

Excerpt from

Introduction to Auto Repair

Preview

The following is a sample excerpt from a study unit converted into the Adobe Acrobat format. A sample online exam is available for this excerpt.

The sample text, which is from the Auto Repair Technician program, explores the field of auto repair. This ever-growing field can provide a fascinating career, a good income, job security, and self-fulfillment to anyone with a desire to work hard and succeed.

The modern automobile is an amazing piece of technology, with its many components working together to provide safe, reliable transportation. It takes highly trained, talented people to keep these high-tech vehicles in running order. Since professional auto repair technicians possess specialized abilities that few others have, their skills are always in demand. As an auto technician, you'll do interesting work that's essential to everyone who owns a car. For this reason, a skilled auto technician is always highly regarded in the community and commands the respect and admiration of friends and coworkers.

There are many reasons why you may be interested in taking this program. You may be preparing to start a full-time career in the automotive repair field. If you're already employed in another field, maybe you're simply interested in expanding your horizons. Perhaps you want to work only part-time, performing repairs only occasionally; or, maybe you're interested in saving money by performing repairs on your own vehicle. We believe that once you understand how many different career opportunities are available to skilled auto repair technicians, you'll understand how rewarding and enjoyable the field of automobile repair can be. No matter what your career goals are, this program is designed to help you succeed.

Home study provides millions of people with the opportunity to learn new skills, earn diplomas, and start new careers. Anyone who has the desire to succeed can find personal satisfaction and professional success through home study programs. By making the commitment to complete this program and earn your diploma, you'll be making a valuable investment in your future. Each and every skill taught in this program has a real-life, hands-on application that can help you earn money and improve your job outlook.

Now, let's begin your lessons. As you start reading this first study unit, you'll learn about the growing automotive repair field and the increasing need for professional auto technicians. You'll discover the many exciting career opportunities that are available to skilled auto technicians. You'll learn about the basic operation of engines and automotive systems. You'll be introduced to the specialized tools that automotive technicians use, and learn how to purchase the professional tools you'll need to get started in the field. Finally, you'll learn the important safety procedures that must be followed when you're performing auto repairs.

After reading through the following excerpt, feel free to take the [sample exam](#) based on this material.

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Introduction to Auto Repair

INTRODUCTION

The Rapidly Growing Field of Automotive Repair

The men and women who pioneered the development of the automobile 100 years ago could never have imagined how the automobile would revolutionize the world. In those days long ago, automobiles were rare, luxurious “toys” owned only by the wealthy. Today, automobiles are owned by ordinary people everywhere and are generally considered to be a necessity of life. Unless you live in a major metropolitan area with a large public transportation system, you probably rely on an automobile to get to work, school, the local shopping mall, and just about everywhere else. The use of the automobile is so widespread that today, in the United States, there are approximately 185 million registered automobiles on the road (Figure 1). This is an average of about 1.07 cars for every licensed driver!

What do these statistics mean to you? Well, think about all those automobiles, and then think about all the people who depend on those cars to get them to work, school, and to stores. Since most people don't work on their own cars at home, this means that they'll rely on you, the auto technician, to keep their vehicles in running order.

Auto repair shops are regularly filled with customers who need the services of skilled technicians. Every one of those 185 million vehicles will require regular maintenance as well as frequent repairs. Proper maintenance is so important to a vehicle's operation that, typically, an auto manufacturer's warranty won't apply to a car unless the owner performs the recommended maintenance. Therefore, even if we lived in a perfect world where no part ever failed and no car ever broke down, there would still be abundant servicing opportunities for trained auto technicians. Of course, in the real world, cars break down every day, and these repairs represent still more earning opportunities for you.

The average person spends about \$1,400 per year on fuel, maintenance, and insurance for his or her car. A large part of that \$1,400 goes directly to an auto repair technician to pay for maintenance and repairs. When you multiply that amount by the current number of licensed drivers, you can quickly see that auto repair is a huge business. Auto technicians are seldom out of work, and excellent career opportunities are available to highly trained and skilled technicians.



FIGURE 1—All of the 185 million vehicles on the road today will require the regular services of automotive repair technicians

The better your education and professional qualifications are, the better your chances will be to advance rapidly in this lucrative industry.

The automotive repair field is not only big—it's continually growing. It provides an opportunity to earn a good income and offers many chances for personal advancement. You can work at the automotive repair trade in any area, 365 days a year—there are no seasonal or regional restrictions on the job. Professional auto technicians enjoy the benefits of job security, interesting work, and a wide variety of different employment opportunities. If you enjoy fixing things and working with your hands, you'll find personal satisfaction in the ability to repair vehicles on which others depend. A check of the classified ads in your local newspaper will no doubt indicate the many job opportunities available for skilled auto repair technicians in your area.

Remember, your customers will place their trust in you, the person who keeps their vehicles safe and reliable. For this reason, talented auto repair technicians are always in demand and are respected by everyone who owns or operates a vehicle.

Automotive Mechanics and Automotive Repair Technicians

You may have noticed that we prefer to use the job title “automotive repair technician” instead of “automotive mechanic” when referring to the professionals who repair vehicles. What exactly is the difference between these job titles? Well, the answer is simple—the difference is the *image* that they represent. For many years, the people who repaired automobiles were referred to as mechanics, and are often still referred to that way. However, unlike the automobiles of the past, today’s vehicles are far more technologically advanced. Modern vehicles contain computerized and electronic control systems, emission control systems, and advanced diagnostic equipment.

Since today’s mechanics are required to learn very high-tech skills as well as the more traditional mechanical repair techniques, many service people now prefer to call themselves “automotive repair technicians” to reflect the wider scope of their jobs (Figure 2). In addition, most automobile manufacturers and parts suppliers also use this newer title. The job title you choose to use is entirely up to you—there’s certainly nothing wrong with being called a mechanic. However, if you prefer, why not call yourself an automotive repair technician? This newer title more accurately describes the type of repair work you’ll do, and it can help you reflect a modern professional image.

FIGURE 2—Today’s automotive repair technician will need many high-tech skills as well as traditional mechanical repair knowledge.



Your Educational Goals

There are many different reasons why students are interested in taking this program, and these reasons vary according to each person's individual goals. What are your educational goals, and how can our program help you reach them?

Well, perhaps you've just finished school and are considering a career in automobile repair. Or, maybe you're a professional who already works in another field, and you're interested in a career change. Either way, we believe that you'll find this program to be both informative and useful. This program is designed to fit the needs of both beginners and more advanced students. The topics are approached in a step-by-step manner, so you can learn correctly from the beginning without feeling overwhelmed. You'll also learn about the many career opportunities in the automotive repair profession, and how you can seize one of those opportunities for yourself.

If you're already employed in the automotive field, you may be interested in upgrading your skills or in obtaining professional certification. Maybe you feel that you need to brush up on the theory of automobile operations, update your knowledge of the latest computer systems, or learn about new antilock brake systems. Perhaps you would just like to have a professional diploma that will prove your skills to your employer. If you're one of these people, this program will help you to fine-tune the skills you already have. The program information is presented in an easy-to-understand format, but is also designed to be interesting to the intermediate or more advanced student. You'll learn lots of practical, professional tips that can help you do your job better, so you'll never be bored. This program is also an excellent tool to help you prepare to successfully pass a professional certification exam, such as the *Automotive Service Excellence (ASE)* exam. (We'll discuss certification examinations in more detail later in the study unit.)

If you work on cars as a hobby or for your own enjoyment, perhaps you would like to take your hobby one step further and start your own automotive repair business. Imagine being able to earn money doing something that you enjoy! For many people, it's a lifelong dream to work at a job they truly love. If this is your dream, you've already taken the first step toward making it come true by enrolling in this program. You may decide to start your own auto repair business, either as a full-time or part-time enterprise. With a little effort and the willingness to learn, you'll be well on your way to owning a successful business.

Perhaps you're not looking for a career in auto repair at this time, but would simply like to become a more informed consumer. Well, having knowledge is like having money in your pocket. For example, many of us have looked at new cars at dealerships and been confused by the

technical jargon on the stickers. What exactly are you buying? Often, a used car in good condition is the best value for your money, but how can you be sure that a used car is in good condition? The knowledge you'll get from this program can help you judge the condition and quality of a car so that you'll understand exactly what you're buying (and maybe even help you get a great deal). You could also use your skills to help relatives, friends, and neighbors when they're purchasing cars.

Maybe you would like to be able to maintain and repair your own car. How much money do you think you could save in a year by doing repairs yourself? Even if you don't wish to do your own repairs, you'll be able to make sure that your local mechanic is doing the job properly (without overcharging you). A strong knowledge of automobile repair can also make you feel safer and more confident when vehicle emergencies occur far from home. Many emergency automotive problems can be solved quickly and easily without calling for help, if you have the know-how. Compare the cost of this program to the cost of towing and expensive roadside repairs, and you'll see how quickly your learning can pay for itself.

This practical program is designed to teach you all the basic knowledge and skills you'll need to start working as a professional auto technician. The program topics are all presented in an interesting, easy-to-understand, and enjoyable format, with plenty of photos, diagrams, and other illustrations to enhance your learning. You'll learn through step-by-step instruction that takes you from the basics of automobile operation to the latest, high-tech repair techniques. You can study at any time that fits your schedule, and at the pace that fits your needs (as fast or slow as you wish). Therefore, you'll get all the benefits of professional instruction and training with none of the hassles of a formal classroom. You can start using your new skills right away, either by making repairs to your own automobiles or by obtaining employment in the auto repair field. So, you'll quickly get the most out of your investment in training. We're confident that no matter what your educational goals are, this training program can help you meet them successfully.

What Will I Learn?

Some students are unsure about how they'll learn automotive repair through home study. You may wonder, "Will I really be prepared to work in the auto repair field when I complete this program? Will I be able to fix any type of car?" The answer to both of these questions is yes.

It's important to remember that today, all successful professional auto technicians have one thing in common—training. In the past, "back-

yard mechanics” learned their skills by tinkering with cars in their own garages. However, because of the complex, high-tech systems that are used on today’s cars, you probably wouldn’t be able to learn how to fix vehicles properly without some formal training. To properly repair a vehicle today, you must thoroughly understand how all the systems work and how they work together. The easiest, fastest way to get this understanding is to complete a formal training program.

This doesn’t mean that a person can’t easily learn to make repairs to his or her own car. In fact, many of the basic skills of engine repair have remained the same for decades. However, it’s important to remember that today’s automotive mechanics (no matter how or where they choose to apply their skills) are highly skilled technicians who have learned their trade through formal training programs such as this program. You’ll be proud to join the ranks of these professionals when you complete your training.

The topics in this first lesson will serve as a solid foundation of knowledge for you to build on as you move through the program. We’ll start by reviewing the basics of four-stroke engine operation and some important engine performance terminology that you should know. Then, we’ll talk about the basic operating systems that make up the automobile. Finally, we’ll end your first study unit with a discussion of automotive tools and safe work practices.

If you’ve already worked on automobiles in the past, you may already know some of the information we’ll discuss in this first study unit. If so, that’s great! You’ll have a head start on completing the rest of the program. (Remember, though, it won’t hurt to review these important concepts.) If you’re new to these automotive topics, take some time to study this first lesson carefully. As you proceed through the program, the study units will quickly become more challenging, covering more detailed automotive repair topics. You’ll learn all the hands-on skills you need to perform repairs on every automotive system. For example, later in the program, you’ll learn about engine rebuilding, brakes, electrical systems, fuel systems, transmissions, computer control systems, emission control systems, and all sorts of high-tech automotive testing and repair techniques.

Don’t let the idea of “high-tech” automotive systems intimidate you. Remember that today’s automobiles are similar in many ways to those of years past. Yes, today’s engines contain electronic control systems, but these systems are simply “add-ons” to the same old gas-powered engine. All the other fundamental engine components have remained the same for many years. Today’s engines still have pistons, crankshafts, camshafts, oil pumps, bearings, and so on, just like the engines in our grandparents’ day. In fact, it’s far more likely that a problem will occur in one of these basic mechanical components than in an electronic component. Therefore, while today’s technicians must know

about the latest electronic systems, they still need the same foundation of basic knowledge that was required in years past.

In this program, we'll concentrate on the repair of automobiles and light trucks (such as minivans, pickup trucks, and sport utility vehicles). As you'll quickly learn, while the exact design of a vehicle will vary from one manufacturer to another, all gas-powered vehicles work according to the same principles. Therefore, you'll be able to apply the skills you learn in this program to just about any type of automobile or light truck there is—both domestic and foreign. It's important to keep this in mind, because imported cars account for a large percentage of the vehicles sold today in the United States. When you complete the program, you'll have the basic skills you need to work on almost any vehicle manufactured and sold today.

Also, since many of the basic principles of operation, repair, and troubleshooting apply to other types of vehicles, you'll be able to further your training in the future if you wish. Perhaps someday you'll want to learn to repair medium or heavy trucks, buses, or diesel engines. If so, this program can provide you with a strong foundation in basic skills that you'll be able to expand on at a later date.