diagnose exhaust leaks with an understanding of how those leaks affect catalytic converter operation, oxygen sensor operation, and tailpipe emissions.
- Effectively use lambda and TSBs to form early diagnostic strategies.

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

1st. Night: Customer interview, diagnostic paths and scan tool usage.

2nd. Night: Five gas analysis, lambda, exhaust leaks, converter testing, and emissions diagnostic lab.

3rd. Night: Engine breathing, engine fueling, and emissions diagnostic lab.

4th. Night: Ignition and cylinder contribution, 25 question final exam.

Total Price	\$360.00
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OBD II Evaporative System & Diagnostics

School Name: Smog Tech Institute
School Number: Fullerton 993020, Chatsworth 991985
Course Name: OBD II Evaporation System & Diagnostics
Course Number: TBA
Program Title: Smog Update Class
Course Hours: 16
Meeting Times: 2 Sundays 9:00AM – 6:00PM
Instructor's Name: Mark Keiser
Instructor's ID: SI304619
Contact Information:
Phone: 951-741-0799
Email Address: mkeiser@smogtechinstitute.com
Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311
Meeting Dates: TBD

Course Description:

We have researched and developed this training manual and update course to address the most common cause of smog check failures. The EVAP system has been identified as a top concern for many years for smog failures and it is the intention of the course to provide complete information's on the type of evap systems being used on vehicle today and the tools to diagnose them. We offer an intuitive diagnostic approach that will pay you back many times the hours spent in this course. This return on investment of your time happens every time you use the information in this manual to arrive at a more accurate diagnosis in less time. There will be labs that's reinforce the information learned in the lecture and will show the proper techniques for evap testing. Students will have developed new diagnostic strategies to eliminate, or isolate the root cause of the failure in a time and cost sensitive manor.

The certificate for completion is valid for two years from the date of the final exam.

Required Textbook:

- OBD II Evaporation System & Diagnostics will be given to student as part of tuition

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: Upon completion of this course the student will be able to:

- Learn the theory and operation of OBD II evaporative emission systems.
- Develop an understanding of why evaporative emission systems are required.
- Develop critical thinking skills necessary to accurately diagnose and repair system
- Explain the purpose and operation of the various OBD II evaporative emission systems.
- Diagnose evaporative emission system related problems resulting from malfunctions in the various fuel system components; determine necessary action.
- Demonstrate correct and safe diagnostic repair procedures related to evaporative emission system failures.

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

1st. Day: Evap Safety procedures, Evap testing with smoke machine Evap Monitors

2nd. day: Evap testing in the shop, Natural Vacuum leak detection, Evap Leak detection pumps. Final Test

Total Price	\$360.00
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Automotive Electrical System & Diagnostics

School Name: Smog Tech Institute

Course Name: Automotive Electrical System Diagnostics

Course Number: TBA

Program Title: Workshop

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Contact Information:

Email Address: mkeiser@smogtechinstitute.com

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Course Description:

This book was created to help technicians develop the critical thinking skills necessary for accurate and fast diagnostics pertaining to failed vehicles in the California smog test program related to complex electrical and electronic systems. The main focus of the book is to teach the diagnostic strategies today's technicians should follow to minimize their diagnostic time and improve accuracy. This book will emphasize the utilization of the diagnostics tools such as scan tools, volt meters and lab scopes. The book begins with a refresher of electrical theory and electrical circuits then progresses to electronics and the use of meters and lab scopes. This book will discuss the tools and testing procedures for finding opens and shorts. With the new smog program moving to a new phase of testing the OBD II system diagnostic strategies will no longer be based on emission but more on sensor and electronic components and this course intends to teach technicians the skills needed to safe and proper diagnostic procedures. This course utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. The diagnostic strategies discussed in this book are valid and real world. This course also includes time in the shop with practical labs

to enhance materials learned in class. These labs will require the student to hook up meters and scopes to identify circuit integrity.

Required Textbook: Automotive Electrical System Diagnostics: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives:

- Discuss the relationship among volts, amperes, and ohms.
- Explain how magnetism is used in automotive applications.
- Explain Ohm's law.
- Describe the characteristics of an open, a short-to-ground, and a short-to-voltage.
- Identify a series, parallel circuit, series-parallel circuit.
- Calculate the total resistance in a parallel circuit.
- Calculate the total resistance in a parallel circuit.
- Discuss how to safely use a fused jumper wire, a test light, and a logic probe.
- Explain how to set up and use a digital meter to read voltage, resistance, and current.
- Explain meter terms and readings.
- Interpret meter readings and compare to factory specifications.
- Discuss how to properly and safely use meters.
- Discuss circuit breakers and PTC electronic circuit protection devices.
- Interpret wiring schematics.
- Explain how relays work.
- List the electrical troubleshooting diagnosis steps.
- Discuss the various methods that can be used to locate a short circuit.
- List the electrical troubleshooting diagnosis steps.
- Explain magnetism.
- Describe how magnetism and voltage are related.
- Describe how an ignition coil works.
- Explain how an electromagnet works.

- Identify semiconductor components.
- Explain precautions necessary when working with semiconductor circuits.
- Discuss where various electronic and semiconductor devices are used in vehicles.
- Explain how diodes and transistors work.
- Describe how to test diodes and transistors.
- Describe the types of networks and serial communications used on vehicles.
- Discuss how the networks connect to the data link connector and to other modules.
- Explain how to diagnose module communication faults.

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

1st. Night: Chapter 1 Electrical circuits and ohms law, series, Chapter 2 parallel, and series parallel circuits, Chapter 3 Circuit testers and digital meters:

2nd. Night: Chapter 4 Oscilloscopes and graphing meters, Chapter 5 Wireing schematics and circuit testing, Chapter 6 magnetism and electromagnetism

3rd. Night: Chapter 7 Electronic fundamentals, Chapter 8 computer fundamentals, Chapter 9 CAN networks communications.

4th. Night: Labs, 50 question final exam.

Total Price	\$360.00
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Brake and Lamp Exam Prep

School Name: Smog Tech Institute

School Number: Fullerton 993020, Chatsworth 991985

Course Name: Brake and Lamp Exam Prep

Course Number: TBA

Program Title: Workshop

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Instructor's ID: SI304619

Contact Information:

Phone: 951-741-0799

Email Address: mkeiser@smogtechinstitute.com

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Course Description:

This course was developed to help Technicians pass the state Brake and lamp Exam. This is not a certified course and is not required by the state it is intended as a workshop to prepare technicians for the brake and lamp exam. This class will show proper hands on inspections of brake systems measurement of brake common brake components, Inspections of the lighting system with hands on adjustment procedures. This class will also go over all the rules and regulation regarding the brake and lamp program. There will be lecture in the class to cover the latest braking systems and complex lighting systems. In the end the student should gain the information that will give him and edge while taking the state of Californian brake and lamp examination.

Required Textbook:

- Brake and Lamp prep guide: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives:

- Brake functions and components
- Split hydraulic systems
- Master cylinder operations
- Balance control systems
- Power brake booster systems
- Disc brake operation
- Micrometer reading
- Drum brake operation
- Brake fluids
- Brake bleeding operations
- Brake lines and hoses
- Knowledge Lighting systems
- Knowledge of lighting components
- Knowledge of inspection procedures
- Knowledge of tools needed for inspections
- Knowledge of diagnostic procedures

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Total Price	\$360.00
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Diesel Fundamentals & Diagnostics Principals

School Name: Smog Tech Institute

Course Name: Diesel fundamentals and Diagnostics Principals

Course Number: TBA

Program Title: Workshop

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Course Description:

Diesels are becoming more and more popular here in the USA every year. Diesel technology has improved over the years and the emissions are now comparable with that of gasoline engines and it stands that many manufacturers will now include the diesel power plants in their fleets due to their efficiency and improved millage. There is a general lack of understanding how diesel engines and fuel systems work and this course will address this lack through the California smog check program update training program. Students will gain the understanding of diesel combustion principles, Types of fuel systems, Emissions systems and controls, Intake systems, onboard diagnostics and much more. This manual utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. This manual also includes sound diagnostic strategies based on real world instruction. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor a diesel OBD II system and determine codes, monitors readiness and mode 6 data.

At the end of this course students should have developed knowledge and skills necessary to diagnose tailpipe emissions and OBD II system failures on Diesel fuel and emission systems. The certificate for completion is valid for two years from the date of the final exam.

Required Textbook:

- Diesel fundamentals and Diagnostics Principals: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives:

- The student should be able to:
- Prepare for ASE Engine Performance (A8) certification test content area “C” (Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair).
- Explain how a diesel engine works.
- Describe the difference between direct injection (DI) and indirect injection (IDI) diesel engines.
- List the parts of the typical diesel engine fuel system.
- Explain how glow plugs work.
- List the advantages and disadvantages of a diesel engine.
- Explain diesel fuel specifications.
- List the advantages and disadvantages of biodiesel.
- Discuss API gravity.
- Explain E-diesel specifications.
- Learn about air supply requirements
- Turbo charging and blower operation
- Crank case ventilation
- PCM Sensors
- Intake throttle plates
- Intake filtering
- Identify emission control system
- Diagnose the onboard diagnostic system

- Understand diesel emissions output

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

- **1st. Night:** Chapter 1 Diesel Engine Operation and Diagnosis:
- **2nd. Night:** Chapter 2 Diesel and Biodiesel fuels, Chapter 3 Air induction and crankcase ventilation, Chapter 4 Diesel Engine Emissions,
- **3rd. Night:** Chapter 5 Exhaust gas recirculation and exhaust after treatment Systems, Chapter 6 onboard diagnostics for diesels.
- **4th. Night:** Labs, 50 question final exam.

Total Price	\$360.00
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Hybrid Fundamentals & Safety

School Name: Smog Tech Institute

Course Name: Hybrid Fundamentals & Safety

Course Number: TBA

Program Title: Workshop

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-0620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

Hybrids are becoming Mainstream in the USA and as the EPA mandates stricter requirements for gas mileage and emissions the manufacturers will be forced to produce more of them to meet these demands. The California smog program will begin certifying Hybrids soon and as it stands smog technicians have very limited exposure to even the basics on these complex vehicles. It is the intention of this class to teach hybrids from a generic prospective and to give basic understanding of all the systems involved that could be of potential danger. This class will also offer a fundamental understanding in the use of hybrid technology in terms of Series and Parallel Design. This class will expand on the use of generators, inverters, converters, Internal Combustion Engine Design and

Features, Heating and ventilation and a quick look at the successful Toyota hybrids. Safety is a major concern and this book will give a thorough understanding of the difference between high voltage and low voltage systems and show technicians proper procedures for powering down the high voltage system. It is the intent of the class to allow a technician to feel more comfortable while working around or with hybrid technology.

This course utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. This manual also includes sound diagnostic strategies based on real world instruction. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor a diesel OBD II system and determine codes, monitors readiness and mode 6 data. This course will give the student critical safety techniques and fundamental understanding of hybrid vehicles.

Required Textbook:

- Hybrid Fundamentals & Safety: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives:

- Describe the different types of hybrid electric vehicles.)
- Explain how a hybrid vehicle is able to achieve an improvement in fuel economy compared to a conventional vehicle design.
- Discuss the advantages and disadvantages of the various hybrid designs.
- Describe HEV components, including motors, energy sources, and motor controllers.
- Discuss the operation of a typical hybrid electric vehicle.
- Explain how a four-stroke-cycle gasoline engine operates.

- Explain the Atkinson cycle and how it affects engine efficiency.
 - Describe the importance of using the specified oil in the engine of a hybrid-electric vehicle.
 - Describe how the fuel injection and ignition systems work on hybrid gasoline engines.
 - Explain how active control engine mounts function.
 - Describe how wide-band oxygen sensors work.
 - Explain how variable valve timing is able to improve engine power and reduce exhaust emissions
 - Describe how auxiliary 12-volt and high-voltage hybrid vehicle batteries work
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- List the safety precautions necessary when working with batteries
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- Explain how to safely charge a battery
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- Discuss how to jump start a vehicle safely
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- Discuss hybrid electric vehicle auxiliary batteries
 - Explain the types of high-voltage batteries used in most hybrid electric vehicles.
 - Describe the operation of DC and AC electric motors.
 - Discuss the advantages and disadvantages of using electric motors in hybrid electric vehicles.
 - Explain how electric power steering works.
 - Describe how a DC-to-DC converter works.
 - Discuss how a DC-to-AC inverter works.
 - Describe how alternative fuels affect engine performance.
 - List alternatives to gasoline
 - Discuss how alternative fuels affect drivability
 - Explain how alternative fuels can reduce CO exhaust emissions
 - Discuss safety precautions when working with alternative fuel
 - Identify a Toyota/Lexus hybrid electric vehicle.
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- Explain the operation of the various unique systems found in Toyota/Lexus hybrid electric vehicles.
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- List the procedures necessary to depower the high-voltage circuits in Toyota/Lexus hybrid electric vehicles.
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- Describe how to safely perform routine service on a Toyota/Lexus hybrid electric vehicle.

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture

- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

1st. Night: Chapter 1 intro to hybrid, Chapter 2 Hybrid Engines, chapter 3 Hybrid batteries

2nd. Night: Chapter 4 Electric Motors and controls, Chapter 5 Alternative fuels
Chapter 6 Fuel cells

3rd. Night: Chapter 7 Toyota Hybrids, Chapter 8 Hybrid Safety, Chapter 9 Hybrid Diagnostic codes.

4th. Night: Labs, 50 question final exam.

Total Price	\$360.00
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New Technologies

School Name: Smog Tech Institute

School Number: Fullerton 993020, Chatsworth 991985

Course Name: New technologies

Course Number: TBA

Program Title: Workshop

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Instructor's ID: SI304619

Contact Information:

Phone: 951-741-0799

Email Address: mkeiser@smogtechinstitute.com

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Course Description:

It used to be that diagnosis was streamline and more focused but now with the addition of Can networks and new complex systems it has become convoluted and challenging. It is the intension of this class to teach a thorough understanding of the complex network systems today's technicians will face and improve their ability to sift through the obstacles when diagnosing emission failures. This course will also give technicians the tools and understanding for diagnosing new systems such as throttle control, Direct Injections, Wide Band O2 Sensors and variable cam timing. There is even a chapter dedicated to ignition systems as well as teaching the more advanced systems such as Waist Spark and Coil on Plug. It is the intention of this course to give technicians the confidence and understanding in diagnosing newer technologies that they may encounter in their daily routine of repairing failed vehicle within California smog check program. This course utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. This manual also includes sound diagnostic strategies based on real world instruction. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor OBD II system, Perform

Can communication checks, identify codes, Wide band O2 sensor data, and variable cam timing data.

At the end of this course students should have developed knowledge and skills to accurately diagnose CAN communication failures, variable cam timing, Throttle control systems, direct injection and complex ignition system failures. The certificate for completion is valid for two years from the date of the final exam.

Required Textbook:

- New Technologies: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives:

- Describe the types of networks and serial communications used on vehicles.
- Discuss how the networks connect to the data link connector and to other modules.
- Explain how to diagnose module communication faults.
- Describe the purpose and function of an electronic throttle control (ETC) system.
- Explain how an electronic throttle control system works.
- List the parts of a typical electronic throttle control system.
- Describe how to diagnose faults in an electronic throttle control system.
- List the reasons for variable valve timing.
- Describe how the valve timing is changed.
- Discuss the various types of variable valve timing.
- Explain how to diagnose variable valve timing faults.
- Describe the differences between port fuel injection and gasoline direct-injection systems.
- List the various modes of operation of a gasoline direct-injection system.
- Explain how a gasoline direct-injection system works.
- Perform a visual inspection of the gasoline direct-injection system and identify the parts.

- Describe the difference between a two-band and a wide-band oxygen sensor.
- Explain the difference between a thimble design and a planar design.
- Discuss the operation of a wide-band oxygen sensor.
- List the test procedure for testing a dual cell and a single cell wide-band oxygen sensor.
- Explain how ignition coils create 40,000 volts.
- Discuss crankshaft position sensor and pickup coil operation.
- Describe the operation of waste-spark and coil-on-plug ignition systems.

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

1st. Night: Chapter 1 CAN & Chapter 2 throttle control systems

2nd. Night: Chapter 3 Variable Cam Timing & Chapter 4 Direct Injection

3rd. Night: Chapter 5-6 Oxygen sensors & chapter 7 ignition systems.

4th. Night: Labs, 50 question final exam.

Total Price	\$360.00
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OBD II System & Diagnostic Strategies

School Name: Smog Tech Institute

Course Name: OBD II Systems and Diagnostic Strategies

Course Number: TBA

Program Title: Workshop

Course Hours: 16

Meeting Times: 4 Nights 6:30 – 10:30PM

Instructor's Name: Mark Keiser

Contact Information:

Email Address: mkeiser@smogtechinstitute.com

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Course Description:

This book was created to help technicians develop the critical thinking skills necessary for accurate and fast diagnostics pertaining to failed vehicles in the California smog test program. The main focus of the book is to teach the diagnostic strategies today's technicians should follow to minimize their diagnostic time and improve accuracy. This book will emphasize the utilization of the diagnostics that are built into today's vehicles such as Mode 6, Fuel Trim, and Emission Diagnostic Monitors. The book begins with a chapter on basic computer operation as a refresher how the computers work, then discusses some basic diagnostic approaches such as the 8 step approach, Symptom based diagnostics, and oscilloscope diagnostic. It is the intention of this course to give technicians the confidence and understanding when diagnosing vehicles and to help them develop a systematic approach that is proven to guide them to a conclusion with the least amount of mistakes. This course utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. The diagnostic strategies discussed in this book are valid and real world. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor OBD

II system, identify the 9 modes of operation in the global OBD II system, Interpret Mode Data, and perform Fuel Trim calculations.

At the end of this course students should have developed knowledge and skills to accurately diagnose most symptoms based and code related concerns of failed vehicles. The certificate for completion is valid for two years from the date of the final exam.

Required Textbook: • OBD II Systems and Diagnostic Principles: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives:

- List the various parts of onboard computers.
- Explain the purpose and function of onboard computers.
- List input sensors to an automotive computer and output devices (actuators) controlled by the computer.
- List the steps of the diagnostic process.
- Describe the simple preliminary tests that should be performed at the start of the diagnostic process.
- List six items to check as part of a thorough visual inspection.
- Explain the troubleshooting procedures to follow if a diagnostic trouble code has been set.
- Explain the troubleshooting procedures to follow if no diagnostic trouble code has been set.
- Discuss the type of scan tools that are used to assess vehicle components.
- Describe the methods that can be used to reprogram (reflash) a vehicle computer.
- List the possible causes of an engine performance problem based on its symptoms.
- List the possible causes of a rich air-fuel mixture.
- List the possible causes of a lean air-fuel mixture.
- Describe what symptoms may occur if a particular sensor is defective.
- List the possible causes of excessive HC, CO, and NOx exhaust emissions.
- Use a digital storage oscilloscope to measure voltage signals.

- Interpret meter and scope readings and determine if the values are within factory specifications.
- Explain time base and volts per division settings.
- Explain the purpose and function of onboard diagnosis.
- List the various duties of the diagnostic executive (task master).
- List five continuous monitors.
- List five non continuous monitors.
- Identify mode \$06
- Describe how mode \$06 can be used to identify a problem. Explain how to convert raw numbers to usable data.
- Explain the purpose and function of fuel trim.
- Discuss the difference between speed density and mass air flow fuel control.
- Describe how knowing the volumetric efficiency of the engine can help diagnose engine performance concerns.
- Explain how to tell if a volumetric efficiency concern in an engine is due to a mechanical or an airflow measurement problem.

Course Format & Methods of instruction:

- This is a lecture class that consists of 12 hours of lecture
- 2 hours of in class laboratory with group discussion.
- The last 2 hours will be used for the final exam.

Sequence of Instruction:

1st. Night: Chapter 1 Diesel Engine Operation and Diagnosis:

2nd. Night: Chapter 2 Diesel and Biodiesel fuels, Chapter 3 Air induction and crankcase ventilation, Chapter 4 Diesel Engine Emissions,

3rd. Night: Chapter 5 Exhaust gas recirculation and exhaust after treatment Systems, Chapter 6 onboard diagnostics for diesels...

4th. Night: Labs, 50 question final exam.

Total Price	\$360.00
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DAY TIME PROGRAM DESCRIPTIONS

California State Smog Inspector

School Name: Smog Tech Institute

Course Name: Smog inspector

Course Number: TBA

Program Title: California State Inspector

Course Hours: 112

Course Completion: 3.5 weeks

Meeting Times: Weekdays 9:00AM – 6:00PM

Meeting Days: Monday, Tuesday, Wednesday, Thursday

Total Meetings: 14

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

- Level 1 Engine and Emission Control Training is intended to provide students with fundamental Knowledge of engine and emission control theory, design and operation. Students who Successfully complete this training at a BAR-certified school will have met the first step of the Bureau of Automotive Repair's training requirements for inexperienced or minimally experienced candidates for the Smog Check Inspector license.
- Level 2 Inspector Training is intended to provide students the knowledge, skills, and abilities needed to perform Smog Check inspections. Students who successfully complete this training will have met the Bureau's training requirements to qualify to take the Smog Check Inspector state licensing examination.

- Smog Exam Test Prep is a module that specifically prepares the student for the state exams by covering many of the questions he will see on the test not just memorization but teaches the knowledge to answer them correctly through lecture and interpretation. This is not a required module but is included to give the student a better chance of success.

Required Textbook: All text books included in tuition cost and are given 1st day of class

- Level 1 Inspector
- 300 question Test prep
- Smog Check Inspection Procedures Manual
- Smog Check Reference Guide
- Laws and Regulations Manual
- Write It Write Booklet
- Low Pressure Fuel Evaporative Training Video
- Gasoline Visible Smoke Test Training- multimedia
- Diesel Vehicle Inspection Training – multimedia

Required Materials:

- Textbooks, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

Level 1

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Describe engine theory, design, and operation for both gasoline and diesel vehicles.
3. Demonstrate their knowledge, skills and abilities in identifying engine systems, parts and Components.

4. Describe emission control systems theory, design and operation for both gasoline and Diesel vehicles.

5. Demonstrate their knowledge, skills and abilities in identifying emission control systems
On various vehicle designs.

6. Demonstrate their knowledge, skills and abilities in checking ignition timing on various Vehicle designs.

7. Demonstrate their knowledge, skills and abilities in checking the operation of exhaust Gas recirculation systems on various system designs.

8. Demonstrate their knowledge, skills and abilities in checking monitor readiness on Vehicles equipped with second generation on-board diagnostics systems (OBDII).

Level 2 Inspector

9. Describe the laws, regulations, and procedures associated with consumer authorization of

Inspections and the overall administration of the Smog Check Program.

10. Describe the standards of practice expected of Smog Check Inspectors.

11. Demonstrate ability to calibrate an emission inspection system.

12. Demonstrate their knowledge, skills and abilities in performing Smog Check emission tests on

Various vehicle designs.

13. Demonstrate their knowledge, skills and abilities in performing Smog Check visual inspections on

Various vehicle designs.

14. Describe and demonstrate they have the knowledge, skills and abilities to perform smog check

Functional tests on various vehicle designs.

Smog Test Prep

15. Sample test questions and analysis for EO State exams

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 3 modules allowing for new students to begin at the beginning of each module

Module	Course name	Clock hours
Module 01	Inspector Level 1	68
Module 02	Inspector Level 2	28
Module 03	Smog Examination Test-Prep	16
	TOTAL HOURS	112
	Total Cash Price	\$2386.00
	Total Price with Financial Aid	\$2636.00

California State Test & Repair Technician

School Name: Smog Tech Institute

Course Name: Test & Repair Technician

Course Number: TBA

Program Title: Day Time Californian State Test & Repair Technician

Course Hours: 140

Course Completion: 4.5 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Monday, Tuesday, Wednesday, Thursday

Total Meetings: 17

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

- BAR Specified Diagnostic and Repair Training is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of electrical/electronic systems and engine and emission control performance. Students with at least two years of engine performance repair experience and who successfully complete this training may qualify for the state licensing examination for the Smog Check Repair Technician License.
- Level 2 Inspector Training is intended to provide students the knowledge, skills, and abilities needed to perform Smog Check inspections. Students who successfully complete this training will have met the Bureau's training requirements to qualify to take the Smog Check Inspector state licensing examination.

- Smog Exam Test Prep is a module that specifically prepares the student for the state exams by covering many of the questions he will see on the test not just memorization but teaches the knowledge to answer them correctly through lecture and interpretation. This is not a required module but is included to give the student a better chance of success.

Required Textbook: Books provided on first day of class

- Bar specified Diagnostic and Repair
- 300 question Test prep
- Smog Check Inspection Procedures Manual
- Smog Check Reference Guide
- Laws and Regulations Manual
- Write It Write Booklet
- Low Pressure Fuel Evaporative Training Video
- Gasoline Visible Smoke Test Training- multimedia
- Diesel Vehicle Inspection Training – multimedia

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as it relates to the automotive industry.
3. Explain the standards of practice pertaining to Smog Check licensure.
4. Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.

5. Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.
6. Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

7. Describe principles of electricity and electronics.
8. Define electrical terms of watts, voltage, current and resistance.
9. Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).
10. Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.
11. Describe theory, design and operation of automotive electrical and electronic systems.
12. Identify standard electrical and electronic symbols.
13. Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.
14. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.
16. Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.
18. Describe the theory, design and operation of induction and exhaust systems.
19. Describe the theory, design and operation of fuel systems.
20. Describe the theory, design and operation of ignition systems.
21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.

22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).
23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).
24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).
25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.
26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria,

monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.

36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.

37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.

38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Level 2 Inspector

39. Describe the laws, regulations, and procedures associated with consumer authorization of

Inspections and the overall administration of the Smog Check Program.

40. Describe the standards of practice expected of Smog Check Inspectors.

41. Demonstrate ability to calibrate an emission inspection system.

42. Demonstrate their knowledge, skills and abilities in performing Smog Check emission tests on

Various vehicle designs.

43. Demonstrate their knowledge, skills and abilities in performing Smog Check visual inspections on

Various vehicle designs.

44. Describe and demonstrate they have the knowledge, skills and abilities to perform smog check

Functional tests on various vehicle designs.

Smog Test Prep

45. Sample test questions and analysis for both EO and EI State exams

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 5 modules allowing for new students to begin at the beginning of each module

Module	Test and Repair Technician	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A6 Electrical	28
Module 02	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	32
Module 03	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	36
Module 04	Inspector Level 2	28
Module 05	Smog Examination Test-Prep	16
	TOTAL HOURS	140
	Total Cash Price	\$2386.00
	Total Price with Financial Aid	\$2636.00

California State Repair Only Technician

School Name: Smog Tech Institute

Course Name: Repair only Technician

Course Number: TBA

Program Title: Californian State Repair only Technician

Course Hours: 112

Course Completion: 3.5 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Monday, Tuesday, Wednesday, Thursday

Total Meetings: 14

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

- BAR Specified Diagnostic and Repair Training is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of electrical/electronic systems and engine and emission control performance. Students with at least two years of engine performance repair experience and who successfully complete this training may qualify for the state licensing examination for the Smog Check Repair Technician License.
- Smog Exam Test Prep is a module that specifically prepares the student for the state exams by covering many of the questions he will see on the test not just memorization but teaches the knowledge to answer them correctly through lecture and interpretation. This is not a required module but is included to give the student a better chance of success.

Required Textbook: Books provided on first day of class

- Bar specified Diagnostic and Repair
- 300 question Test Prep

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as it relates to the automotive industry.
3. Explain the standards of practice pertaining to Smog Check licensure.
4. Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.
5. Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.
6. Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

7. Describe principles of electricity and electronics.
8. Define electrical terms of watts, voltage, current and resistance.
9. Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).
10. Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.

11. Describe theory, design and operation of automotive electrical and electronic systems.
12. Identify standard electrical and electronic symbols.
13. Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.
14. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.
16. Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.
18. Describe the theory, design and operation of induction and exhaust systems.
19. Describe the theory, design and operation of fuel systems.
20. Describe the theory, design and operation of ignition systems.
21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.
22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).
23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).
24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).
25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.

26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.
36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.
37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.
38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Smog Test Prep

39. Sample test questions and analysis for EI State exams

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 4 modules allowing for new students to begin at the beginning of each module

Module	Repair only Technician day time	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A6 Electrical	28
Module 02	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	32
Module 03	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	36
Module 04	Smog Examination Test-Prep	16
	TOTAL HOURS	112
	Total Cash Price	\$2386.00
	Total Price with Financial Aid	\$2636.00

(APET) Automotive Performance Emission Training

School Name: Smog Tech Institute

Course Name: Automotive Performance Emissions Training

Course Number: TBA

Program Title: Day Time Automotive Performance Emission Training

Course Hours: 720

Course Completion: 22 weeks

Meeting Times: Weekdays 9:00AM – 6:00PM

Meeting Days: Monday, Tuesday, Wednesday & Thursday

Total Meetings: 90

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

The Automotive Performance & Emissions Technology (APET) course curriculum consists of seventeen modules. Most modules have laboratory demonstrations as well as classroom presentation. Some modules cover single subject matter and some cover multiple subjects. Certificates are awarded for each module successfully completed. This is a 720 class intended to satisfy the BAR requirement for one of the methods of attaining a Smog Repair license for the state Of California: Note even though this class will meet and exceed the education requirements it is still up to the applicant to prove 1 year experience of working on vehicles in an automotive repair facility before he can take the state exam.

The subjects in this class include:

- Automotive Safety & Information
- Engine Technology

- Electrical Systems Technology
- Fuel Management Technology
- Diagnostic Tools & Test Equipment Operation
- Automotive Service and Administration
- Practical Applications
- Bar Specified Diagnostic Training-Alternative A6 Electrical
- Bar Specified Diagnostic Training-Alternative A8 Engine Performance
- Bar Specified Diagnostic Training-Alternative L1 Advanced Engine
- Inspector Level 1
- Inspector Level 2
- Bar Update Training
- Smog Examination Test-Prep
- Diesel Fundamentals and Emission Controls
- Direct Injection
- Hybrid Fundamentals and Safety

Required Textbook: All Books provided by school as part of their paid tuition.

- Bar Specified Diagnostic
- Level 1 Inspector
- Level 2 Inspector
- Automotive Diesel specialist
- Advanced Engine Performance Specialist
- Hybrid Specialist
- Automotive Electrical Specialist
- .300 question smog prep
- 2013 update books
- Smog Check Inspection Procedures Manual
- Smog Check Reference Guide
- Laws and Regulations Manual
- Write It Write Booklet
- Low Pressure Fuel Evaporative Training Video
- Gasoline Visible Smoke Test Training- multimedia
- Diesel Vehicle Inspection Training – multimedia

Required Materials:

- Textbooks will be given at the beginning of each module.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

- Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
- Explain the causes and effects of air pollution as it relates to the automotive industry.
- Explain the standards of practice pertaining to Smog Check licensure.
- Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.
- Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.
- Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

- Describe principles of electricity and electronics.
- Define electrical terms of watts, voltage, current and resistance.
- Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).
- Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.
- Describe theory, design and operation of automotive electrical and electronic systems.
- Identify standard electrical and electronic symbols.
- Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.
- Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.
- Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Engine and Emission Control Performance

- Describe engine theory, design, and operation.
- Describe the theory, design and operation of induction and exhaust systems.
- Describe the theory, design and operation of fuel systems.
- Describe the theory, design and operation of ignition systems.
- Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.
- Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).
- Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).
- Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).
- Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.
- Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
- Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
- Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
- Diagnose ignition system malfunctions or defects and determine appropriate repairs.

- Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
- Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
- Identify computerized engine and emissions control systems, subsystems and components.
- Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
- Describe the OBDII system modes of operation, modes 1-9.
- Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.
- Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.
- Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.
- Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Diesel

- Prepare for ASE Engine Performance (A8) certification test content area "C" (Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair).
- Explain how a diesel engine works.
- Describe the difference between direct injection (DI) and indirect injection (IDI) diesel engines.
- List the parts of the typical diesel engine fuel system.
- Explain how glow plugs work.
- List the advantages and disadvantages of a diesel engine.
- Explain diesel fuel specifications.
- Identify the different types of injectors
- Identify the different types of injector nozzles
- Identify turbo chargers and boost controls
- List the advantages and disadvantages of biodiesel.
- Discuss API gravity.

- Explain E-diesel specifications.
- Learn about air supply requirements
- Turbo charging and blower operation
- Crank case ventilation
- PCM Sensors
- Intake throttle plates
- Intake filtering
- Identify emission control system
- Diagnose the onboard diagnostic system
- Understand diesel emissions output

Hybrid

- Describe the different types of hybrid electric vehicles.)
- Explain how a hybrid vehicle is able to achieve an improvement in fuel economy compared to a conventional vehicle design.
- Discuss the advantages and disadvantages of the various hybrid designs.
- Describe HEV components, including motors, energy sources, and motor controllers.
- Discuss the operation of a typical hybrid electric vehicle.
- Explain how a four-stroke-cycle gasoline engine operates.
- Explain the Atkinson cycle and how it affects engine efficiency.
- Describe the importance of using the specified oil in the engine of a hybrid-electric vehicle.
- Describe how the fuel injection and ignition systems work on hybrid gasoline engines.
- Explain how active control engine mounts function.
- Describe how wide-band oxygen sensors work.
- Explain how variable valve timing is able to improve engine power and reduce exhaust emissions
- Describe how auxiliary 12-volt and high-voltage hybrid vehicle batteries work

- List the safety precautions necessary when working with batteries

- Explain how to safely charge a battery

- Discuss how to jump start a vehicle safely

- Discuss hybrid electric vehicle auxiliary batteries
- Explain the types of high-voltage batteries used in most hybrid electric vehicles.
- Describe the operation of DC and AC electric motors.
- Discuss the advantages and disadvantages of using electric motors in hybrid electric vehicles.
- Explain how electric power steering works.
- Describe how a DC-to-DC converter works.

- Discuss how a DC-to-AC inverter works.
 - Describe how alternative fuels affect engine performance.
 - List alternatives to gasoline
 - Discuss how alternative fuels affect drivability
 - Explain how alternative fuels can reduce CO exhaust emissions
 - Discuss safety precautions when working with alternative fuel
 - Identify a Toyota/Lexus hybrid electric vehicle.
- Explain the operation of the various unique systems found in Toyota/Lexus hybrid electric vehicles.
- List the procedures necessary to depower the high-voltage circuits in Toyota/Lexus hybrid electric vehicles.
- Describe how to safely perform routine service on a Toyota/Lexus hybrid electric vehicle.
 - Identify Honda hybrid electric vehicles.
 - Describe how the Honda Integrated Motor Assist (IMA) system works.
 - Explain the precautions necessary when working on Honda hybrid electric vehicles
 - Describe the features and the operational characteristics of Honda hybrid electric vehicles
 - Explain the service procedures for Honda hybrid electric vehicles.
 - Explain the operation of a Ford/Mercury hybrid electric vehicle (HEV).
 - Describe the features of a Ford/Mercury HEV.
 - Discuss the safety precautions to be followed whenever working on a Ford/Mercury HEV.
 - Explain how the electronically controlled continuously variable transmission (CVT) allows the Ford/Mercury HEV to achieve maximum efficiency.
 - Describe the service procedures for Ford/Mercury HEVs.
- Identify General Motors hybrid electric and extended range electric vehicles
 - Describe how the parallel hybrid truck system works.
 - Describe the features and operating characteristics of the Saturn, Chevrolet, and Buick mild hybrids, and two-mode hybrid vehicles.
 - Describe how the Chevrolet VOLT works
 - Explain the precautions necessary when working on General Motors hybrid vehicles.
 - Explain the service procedures for General Motors hybrid vehicles.

Course Format & Methods of instruction:

- This is a lecture and hands on class

- Class consists of 720 hours of lecture and 120 hours of Hands on practical labs
- Each day will include a combination of lecture and labs to supports subjects learned in lecture. Class will formatted into 17 modules different hours in each. This allows for new students to start the class at the beginning of each module. Student must pass an assessment test for each module to get credit for the complete 720 program

Module	Automotive Performance Emissions Training	Clock hours
Module 1	Automotive Safety & Information	12
Module 2	Engine Technology	32
Module 3	Electrical Systems Technology	40
Module 4	Fuel Management Technology	40
Module 5	Diagnostic Tools & Test Equipment Operation	28
Module 6	Automotive Service and Administration	16
Module 7	Practical Applications	140
Module 8	Bar Specified Diagnostic Training-Alternative A6 Electrical	28
Module 9	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	32
Module 10	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	36
Module 11	Inspector Level 1	68
Module 12	Inspector Level 2	28
Module 13	Bar Update Training	16
Module 14	Smog Examination Test-Prep	24
Module 15	Diesel Fundamentals and Emission Controls	120
Module 16	Direct Injection	20
Module 17	Hybrid Fundamentals and Safety	40
	TOTAL HOURS	720
	Total Cash Price	\$6954.00
	Total Price With Financial Aid	\$7203.00

Advanced Engine Performance Specialist

School Name: Smog Tech Institute

Course Name: Advanced Engine Performance specialist

Course Number: TBA

Program Title: Day Time Advanced Engine Performance specialist

Course Hours: 120

Course Completion: 3.75 weeks

Meeting Times: Weekdays 9:00AM – 6:00PM

Meeting Days: Monday, Tuesday, Wednesday & Thursday

Total Meetings: 15

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

Vehicle Systems have become more complex over the years and it has become very difficult for technicians to keep up with this technology. This class was created to take the technician who already has a good automotive foundation and to enhance their diagnostic skills by teaching new techniques to enhance their bottom line and increase their profits. This course starts off with developing a sound diagnostic approach that can be applied to any repair. Technicians will learn how complicated computer network systems work and how to repair them. The technicians will learn the foundations for Global OBD II and how to use the system to repair vehicles. Proper use of circuit testers and Oscilloscopes, starting and charging system diagnostics including the new push button start systems, all ignition system theory and diagnosis, alternative and diesel fuels, all sensors used for fuel and timing controls air fuel ratio sensors, fuel trim diagnostic, electronic fuel injections systems and throttle control, emission control devices and how monitors work, and lastly emission based diagnosis. The materials utilized in this class are industry standard NATEF certified. These materials are

designed for higher education and have been perfected over the years. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor an OBD II system and determine codes, monitors readiness and mode 6 data and much more. Also included in the class is an online component that allows the technician to problem solve using online simulated technical concerns. At the end of this course students should have developed knowledge and skills necessary to diagnose all types of emission, OBD II, ignition, Network and other failures on modern vehicle systems. The certificate for completion is valid upon passing final exam.

Required Textbook:

- Advanced Engine Performance Specialist: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

- Proper diagnostic processes
- Fundamentals of CAN Networks and diagnostic processes
- OBD II system operation and leveraging the ability of this system for diagnostics
- Proper use of circuit testers and Lab scopes.
- Charging and starting systems
- Ignition systems theory and testing
- Learn how each sensor interacts with the computer and how to test them when they fail
- Understand the importance of oxygen sensors and how to test them.

- Learn how monitors run test on emission control devices
- Understand the difference between port fuel injection and Direct fuel injection
- When the engine fails learn the test to determine the cause and the severity failure

Course Format & Methods of instruction:

- This is a lecture and hands on class
- Class consists of 90 hours of lecture and 30 hours of Hands on practical labs
- Each day will include a combination of lecture and labs to supports subjects learned in lecture. Class will formatted into 5 modules 24 hours each. This allows for new students to start the class at the beginning of each module.

Module	Advanced Engine Performance specialist	Clock hours
Module 01	Diagnostic processes	24
Module 02	Electronic, Electrical, Ignition and system theory and diagnostics	24
Module 03	Sensors and Actuators practical usage and diagnostics	24
Module 04	Fuel Injection systems operation and theory and diagnostics	24
Module 05	Emissions and emission control systems theory and diagnostics	24
	TOTAL HOURS	120
	Total cash price	\$2386.00
	Total price with financial aid	\$2636.00

Automotive Electrical Specialist

School Name: Smog Tech Institute

Course Name: Automotive Electrical Specialist

Course Number: TBA

Program Title: Day Time Automotive Electrical Specialist

Course Hours: 120

Course Completion: 3.75 weeks

Meeting Times: Weekdays 9:00AM – 6:00PM

Meeting Days: Monday, Tuesday, Wednesday & Thursday

Total Meetings: 15

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

80 % of a time diagnosing a vehicle is spent working with electrical systems and components and vehicle electronics are becoming more sophisticated each year of new production vehicles. It is the objective of this course to start with the understanding the basic electrical foundation then move to the more advanced systems that are in use today. This class will tech Ohms law, Voltage Drop Testing, Opens, shorts, and circuit types. This course is for the beginner and the advanced electrical technician. This class will also offer broad understanding of electrical and Electronics that are used on vehicles today. This class will explain the use of volt meters and oscilloscopes and have hands on practice to put in to practice what is learned through lecture. It is the intent of the class to allow a technician to feel more comfortable while working around automotive electrical. This course utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. This manual also includes sound diagnostic strategies based on real world instruction. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor electronic systems, perform voltage drop test ohms test, amps test and much more.

Required Textbook:

- Automotive Electrical Specialist: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

- Discuss the relationship among volts, amperes, and ohms.
- Explain how magnetism is used in automotive applications.
- Explain Ohm's law.
- Identify the parts of a complete circuit.
- Explain Watt's law.
- Describe the characteristics of an open, a short-to-ground, and a short-to-voltage.
- Identify a series, parallel circuit, series-parallel circuit.
- Calculate the total resistance in a parallel circuit.
- Calculate the total resistance in a parallel circuit.
- Discuss how to safely use a fused jumper wire, a test light, and a logic probe.
- Explain how to set up and use a digital meter to read voltage, resistance, and current.
- Explain meter terms and readings.
- Interpret meter readings and compare to factory specifications.
- Discuss how to properly and safely use meters.
- Explain the wire gauge number system.
- Describe how fusible links and fuses protect circuits and wiring.
- Discuss electrical terminals and connectors.
- Describe how to solder.
- Discuss circuit breakers and PTC electronic circuit protection devices.
- Explain the types of electrical conduit.

- List the steps for performing a proper wire repair.
- Interpret wiring schematics.
- Explain how relays work.
- Discuss the various methods that can be used to locate a short circuit.
- List the electrical troubleshooting diagnosis steps.
- Discuss the various methods that can be used to locate a short circuit.
- List the electrical troubleshooting diagnosis steps.
- Describe how a capacitor can store an electrical charge.
- Explain how a capacitor circuit can be used as a timer circuit.
- Explain magnetism.
- Describe how magnetism and voltage are related.
- Describe how an ignition coil works.
- Explain how an electromagnet works.
- Identify semiconductor components.
- Explain precautions necessary when working with semiconductor circuits.
- Discuss where various electronic and semiconductor devices are used in vehicles.
- Explain how diodes and transistors work.
- Describe how to test diodes and transistors.
- List the precautions that a service technician should follow to avoid damage to electronic components from electrostatic discharge.
- Describe the types of networks and serial communications used on vehicles.
- Discuss how the networks connect to the data link connector and to other modules.
- Explain how to diagnose module communication faults.
- List the precautions necessary when working with batteries.
- Explain how to safely charge a battery.
- Discuss how to perform a battery drain test.
- Describe how to perform a battery load test.
- Explain how to conduct a conductance test.
- Describe how the cranking circuit works.
- Discuss how a starter motor converts electrical power into mechanical power.
- Describe the hold-in and pull-in windings of a starter solenoid.
- List the parts of a typical alternator.
- Describe how an alternator works.
- Explain how the powertrain control module (PCM) controls the charging circuit.
- Describe how to perform a charging voltage test.
- Discuss how to perform an AC ripple voltage test.
- Explain how to perform an alternator output test.
- Explain how to disassemble an alternator and test its component parts.
- Discuss how to check the wiring from the alternator to the battery.

- Describe how to test the operation of a computer-controlled charging system.
- Read and interpret a bulb chart.
- Describe how interior and exterior lighting systems work.
- Read and interpret a bulb chart.
- Discuss troubleshooting procedures for lighting and signaling circuits.
- Be able to identify the meaning of dash warning symbols.
- Discuss how a fuel gauge works.
- Explain how to use a service manual to troubleshoot a malfunctioning dash instrument.
- Describe how a navigation system works.
- List the various types of dash instrument displays.
- Describe how the horn operates.
- List the components of a wiper circuit.
- Explain how the blower motor can run at different speeds.
- Discuss how to diagnosis faults in the horn, wiper, and blower motor circuits.
- Explain how the body control module or body computer controls the operation of electrical accessories.
- Explain how cruise control operates and how to diagnose the circuit.
- Describe how power door locks, windows, and seats operate.
- Describe how a keyless remote can be reprogrammed.
- Explain how the theft deterrent system works.
- List the appropriate safety precautions to be followed when working with airbag systems.
- Describe the procedures to diagnose and repair common faults in airbag systems.
- Explain how the passenger presence system works.
- Describe how AM and FM radio works.
- Explain how to test speaker polarity.
- Explain how to match speaker impedence.
- Explain how crossovers work.
- Describe how satellite radio works.
- Explain how Bluetooth systems work.
- Discuss voice recognition systems.
- List causes and corrections of radio noise and interference.

Course Format & Methods of instruction:

- This is a lecture and hands on class
- Class consists of 90 hours of lecture and 30 hours of Hands on practical labs
- Each day will include a combination of lecture and labs to supports subjects learned in lecture. Class will formatted into 5 modules 24 hours each. This allows for new students to start the class at the beginning of each module.

Course Modules

Module	Automotive Electrical Specialist	Clock hours
Module 01	Electrical Fundamentals	24
Module 02	Electrical Testing and components	24
Module 03	Battery, Charging and Starting Systems	24
Module 04	Electrical accessories	24
Module 05	Heating and Air-conditioning	24
	TOTAL HOURS	120
	Total Cash Price	\$2386.00
	Total Price with Financial Aid	\$2636.00

Diesel Automotive Specialist

School Name: Smog Tech Institute

Course Name: Diesel Automotive Specialist

Course Number: TBA

Program Title: Day Time Diesel Automotive Specialist

Course Hours: 120

Course Completion: 3.75 weeks

Meeting Times: Weekdays 9:00AM – 6:00PM

Meeting Days: Monday, Tuesday, Wednesday & Thursday

Total Meetings: 15

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

Diesels are becoming more and more popular here in the USA every year. Diesel technology has improved over the years and the emissions are now comparable with that of gasoline engines and it stands that many manufacturers will now include the diesel power plants in their fleets due to their efficiency and improved millage. There is a general lack of understanding how diesel engines and fuel systems work and this course will address this lack of understanding by teaching students about diesel combustion principles, Types of fuel systems, Emissions systems and controls, Intake systems, onboard diagnostics and much more. This manual utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been perfected over the years. This manual also includes sound diagnostic strategies based on real world instruction. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor a diesel OBD II system and determine codes, monitors readiness and mode 6 data.

At the end of this course students should have developed knowledge and skills necessary to diagnose tailpipe emissions and OBD II system failures on Diesel

fuel and emission systems. The certificate for completion is given upon completion of all course hours and passing final exam.

Required Textbook:

- Diesel Automotive Specialist: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

- Prepare for ASE Engine Performance (A8) certification test content area “C” (Fuel, Air Induction, and Exhaust Systems Diagnosis and Repair).
- Explain how a diesel engine works.
- Describe the difference between direct injection (DI) and indirect injection (IDI) diesel engines.
- List the parts of the typical diesel engine fuel system.
- Explain how glow plugs work.
- List the advantages and disadvantages of a diesel engine.
- Explain diesel fuel specifications.
- Identify the different types of injectors
- Identify the different types of injector nozzles
- Identify turbo chargers and boost controls
- List the advantages and disadvantages of biodiesel.
- Discuss API gravity.
- Explain E-diesel specifications.
- Learn about air supply requirements
- Turbo charging and blower operation
- Crank case ventilation

- PCM Sensors
- Intake throttle plates
- Intake filtering
- Identify emission control system
- Diagnose the onboard diagnostic system
- Understand diesel emissions output

Course Format & Methods of instruction:

- This is a lecture and hands on class
- Class consists of 90 hours of lecture and 30 hours of Hands on practical labs
- Each day will include a combination of lecture and labs to supports subjects learned in lecture. Class will formatted into 5 modules 24 hours each. This allows for new students to start the class at the beginning of each module.

Course Modules

Module	Automotive Diesel Specialist	Clock hours
Module 01	Diesel engine operating principals	28
Module 02	Diesel Fuel Systems	36
Module 03	Air induction and exhaust systems	20
Module 04	Emission systems	20
Module 05	On board Diagnostics	16
	TOTAL HOURS	140
	Total Cash Price	\$2386.00
	Total Price with Financial Aid	\$2636.00

Hybrid Specialist

School Name: Smog Tech Institute

Course Name: Hybrid Specialist

Course Number: TBA

Program Title: Day Time Hybrid Specialist

Course Hours: 120

Course Completion: 3.75 weeks

Meeting Times: Weekdays 9:00AM – 6:00PM

Meeting Days: Monday, Tuesday, Wednesday & Thursday

Total Meetings: 15

Days Per Week: 4

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-0620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

Hybrids are becoming Mainstream in the USA and as the EPA mandates stricter requirements for gas mileage and emissions the manufacturers will be forced to produce more of them to meet these demands. The California smog program will begin certifying Hybrids soon and as it stands smog technicians have very limited exposure to even the basics on these complex vehicles. It is the intention of this class to teach hybrids from a generic prospective and to give basic understanding of all the systems involved that could be of potential danger. This class will also offer a fundamental understanding in the use of hybrid technology in terms of Series and Parallel Design. This class will expand on the use of generators, inverters, converters, Internal Combustion Engine Design and Features, Heating and ventilation and a quick look at the successful Toyota hybrids. Safety is a major concern and this book will give a thorough understanding of the difference between high voltage and low voltage systems and show technicians proper procedures for powering down the high voltage system. It is the intent of the class to allow a technician to feel more comfortable while working around or with hybrid technology.

This course utilizes Materials that are proven the industry and are NATEF certified. These materials are designed for higher education and have been

perfected over the years. This manual also includes sound diagnostic strategies based on real world instruction. This course also includes time in the shop with practical labs to enhance materials learned in class. These labs will require the student to hook up a scan tool to monitor a diesel OBD II system and determine codes, monitors readiness and mode 6 data. This course will give the student critical safety techniques and fundamental understanding of hybrid vehicles.

Required Textbook:

- Hybrid Specialist: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

- Describe the different types of hybrid electric vehicles.)
- Explain how a hybrid vehicle is able to achieve an improvement in fuel economy compared to a conventional vehicle design.
- Discuss the advantages and disadvantages of the various hybrid designs.
- Describe HEV components, including motors, energy sources, and motor controllers.
- Discuss the operation of a typical hybrid electric vehicle.
- Explain how a four-stroke-cycle gasoline engine operates.
- Explain the Atkinson cycle and how it affects engine efficiency.
- Describe the importance of using the specified oil in the engine of a hybrid-electric vehicle.
- Describe how the fuel injection and ignition systems work on hybrid gasoline engines.
- Explain how active control engine mounts function.
- Describe how wide-band oxygen sensors work.
- Explain how variable valve timing is able to improve engine power and reduce exhaust emissions

- Describe how auxiliary 12-volt and high-voltage hybrid vehicle batteries work
- List the safety precautions necessary when working with batteries
- Explain how to safely charge a battery
- Discuss how to jump start a vehicle safely
- Discuss hybrid electric vehicle auxiliary batteries
- Explain the types of high-voltage batteries used in most hybrid electric vehicles.
- Describe the operation of DC and AC electric motors.
- Discuss the advantages and disadvantages of using electric motors in hybrid electric vehicles.
- Explain how electric power steering works.
- Describe how a DC-to-DC converter works.
- Discuss how a DC-to-AC inverter works.
- Describe how alternative fuels affect engine performance.
- List alternatives to gasoline
- Discuss how alternative fuels affect drivability
- Explain how alternative fuels can reduce CO exhaust emissions
- Discuss safety precautions when working with alternative fuel
- Identify a Toyota/Lexus hybrid electric vehicle.
- Explain the operation of the various unique systems found in Toyota/Lexus hybrid electric vehicles.
- List the procedures necessary to depower the high-voltage circuits in Toyota/Lexus hybrid electric vehicles.
- Describe how to safely perform routine service on a Toyota/Lexus hybrid electric vehicle.
- Identify Honda hybrid electric vehicles.
- Describe how the Honda Integrated Motor Assist (IMA) system works.
- Explain the precautions necessary when working on Honda hybrid electric vehicles
- Describe the features and the operational characteristics of Honda hybrid electric vehicles
- Explain the service procedures for Honda hybrid electric vehicles.
- Explain the operation of a Ford/Mercury hybrid electric vehicle (HEV).
- Describe the features of a Ford/Mercury HEV.
- Discuss the safety precautions to be followed whenever working on a Ford/Mercury HEV.
- Explain how the electronically controlled continuously variable transmission (CVT) allows the Ford/Mercury HEV to achieve maximum efficiency.
- Describe the service procedures for Ford/Mercury HEVs.

- Identify General Motors hybrid electric and extended range electric vehicles
- Describe how the parallel hybrid truck system works.
- Describe the features and operating characteristics of the Saturn, Chevrolet, and Buick mild hybrids, and two-mode hybrid vehicles.
- Describe how the Chevrolet VOLT works
- Explain the precautions necessary when working on General Motors hybrid vehicles.
- Explain the service procedures for General Motors hybrid vehicles.

Course Format & Methods of instruction:

- This is a lecture and hands on class
- Class consists of 90 hours of lecture and 30 hours of Hands on practical labs
- Each day will include a combination of lecture and labs to supports subjects learned in lecture. Class will formatted into 5 modules 24 hours each. This allows for new students to start the class at the beginning of each module.

Course Modules

Module	Hybrid Specialist	Clock hours
Module 01	Introduction to hybrid vehicle	24
Module 02	Hybrid power systems	24
Module 03	Hybrid Transmission and Ventilation systems	24
Module 04	Hybrid from manufactures systems prospective	24
Module 05	Hybrid safety ad vehicle diagnostics	24
	TOTAL HOURS	120
	Total Cash Price	\$2386.00
	Total Price with financial Aid	\$2636.00

EVENING PROGRAM DESCRIPTIONS

California State Smog Repair Technician

School Name: Smog Tech Institute

Course Name: Smog Repair Technician

Course Number: TBA

Program Title: Californian State Smog Repair Technician Evening Program

Course Hours: 72

Course Completion: 9 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Tuesday, Thursday

Total Meetings: 18

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

BAR Specified Diagnostic and Repair Training is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of electrical/electronic systems and engine and emission control performance. Students with at least two years of engine performance repair experience and who successfully complete this training may qualify for the state licensing examination for the Smog Check Repair Technician License.

Required Textbook:

- Bar specified Diagnostic and Repair: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as it relates to the automotive industry.
3. Explain the standards of practice pertaining to Smog Check licensure.
4. Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.
5. Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.
6. Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

7. Describe principles of electricity and electronics.
8. Define electrical terms of watts, voltage, current and resistance.
9. Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).
10. Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.

11. Describe theory, design and operation of automotive electrical and electronic systems.
12. Identify standard electrical and electronic symbols.
13. Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.
14. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.
16. Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.
18. Describe the theory, design and operation of induction and exhaust systems.
19. Describe the theory, design and operation of fuel systems.
20. Describe the theory, design and operation of ignition systems.
21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.
22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).
23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).
24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).
25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.

26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.
36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.
37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.
38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 3 modules allowing for new students to begin at the beginning of each module

Module	Repair only Technician	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A6 Electrical	20
Module 02	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	24
Module 03	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	28
	TOTAL HOURS	72
	Total Cash Price	\$1200.00
	Total Price with	\$1500.00

Californian State Smog Inspector

School Name: Smog Tech Institute

Course Name: Smog Inspector

Course Number: TBA

Program Title: California State Smog Inspector evening program

Course Hours: 96

Course Completion: 12 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Monday, Wednesday

Total Meetings: 24

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

- The Engine and Emission Control Training is intended to provide students with fundamental knowledge of engine and emission control theory, design and operation. Students who successfully complete this training at a BAR-certified school will have met the first step of the Bureau of Automotive Repair's training requirements for inexperienced or minimally experienced candidates for the Smog Check Inspector license.
- Level 2 Inspector Training is intended to provide students the knowledge, skills, and abilities needed to perform Smog Check inspections. Students who successfully complete this training will have met the Bureau's training requirements to qualify to take the Smog Check Inspector state licensing examination.

Required Textbook: All text books included in tuition cost and are given 1st day of class

- Level 1 Inspector

- Smog Check Inspection Procedures Manual
- Smog Check Reference Guide
- Laws and Regulations Manual
- Write It Write Booklet
- Low Pressure Fuel Evaporative Training Video
- Gasoline Visible Smoke Test Training- multimedia
- Diesel Vehicle Inspection Training – multimedia

Required Materials:

- Textbooks, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

Level 1

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Describe engine theory, design, and operation for both gasoline and diesel vehicles.
3. Demonstrate their knowledge, skills and abilities in identifying engine systems, parts and Components.
4. Describe emission control systems theory, design and operation for both gasoline and Diesel vehicles.
5. Demonstrate their knowledge, skills and abilities in identifying emission control systems On various vehicle designs.
6. Demonstrate their knowledge, skills and abilities in checking ignition timing on various Vehicle designs.

7. Demonstrate their knowledge, skills and abilities in checking the operation of exhaust Gas recirculation systems on various system designs.

8. Demonstrate their knowledge, skills and abilities in checking monitor readiness on Vehicles equipped with second generation on-board diagnostics systems (OBDII).

Level 2 Inspector

9. Describe the laws, regulations, and procedures associated with consumer authorization of

Inspections and the overall administration of the Smog Check Program.

10. Describe the standards of practice expected of Smog Check Inspectors.

11. Demonstrate ability to calibrate an emission inspection system.

12. Demonstrate their knowledge, skills and abilities in performing Smog Check emission tests on

Various vehicle designs.

13. Demonstrate their knowledge, skills and abilities in performing Smog Check visual inspections on

Various vehicle designs.

14. Describe and demonstrate they have the knowledge, skills and abilities to perform smog check

Functional tests on various vehicle designs.

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 2 modules allowing for new students to begin at the beginning of each module

Module	Inspector Only Technician	Clock hours
Module 01	Inspector Level 1	68
Module 02	Inspector Level 2	28
	HOURS	96
	Total Cash Price	\$1695.00
	Total Price with Financial Aid	\$1995.00

California Test and Repair Technician

School Name: Smog Tech Institute

Course Name: Test and Repair Technician

Course Number: TBA

Program Title: California State Test and Repair Technician Evening Program

Course Hours: 100

Course Completion: 12.5 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Tuesday, Thursday for modules 1-3 Monday Wednesday module 4

Total Meetings: 25

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 & 21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

- BAR Specified Diagnostic and Repair Training is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of electrical/electronic systems and engine and emission control performance. Students with at least two years of engine performance repair experience and who successfully complete this training may qualify for the state licensing examination for the Smog Check Repair Technician License.
- Level 2 Inspector Training is intended to provide students the knowledge, skills, and abilities needed to perform Smog Check inspections. Students who successfully complete this training will have met the Bureau's training

requirements to qualify to take the Smog Check Inspector state licensing examination.

Required Textbook: All text books included in tuition cost and are given 1st day of class

- Bar specified Diagnostic and Repair.
- Smog Check Inspection Procedures Manual
- Smog Check Reference Guide
- Laws and Regulations Manual
- Write It Write Booklet
- Low Pressure Fuel Evaporative Training Video
- Gasoline Visible Smoke Test Training- multimedia
- Diesel Vehicle Inspection Training – multimedia

Required Materials:

- Textbooks, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as it relates to the automotive industry.
3. Explain the standards of practice pertaining to Smog Check licensure.
4. Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.
5. Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.

6. Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

7. Describe principles of electricity and electronics.

8. Define electrical terms of watts, voltage, current and resistance.

9. Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).

10. Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.

11. Describe theory, design and operation of automotive electrical and electronic systems.

12. Identify standard electrical and electronic symbols.

13. Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.

14. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.

16. Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.

18. Describe the theory, design and operation of induction and exhaust systems.

19. Describe the theory, design and operation of fuel systems.

20. Describe the theory, design and operation of ignition systems.

21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.

22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).
23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).
24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).
25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.
26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.

36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.

37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.

38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Describe and demonstrate personal, shop, equipment, and vehicle safety practices.

Level 2 Inspector

39. Describe the laws, regulations, and procedures associated with consumer authorization of

Inspections and the overall administration of the Smog Check Program.

40. Describe the standards of practice expected of Smog Check Inspectors.

41. Demonstrate ability to calibrate an emission inspection system.

42. Demonstrate their knowledge, skills and abilities in performing Smog Check emission tests on

Various vehicle designs.

43. Demonstrate their knowledge, skills and abilities in performing Smog Check visual inspections on

Various vehicle designs.

44. Describe and demonstrate they have the knowledge, skills and abilities to perform smog check

Functional tests on various vehicle designs.

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction

- Class is taught in 4 modules allowing for new students to begin at the beginning of each module

Module	Test and Repair Technician	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A6 Electrical	20
Module 02	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	24
Module 03	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	28
Module 04	Inspector Level 2	28
	TOTAL HOURS	100
	Total Cash Price	\$1695.00
	Total Price With financial Aid	\$1995.00

INDIVIDUAL BAR COURSES

A-6 BAR Specified Diagnostic & Repair Training

School Name: Smog Tech Institute

Course Name: A-6 BAR Specified Diagnostic & Repair Training

Course Number: TBA

Program Title: Individual A-6 BAR Specified Diagnostic & Repair Training

Course Hours: 20

Course Completion: 2.5 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Tuesday, Thursday

Total Meetings: 18

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

For a Limited time only and until august of 2014 Technicians may complete BAR ASE alternative as a way to keep their certification current, after august of 2014 they must complete all BAR specified diagnostic training or have ASE A-6, A-8 and L1. This class is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of electrical/electronic systems. This class is only for the purpose of recertification and not for new Smog technicians trying to get a repair license. Bar Specified Diagnostic training will need to be completed for new applicant's meet the qualifications of the repair license.

Required Textbook:

- A-6 BAR Specified Diagnostic & Repair Training: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as it relates to the automotive industry.
3. Explain the standards of practice pertaining to Smog Check licensure.
4. Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.
5. Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.
6. Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

7. Describe principles of electricity and electronics.
8. Define electrical terms of watts, voltage, current and resistance.

9. Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).

10. Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.

11. Describe theory, design and operation of automotive electrical and electronic systems.

12. Identify standard electrical and electronic symbols.

13. Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.

14. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.

16. Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 1 modules allowing for new students to begin at the beginning of each module

Module	ASE Alternative A-6	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A6 Electrical	20
	Total Price	\$350.00

A-8 BAR Specified Diagnostic & Repair Training

School Name: Smog Tech Institute

Course Name: A-6 BAR Specified Diagnostic & Repair Training

Course Number: TBA

Program Title: Individual A-8 BAR Specified Diagnostic & Repair Training

Course Hours: 24

Course Completion: 3 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Tuesday, Thursday

Total Meetings: 6

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

For a Limited time only and until august of 2014 Technicians may complete BAR ASE alternative as a way to keep Their certification current, after august of 2014 they must complete all BAR specified diagnostic training or have ASE A-6, A-8 and L1. This class is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of engine and emission control performance. This class is only for the purpose of recertification and not for new Smog technicians trying to get a repair license. Bar Specified Diagnostic training will need to be completed for new applicant's meet the qualifications of the repair license.

Required Textbook:

- A-8 BAR Specified Diagnostic & Repair Training: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.

18. Describe the theory, design and operation of induction and exhaust systems.

19. Describe the theory, design and operation of fuel systems.

20. Describe the theory, design and operation of ignition systems.

21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.

22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).

23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).

24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).

25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.

26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.
36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.
37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.
38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 1 modules allowing for new students to begin at the beginning of each module

Module	ASE alternative A-8	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	24
	Total Price	\$400.00

L1 BAR Specified Diagnostic & Repair Training

School Name: Smog Tech Institute

Course Name: L1 BAR Specified Diagnostic & Repair Training

Course Number: TBA

Program Title: Individual L1 BAR Specified Diagnostic & Repair Training

Course Hours: 28

Course Completion: 3.5 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Tuesday, Thursday

Total Meetings: 7

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

For a Limited time only and until august of 2014 Technicians may complete BAR ASE alternative as a way to keep Their certification current, after august of 2014 they must complete all BAR specified diagnostic training or have ASE A-6, A-8 and L1. This class is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of engine and emission control performance. This class is only for the purpose of recertification and not for new Smog technicians trying to get a repair license. Bar Specified Diagnostic training will need to be completed for new applicant's meet the qualifications of the repair license.

Required Textbook:

- L1 Bar Specified Diagnostic & Repair Training: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.

- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.
18. Describe the theory, design and operation of induction and exhaust systems.
19. Describe the theory, design and operation of fuel systems.
20. Describe the theory, design and operation of ignition systems.
21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.
22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).
23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).
24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).
25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.

26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.
27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.
28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.
36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.
37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.
38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions

- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 1 modules allowing for new students to begin at the beginning of each module

Module	ASE Alternative L1	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	28
	Total Price	\$450.00

Bar Specified Diagnostic & Repair Training

School Name: Smog Tech Institute

Course Name: Bar Specified Diagnostic and Repair Training

Course Number: TBA

Program Title: Individual BAR Specified Diagnostic and Repair Training Complete

Course Hours: 72

Course Completion: 9 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Tuesday, Thursday

Total Meetings: 18

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 & 21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

BAR Specified Diagnostic and Repair Training is intended to provide students a high level of competency in the diagnosis and repair of Smog Check failures. This training focuses on the areas of electrical/electronic systems and engine and emission control performance. Students with at least two years of engine performance repair experience and who successfully complete this training may qualify for the state licensing examination for the Smog Check Repair Technician License.

Required Textbook:

- Bar specified Diagnostic and Repair: provided by school as part of their paid tuition.

Required Materials:

- Textbook, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.

- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

General information

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Explain the causes and effects of air pollution as it relates to the automotive industry.
3. Explain the standards of practice pertaining to Smog Check licensure.
4. Locate, assess and apply vehicle service / repair information, in the process of Smog Check diagnosis and repair.
5. Employ appropriate diagnostic and repair processes based on the customer's complaint, the cause of inspection failure, or vehicle data / information.
6. Establish a level of priority with respect to the repair of a Smog Check failure using inspection and vehicle data / information.

Electrical/Electronic Systems

7. Describe principles of electricity and electronics.
8. Define electrical terms of watts, voltage, current and resistance.
9. Describe and identify the types of automotive electrical circuits (series, parallel, and series/parallel).
10. Describe and identify the types of electrical and electronic components used in computer controlled automotive systems.
11. Describe theory, design and operation of automotive electrical and electronic systems.
12. Identify standard electrical and electronic symbols.

13. Demonstrate full understanding of electrical principals in detecting defects in electrical/electronic circuits, including, but not limited to, continuity tests, resistance tests, current/amperage tests, voltage drop tests.

14. Interpret electrical wiring diagrams and schematics to diagnose automotive electrical and electronic systems.

16. Employ various types of test equipment, including but not limited to a digital multi-meter (DMM) and a digital storage oscilloscope (DSO).

Engine and Emission Control Performance

17. Describe engine theory, design, and operation.

18. Describe the theory, design and operation of induction and exhaust systems.

19. Describe the theory, design and operation of fuel systems.

20. Describe the theory, design and operation of ignition systems.

21. Describe theory, purpose, design and operation of emission control systems, including, but not limited to, crankcase controls, fuel evaporative controls, air injection, exhaust gas recirculation, catalyst and other exhaust gas after treatment systems, and integrated emission control management strategies, such as spark control and variable valve timing.

22. Describe the exhaust byproducts of internal combustion and define the primary emissions resulting from this combustion process. (Oxygen, carbon dioxide, carbon monoxide, hydrocarbon, oxides of nitrogen, sulphur dioxide, particulate matter).

23. Explain the relationship of the air/fuel ratio to the combustion process and the resulting emissions (stoichiometric, rich, and lean).

24. Analyze exhaust gas readings to determine the best diagnostic strategy (4 - 5 gas analysis).

25. Employ engine and emission control diagnostic test equipment, including, but not limited to, cylinder compression gauge, cylinder leak down tester, fuel pressure gauge, ignition oscilloscope, timing light, pressure/vacuum gauge, DMM, OBD diagnostic scan tool, DSO, and exhaust gas analyzer.

26. Diagnose engine mechanical malfunctions or defects and determine appropriate repairs.

27. Diagnose induction and fuel system malfunctions or defects and determine appropriate repairs.

28. Diagnose emission control systems malfunctions/defects and determine appropriate repairs. Including, but not limited to, crankcase controls, fuel evaporative controls, exhaust gas recirculation, secondary air, and catalytic converter efficiency.
29. Diagnose ignition system malfunctions or defects and determine appropriate repairs.
30. Identify root or underlying causes of engine and emission control malfunctions and differentiate between mechanical, electrical/electronic and fuel system problems and determine appropriate repairs.
31. Describe the theory, design and operation of computerized engine and emission control management systems, OBDI and OBDII.
32. Identify computerized engine and emissions control systems, subsystems and components.
33. Describe OBDII monitors: catalyst efficiency, misfire detection, fuel system, heated exhaust gas oxygen sensors, EGR, and comprehensive component monitors, evaporative emissions, secondary air injection, thermostat, and PCV monitor.
34. Describe the OBDII system modes of operation, modes 1-9.
35. Evaluate a vehicle's OBD data, to determine the systems operational status and condition, including, but not limited to, supported monitors, monitor enabling criteria, monitor readiness, generic and vehicle manufacturer fault codes, freeze frame data, and fuel control.
36. Demonstrate comprehensive knowledge and ability in using an OBDII diagnostic scan tool to detect various engine and emission control malfunctions.
37. Demonstrate comprehensive knowledge and ability in using a DSO to detect various system / component malfunctions.
38. Evaluate a vehicle's OBD data to verify proper engine / emission controls management functionality- repair verification.

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 3 modules allowing for new students to begin at the beginning of each module

Module	Repair only Technician	Clock hours
Module 01	Bar Specified Diagnostic Training-Alternative A6 Electrical	20
Module 02	Bar Specified Diagnostic Training-Alternative A8 Engine Performance	24
Module 03	Bar Specified Diagnostic Training-Alternative L1 Advanced Engine	28
	TOTAL HOURS	72
	Total Price	\$1200.00

Level 1 Inspector Training

School Name: Smog Tech Institute

Course Name: Level 1 Inspector Training

Course Number: TBA

Program Title: Individual Level 1 Inspector Training

Course Hours: 68

Course Completion: 8.5 weeks

Meeting Times: Weekdays 6:30PM – 10:30PM

Meeting Days: Monday, Wednesdays

Total Meetings: 17

Days Per Week: 2

Instructor's Name: Mark Keiser

Locations: 4070 North Palm St Fullerton, CA 92503 &
21208 Nordhoff St Chatsworth, CA 91311

Meeting Dates: TBD

Contact Information:

Phone: 714-441-1620

Email Address: mkeiser@smogtechinstitute.com

Course Description:

The Engine and Emission Control Training is intended to provide students with fundamental

Knowledge of engine and emission control theory, design and operation. Students who Successfully complete this training at a BAR-certified school will have met the first step of the

Bureau of Automotive Repair's training requirements for inexperienced or minimally experienced

Candidates for the Smog Check Inspector license.

Required Textbook:

- Level 1 Inspector Training
- Labs
- My automotive lab

Required Materials:

- All Textbooks, given out the first night of class.
- Lab sheets will be provided during labs.
- Pencils, pens, and paper will be provided in classroom.
- My Automotive Lab for online Technical simulations. Access to web site is provided in book

Other Requirements:

- Students are expected to arrive to class on-time
- Cell phones should be on vibrate and no texting during class
- Participate in class discussions and labs.

Course Objectives: By completion student should have strong knowledge of

1. Describe and demonstrate personal, shop, equipment, and vehicle safety practices.
2. Describe engine theory, design, and operation for both gasoline and diesel vehicles.
3. Demonstrate their knowledge, skills and abilities in identifying engine systems, parts and Components.
4. Describe emission control systems theory, design and operation for both gasoline and Diesel vehicles.
5. Demonstrate their knowledge, skills and abilities in identifying emission control systems On various vehicle designs.
6. Demonstrate their knowledge, skills and abilities in checking ignition timing on various Vehicle designs.
7. Demonstrate their knowledge, skills and abilities in checking the operation of exhaust Gas recirculation systems on various system designs.
8. Demonstrate their knowledge, skills and abilities in checking monitor readiness on Vehicles equipped with second generation on-board diagnostics systems (OBDII).

Course Format & Methods of instruction:

Methods of instruction used to achieve learning outcomes must include hands-on exercises and laboratory/shop demonstrations in combination with any of the following:

- Lectures & discussions
- Written materials
- Audio-visual instruction
- Computer-based instruction
- Class is taught in 1 modules allowing for new students to begin at the beginning of each module

Module	Inspector Level 1	Clock hours
Module 01	Inspector Level 1	68
	Total Price	\$1200.00