

AutoTeacher News & AIPC News

May 2003 Copyright ATech Training Inc.

In This Month's Newsletters

- **ATech to release GM SET Trainer information.**
The plans for one of the most popular automotive electricity/electronics trainers in the world will be released this Fall.
- **ATech, AIPC, and Autotap are offering a fantastic Scan Tool deal for Educators!**
If you need an inexpensive laptop or palm based scan tool for classroom use take advantage of this offer soon. Don't know how long it will be available.
- **How to teach OBD II.**
This is the first in a series of articles using the Autotap Scan Tool screen information in Power Point presentations of OBD II.
- **ATech's OBD II System Demonstrator.**
Is it real world? Ask the attendees of last month's "Invitational Educational Retreat". Most of them will be at NACAT in Alaska.
- **AIPC's National Winner in the "manufacturer affiliated category" - Clark College, Vancouver Washington.**
Instructor Mike Godson writes about their program and winning the AIPC National Award.
- **Ford's ASSET & MLR program.**
Another opportunity for young aspiring technicians.

Other Items

The **submission deadline** date for the 2003 Automotive Industry Planning Council (AIPC) Awards for Excellence in Automotive Training is rapidly approaching - **June 1, 2003**. Remember to register your submission at the AIPC website www.autoipc.org when you submit it to your State Coordinator.

I am still receiving comments on the April Invitational Education Retreat. It appears that everyone thoroughly enjoyed the training and the opportunity to share ideas and experiences with others. I forgot to acknowledge in last month's newsletter article that many of the pictures were taken by Merle Saunders of Vale High School, Vale, Oregon. Thanks Merle.

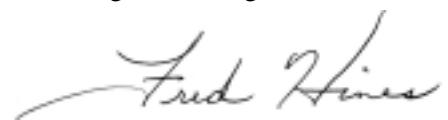
ATech To Release GM SET Plans

First, a little history. Approximately ten years ago General Motors decided to revamp the Specialized Electronics Training (SET) program. This included a rewrite of the curriculum and a complete new trainer hardware design. The company selected produced the curriculum and a hardware design. GM did not like the hardware design and directed them to ATech Training. I modified one of my previous designs to meet their needs and subsequently we supplied the training hardware for the "pilot" projects. ATech retained the copyright on the design but allowed GM to produce the quantity needed for their training centers.

Since that time, other companies and individuals have produced and sold the copyrighted design illegally. In fact, one individual built an entire company around the product. ATech has never attempted to legally protect the design primarily due to the need for an automotive based electricity/electronics training program. Most of what was available were electronics programs which had been "modified" for automotive by the tech ed companies. Today, my design is used by an extremely large number of schools, industrial companies, and OEMs, some legal and some illegal. Most of them have no idea who was responsible for the original design! As a matter of fact, while touring a major OEM training facility recently, I spotted a home built version of the design.

I have decided to release the design information and make the production plans available for schools to use. The complete plans will be released this Fall, 2003. An announcement will be made in the AutoTeacher News and the plans will be in PDF format on both the ATech Training website www.atechtraining.com and the Automotive Industry Planning Council website www.autoipc.org. I will also offer suggestions on reducing the costs of various parts and pieces. Hopefully, we can reduce the complexity to the level that advanced students in most automotive programs will be able to build the design. In other words, it should be a great project for some of your advanced students.

I have had many requests for implementing troubleshooting activities on the GM SET hardware platform over the years. GM's approach was to have extra faulted components, but these are unwieldy and the students learn very quickly which component modules are bad. Early this Fall, ATech will be releasing the troubleshooting SET platform. It will include network and local faulting capability, student response terminal, and Instructor control through the schematic based fault insertion of the ATech Instructor Management Program. Watch for it!



ATech, AIPC, AutoTap (A-A-A) Educator Scan Tool Program



Multiple Data Display Screen Laptop Computer (Laptop Computer)

Use your PC or Palm to quickly diagnose and fix problems on 1996 and newer OBD II equipped cars and light trucks.



- Read Diagnostic Trouble Codes
- Read Freeze Frame Data
- Clear the Check Engine Light
- View emissions readiness monitors
- View and log real-time sensor data, including manufacturers enhanced data for GM, Ford and Chrysler
- Graph signals to illustrate relationships for classroom presentation
- Allow students to “discover” operational characteristics of systems.

The A-A-A Educator Program

Automotive Technical Instructors may Purchase a \$489.95 AutoTap Pro OBD II Diagnostic Scanner for just \$249.95 for Classroom Instructional Use!

ATech Training and the Automotive Industry Planning Council (AIPC) in collaboration with AutoTap are very excited about this opportunity for schools across the United States and Canada. In an effort to improve instruction of OBD II and, as a result, improve the skills of the graduating technicians, this enhanced data scanner for laptop computers or Palm™ PDA devices is being made available at a special greatly discounted price. How long will this offer last? At this point that is unknown so make your requests soon.

If you instruct in automotive technical training at a state accredited educational institution in the United States or Canada, you are eligible to participate in the A-A-A educator purchase program. Visit the ATech website for the required application and additional details: www.atechtraining.com



Diagnostic Scanner

OBD II Instruction

Students can be “trained” to perform manipulative tasks, i.e. replacing the engine control module. But they must be “educated” to determine if it has failed. This is the basic concept of developing troubleshooting skill. While the difference between training and education will be argued forever, everyone actually knows the difference - “Would you want your daughter to attend a sex education class or a sex training class at school?”.

Troubleshooting requires utilizing information and knowledge you know to draw logical conclusions about new problems. The advantage of experience is that our information and knowledge base should be much larger. Young technicians should always take advantage of the experience of the 30+ year technician in the shop if he will share. That experience will fix 75% of the problems but the other 25% will be the “profit destroyers”. Education will help cut those down.

OBD is the first complex relationship system that the automotive repair industry has seen. To solve problems in these systems requires an understanding of the cause and effect of signals in a time domain. We view and teach Ohm’s Law as a static relationship. What if we add a time element to the equation? Place a light bulb across a battery and now the circuit current and light intensity are time dependent. This is now a real world system where nothing remains constant.

The key factor in helping students understand OBD II is helping them to understand the time element. Graphs are the best presentation tool for illustrating changes in relation to time, but many automotive students have never been given the opportunity to acquire this knowledge. A varying line on a piece of paper with different values and items on two perpendicular axes is totally confusing. Discovery is always one of the best teaching tools and this is a prime place to apply it.

Using a vehicle or any of the ATech Engine Control System Demonstrators and the AutoTap scan tool, let the student connect the scan tool and select a prebuilt configuration to display the Throttle Position Sensor voltage in a graphical format. Allow them to vary the TPS and observe the signal on the graph (figure 1). The key elements of understanding to emphasize are the signal variation in relation to time. Have the student watch the cursor as it moves across the graph and determine the amount of time required for each division on the X axis. Connect a voltmeter to read the TPS output voltage. Point out to the student that a signal line which moves from the bottom of the graph to the top is increasing in voltage

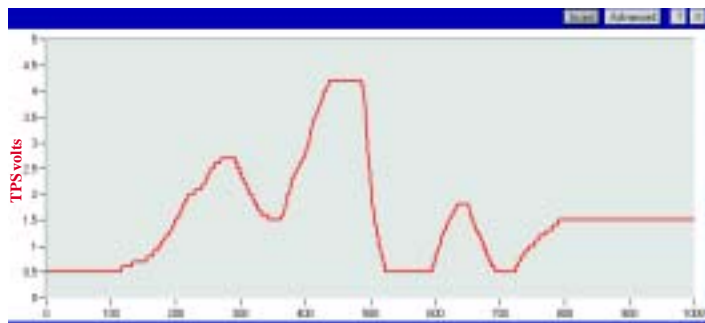


Figure 1

based on the scale on the left hand (Y) axis. Let them operate the TPS and compare the signal level on the graph with the voltage shown on the voltmeter.

Have the student select the advanced tab at the top of the graph to open the window shown in figure 2. By adjusting the scaling value maximum, they can experiment with the voltage axis (Y) value and see the effect on the displayed signal. This is also an opportunity to select the “auto” function and observe the change in scaling done by



Figure 2

the program as the TPS value is varied. They can also adjust the time axis (X) value and determine the change in increment period based on the new values. If you have advanced students or the question comes up, you can explain why the analog output signal from the TPS has “steps” produced by the sampling rate. It is important that the student experience and understand the relationships of the two axis values to the displayed signal.

How do you get the student from a one element simple graph to a four item complex relationship in your Power Point presentations? Do one element at a time. Start with only the oxygen signal as shown in figure 3. Discuss the O₂ voltage scale and point out the signal swing, especially the exaggerated rich and lean areas A and B. These areas were produced on the ATech OBD II

OBD II Instruction cont'd

System Demonstrator by shifting fuel trim values while the system was running. This caused the oxygen sensor signal to remain in the extreme positive and negative voltage areas longer than normal. The ATech trainer was designed

out the small injector pulse width variations. These are in response to the normal O2 sensor signal swings.

Figure 5 adds short term fuel trim (STFT) to the graph. Now the STFT relationship to the O2 signal is shown. Remember that short term fuel trim actually produces the change in injector pulse width. A key point in this graph is the increase and decrease in STFT. The injector pw remains at the new value but the STFT returns to zero. Why? Figure 6 adds long term fuel trim (LTFT)

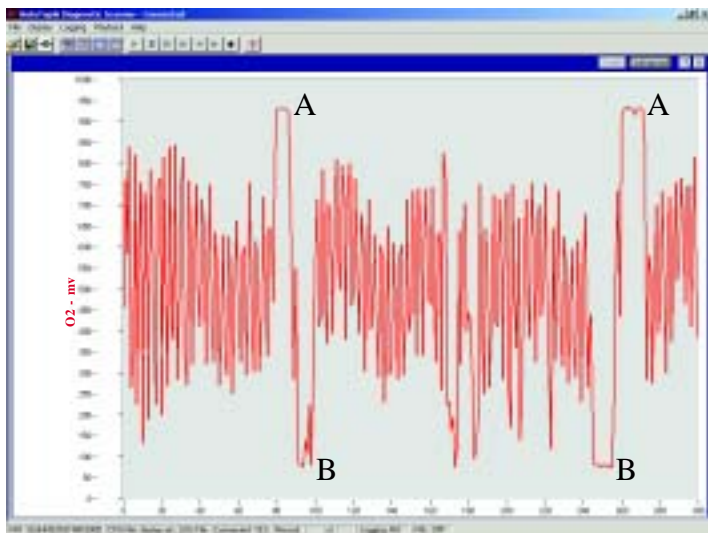


Figure 3

with student instruction in mind. It allows you to create instructional situations and see how the PCM responds.

By adding the injector pulse width value to the graph as shown in figure 4, we now have an illustration of the fundamental principal of closed loop operation. If your student does not understand this relationship, he/she will never truly understand emission control. The key point to discuss is the change in injector pulse width in response to the oxygen sensor signal. If the oxygen sensor signal is

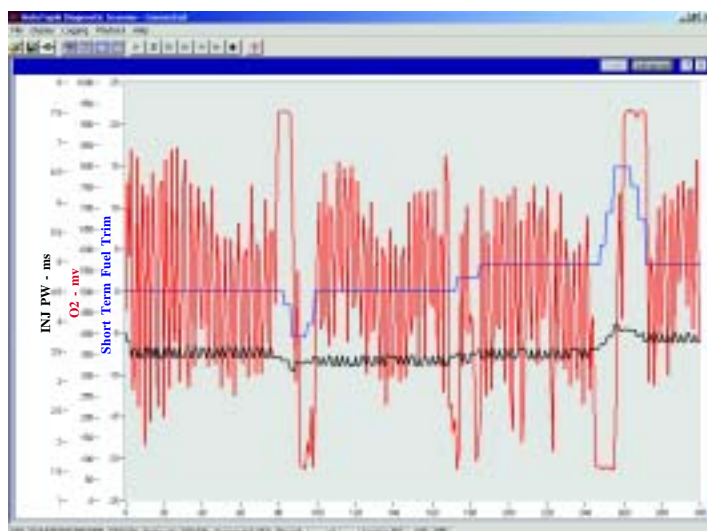


Figure 5

and shows that the LTFT value increases, driving STFT back to zero. Our fuel trim value has now been transferred from STFT to LTFT. I have included one set of values for STFT and LTFT on the graph to illustrate that the change in values is equal. LTFT decreases 5% to remove the -5% of the STFT. The only way to produce these signals and recreate them for student exercises and/or capture for Power Point Presentations is with an ATech OBD II Demonstrator and the AutoTap Scan Tool.

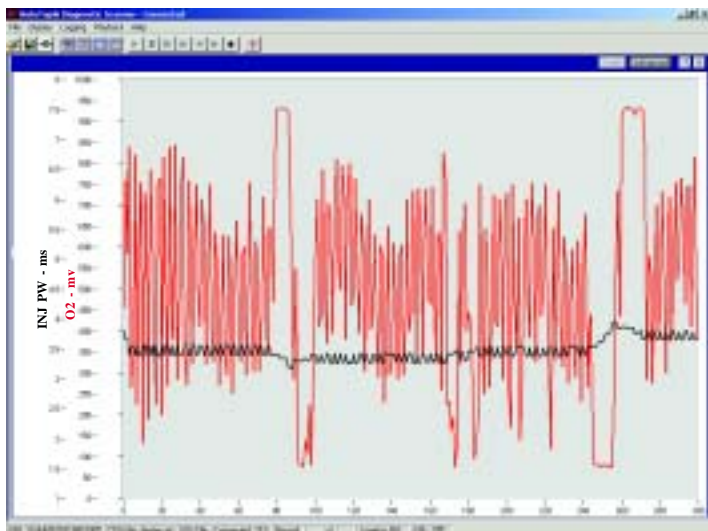


Figure 4

rich (above .45 volts), the injector pulse width decreases, reducing the amount of fuel injected. On the lean swing, the opposite response occurs. Causing the oxygen sensor to remain in the rich and lean areas for an extended time produces a great demonstration of this principle. Also point

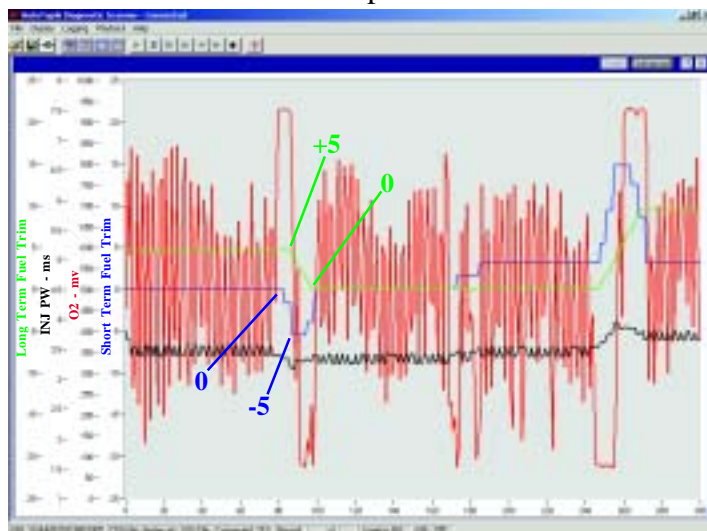
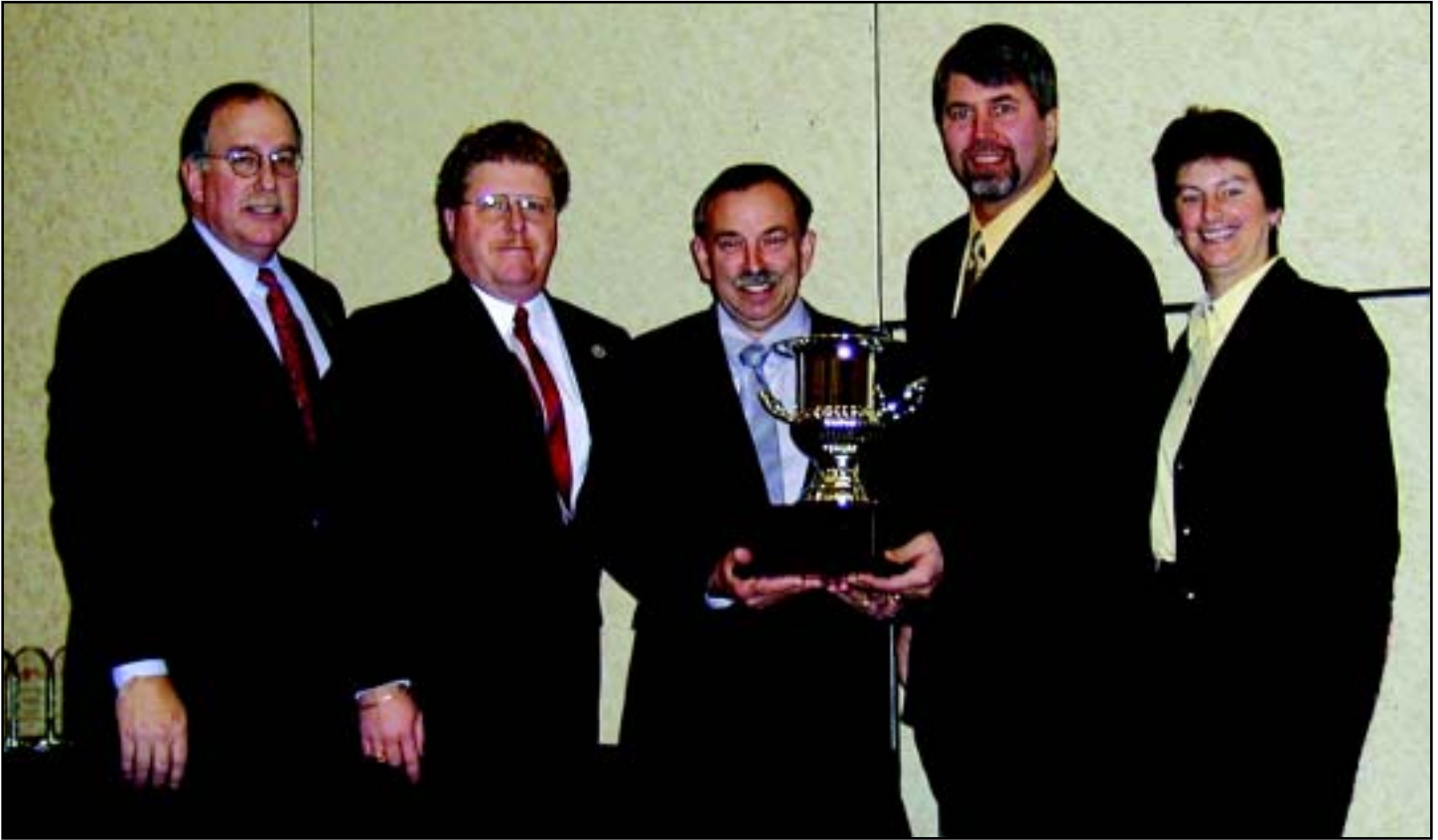


Figure 6

National Winner - Clark College, WA Toyota T-TEN Program



From Left to Right:

Rick Ciesla - Global Technical Training, DaimlerChrysler, MI, (AIPC Treasurer)

Gene Pierce - Assistant Superintendent, Tuscola Intermediate School District, MI, (AIPC Education Chairman)

Robert Jones - Automotive Dept. Head, Clark College (Toyota T-TEN), WA

Mike Godson - Automotive Instructor, Clark College (Toyota T-TEN), WA

Mary Hutchinson - Executive Director of NATEF, (AIPC Secretary)

My name is Mike Godson. I am an automotive instructor at Clark College in Vancouver, WA. My history with the college spans only 7 years, but in that time many changes have taken place in the automotive department. As with any new faculty member, the hopes and aspirations for change seem to direct many actions and my story is no exception.

I was fortunate to come into a department that was ready for change and also quite lucky to have a department head supportive of that end. In this time of rapidly shifting technology if you're not adapting and moving forward, you are simply going backwards. My department head, Bob Jones, understands that concept and has always supported any effort that provides for improve-

ment, no matter what the barriers. For Bob, change was welcome because the faculty member I replaced had become set in their ways and resisted any effort to revolutionize the automotive program. My hope is that any new teacher gets the support I have received, and I can't thank Bob enough for his constant encouragement. Bob Jones defines the term partnership on a daily basis through both his actions and aspirations.

Has this happened to you? Your administrator comes by with a request to apply for some award. You timidly look over the application, try to give a politically correct "No, I'm too busy"; then when that response doesn't fly, you bury the application on your desk hoping to plead ignorance. Sound familiar? This describes my

first reaction to the award I'm writing about and also notes the single mindedness often associated with the application process. It soon became evident that the only way possible for our program to successfully complete the application was through partnerships.

The overwhelming flood of documentation required by today's educational system can crush the spirit of any new auto shop instructor. NATEF certification, self-studies, accreditation, and factory programs name just a few demands typically placed on new faculty member's shoulders. Sometimes you think how great it would be if teaching was the only demand on your time! However, these items have become a requirement for many vocational teachers, so developing survival skills in these areas is key to success. When approaching any of these tasks always ask for help and share the load. Please consider the following strategies when applying for the AIPC award:

1. Split up as many tasks as possible. Divide the sections into small parts if you have to, and don't forget to give your administrator some work. Perhaps even your advisory committee could pitch in and help.
2. Get some clerical support. Again, your administrator should provide some type of office help even if it's only student workers.
3. Set up a timeline and meetings to track progress of the project. Time is always too short and planning will help move things along.
4. If possible, get someone to edit your application. Most automotive instructors are not literary scholars, so help in finalizing your draft can really make a difference.
5. Utilize technology whenever possible. Shared hard drives, digital photos, and e-mail can be real time savers.
6. Draw information from other documents or sources, and bank such information for future projects. It never ceases to amaze me how educational institutions seem to use documentation as fuel. Recycling parts of this document will give you something to start with when asked for other items.

It may take more than one shot at the application process, but when the day finally comes that you get good news be certain everyone knows. Strong public relations regarding any program achievement go a long way when asking for resources or recruiting students. Additionally, most administrators must provide reports to their principals, deans, presidents, or boards. Good news is always a welcome chore in these cases, so be ready.

The AIPC is very interested in promotion and

improvement of automotive training programs. Any self-study endeavor, like the award application, should include or highlight areas that would benefit from improvement. In a round about way, this process will give you the evidence needed to implement change in your particular program. I believe this approach will add value to any automotive program if the goal is moving forward. Remember, status quo only means your falling behind.

In closing let me say that being part of team is a requirement of success in this business. Applying for an award, becoming an ASE certified training program, successfully placing students in jobs, and having the resources to deliver automotive training are all part of a team effort. You probably have an administrator, fellow faculty, or support person you find difficult to work with now. That person is not a barrier to success, but rather your key to moving forward. Strive to partner with such people; because like it or not, you must function as part of a team to be successful.

**Mike Godson, Automotive Instructor
Clark College**

Automotive Training Managers Council Training Showcase

Do you have a product that you would like to present to the Training Managers of some of the most important automotive companies in the world? If so, the ATMC Training Showcase is the event to attend. Some ATMC member companies are:

Standard	Bosch	Mitchell	DaimlerChrysler
ACDelco	GM	Fluke	Timken
Raytheon	USPS	Ford	Fedex
Ryder	Dana	NAPA	Federal Mogul
Babcox	Delphi	Goodyear	Delco-Remy
SAAB	Snap-On	Workhorse	International
Mieneke	Midas	PACT	Detroit Diesel

Booths at the September NASCAR™ conference in Mooresville, NC are available for rent. Contact

Bob Rodriguez, ATMC Administrative Director
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Leesburg, VA 20175, 703-669-6670
www.ATMC.org



Ford ASSET & MLR Programs

ASSET stands for Automotive Student Service Educational Training

Good Technicians Are Hard to Find. They're Developed in the Ford ASSET Program.

Ford ASSET stands for the Automotive Student Service Educational Training Program. It is an alliance among Ford Motor Company, your Ford and Lincoln Mercury dealers and local participating community colleges. This program allows highly motivated people to get started on a career as a Quality Care technician. It's also one way your dealer helps ensure that the best and the brightest people are working on your vehicle. Through the ASSET Program, local dealers handpick the students and oversee their education and training. So that by the time they graduate, the students know your vehicle inside and out.

The ASSET program allows technical and vocational students to get on-the-job training at a sponsoring Ford or Lincoln Mercury dealership while earning an Associates Degree in Automotive Technology at a local, participating community college. After graduation, students are likely to be hired for a full-time job at one of the 5,000+ Ford or Lincoln Mercury dealerships, to the tune of a 99% success rate. In fact, in 1996, 600 students, nationwide, graduated from the ASSET program and 594 of them are working full time in Ford and Lincoln Mercury dealerships! It's a fairly demanding course, but there's plenty of benefits to make it worth your while. You'll be getting not only in-class instruction from trained instructors, but also hands-on experience at a Ford or Lincoln Mercury dealership, and earning money while you're getting your Associates Degree.

Anyone who is a high school graduate and interested in the technical side of vehicles is eligible. Vehicle enthusiasts and high school Auto Shop students are typical candidates. While most students find out about the program through their high schools, eligibility is not limited to current or recent high school graduates.

How the Program Works

ASSET is a 2-year program divided into two parts. Nine to 12 weeks of classroom instruction are alternated with 9-12 weeks of paid co-op work experience at a sponsoring Ford or Lincoln Mercury dealership.

Upon completing the ASSET program, every participant is equipped with the basic skills and experience to be a successful service technician.

You and the Dealer

Sponsoring Ford and Lincoln Mercury dealers play a vital role in ASSET. Each dealer:

- Interviews and selects prospective students
- Appoints an in-dealership coordinator to help the school ASSET coordinator plan and monitor the cooperative work experience
- Provides the work experience that reinforces your most recent classroom instruction
- Pays you for working at the dealership
- Supplies you with uniforms (in keeping with dealership policy)

Dealer Benefits

No initial investment

- Improved Fix-It-Right-the-First-Time capability
- Less dealership training (downtime) for technicians in the future
- A continuous source for recruiting educated technicians

MLR stands for Maintenance & Light Repair

The Quick Path to the High Road

The Maintenance and Light Repair program offers a quick, low-intensity opportunity for students to enter the challenging world of automotive service. You'll acquire the necessary skills to perform regular maintenance, minor or light repairs, and parts installation on all types of Ford and Lincoln Mercury automobiles and light trucks. Your success will be rewarded with Ford Motor Company certification in basic electrical systems, brakes and steering/suspension.

If you are mechanically inclined and interested in a certification program, make the commitment today and you'll be on your way to a successful career as a trained and certified light line technician.

A Hands-on Experience

This program was developed by the Ford Motor Company to prepare students with the basic skills needed to gain employment as a Maintenance and Light Repair Technician. Students will receive extensive hands-on experience servicing late-model Ford or Lincoln Mercury vehicles.



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A Tech Training is a member of:



Automotive Industry Planning Council



Automotive Training Managers Council

And actively supports:



AIPC 2003 Awards Program

Deadline is June 1 for submitting documents to State Coordinators for 2003 program

Free Electrical Troubleshooting Skills Development Program

AutoIPC (AIPC) and A Tech through a collaborative effort have made a free downloadable program available on www.autoipc.org. The program's purpose is to develop electrical troubleshooting skill in both technicians and students. It is free for you to use personally or in your classroom. All other copyright restrictions are maintained.

The program is a variation of the A Tech Skills For Electrical/Electronic Troubleshooting (SEET) program. The variation allows faulted circuits to be displayed and diagnosed using standard virtual instruments. The program as downloaded contains one faulted circuit. New faults for the circuit and new circuits will be made available periodically on the AutoIPC website for downloading.

Additional faults are available for download on the AIPC website and all registered users have been notified of their availability.